K.L.N.COLLEGE OF ENGINEERING

Approved by AICTE and Affiliated to Anna University, Chennai
(An ISO 9001: 2015 Certified Institution)
Pottapalayam – 630 612
Sivagangai District, Tamil Nadu, India

Website URL: http://www.klnce.edu

E-Mail ID :info@klnce.edu

Department of Computer Science and Engineering
(Accredited by NBA, New Delhi Research Centre Recognition by Anna University,Chennai)

July – Dec 2017

Volume-1
Issue-1

INTERF*ACE*

NEWSLETTER

K.L.N.COLLEGE OF ENGINEERING

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Department of Computer Science and Engineering

July – Dec 2017	INTERFACE	Volume-1 Issue-1

INTERFACE

News Letter

COLLEGE VISION AND MISSION

VISION:

To become a Premier Institute of National Repute by Providing Quality Education, Successful Graduation, Potential Employability and Advanced Research & Development through Academic Excellence.

MISSION:

To Develop and Make Students Competent Professional in the Dynamic Environment in the field of Engineering, Technology and Management by emphasizing Research, Social Concern and Ethical Values through Quality Education System.

About the Department

The Computer Science and Engineering Department is established in the year 1997 and is accredited by NBA, New Delhi. M.E (CSE) Programme is started since Academic year 2010-11. Experienced faculty member transform their expertise through state of art facilities available in the department. The department motivates the stake holder to contribute effectively through innovative research. Each batch student of UG and PG bag more number of ranks in Anna University exams and secure placements offers in the premier organizations.

Department VISION:

To be a competent Professional in the field of Computer Science & Engineering through quality education, training and innovative research

DepartmentMISSION:

• Imparting proficient education through quality teaching –learning process in tune with the interdisciplinary needs of global work environment.
• Inculcating the attitude of continuous learning through industry institution interaction, consultancy and research activities.
• Cultivating professionalism, Ethics and integrity of character for positive contributions to society.

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Our Sincere Thanks to:

President	:	**Er.K.N.K.Karthik**
Secretary & Correspondent	:	**Dr.K.N.K. Ganesh**
Treasurer	:	**Mr.P.K.Mothilal**
Principal	:	**Dr.A.V.Ramprasad**
Editor-in-Chief	:	**Dr.P.R.Vijayalakshmi**

Message from Management

Dr.K.N.K.Ganesh
Secretary & Correspondent

Dr.K.N.K.Karthik
President

At the outset,We congratulate the CSE Department and Specially the Newsletter Committee Members for their efforts in bringing out the Newsletter. Newsletter is an amalgamation of all the events held in the department and it plays an instrumental role in providing a greater exposure of the achievements accomplished by the students and the faculty. We wish all the very best in your endeavors.

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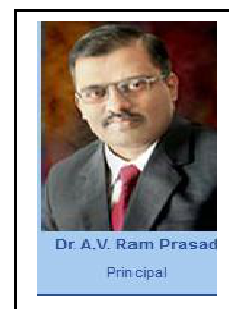Pottapalayam – 630 612

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Principal's Message:

As students are the members of a progressive society, the teachers shall not Fight today battle with yesterday's weapon, but they must prepare them to face all the eventualities of life. Thus, teachers are the architects of a country. Consequently the true education should deepen our insight, widen our horizon and create a meaningful outlook. Equally the students are fortunate enough to have born in a free nation, with all the facilities to shape their career in such a way, that they should be part of a good and healthy society with progressive attitude towards divinity.

Dr. A.V. Ram Prasad
Principal

HOD's Message:

My appeal to my dear students is to attend all classes, make use of library extensively and read text books regularly take part in technical paper presentations and seminars and undergo training in various skills sets, so that, they will not face difficult times in their professional career since, they will be mostly on standalone mode. In this respect, I humbly request the parents and guardians to show more interest in their wards day to day activities and overall performance. Parents are also without fail the parents association meetings held by the colleges.

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From the Editor's Desk:

Dear students,

Hearty welcome to the CSE Department's third issue of the Newsletter for the academic year 2016-2017.

The objectives of the Newsletter is to mainly focus on the

➢ Achievements of the Students and Faculty members from the CSE dept in Curricular, Co-curricular and Extra-curricular Activities.

➢ The Recent trends in the area of Computer Science & Engineering and related areas.

I congratulate all my team members for their constant efforts in launching this News Letter. We are Very Grateful to our Management, EO, and Principal for their Support and Encouragement.

EDITORIAL CREW

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Ms.Sarayuparvathi R	-	Article Grammar and spelling check
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About Our Department

Computer Science and Engineering graduates are widely employed in the software industries throughout the world. Some of the graduates are employed in the hardware, Communication and ITES industries also. Computer Science and Engineering demands a blend of creative and technical skills. A number of opportunities exist in systems development across a range of application domains, as well as in the relatively newer areas of intelligent systems, interface design and Tele computing. Due to the globalization, there is a wide opportunity of employment for the Computer Science and Engineering graduates. The formation of various technical parks/software parks throughout the country makes a great demand for the Computer Science and Engineering course in the Engineering graduates are employed as researchers in many research organizations like DRDO, ISRO, BARC, IGCAR, etc.

Department's Vision and Mission

Vision:

To prepare responsible professional Engineers in the field of Computer Science & Engineering and computing applications through quality education, training and innovative research.

Mission:

To produce successful and creative interdisciplinary Computer Science & Engineering graduates in solving problems, in tune with the needs of global work environment and committed to continuous learning with integrity of character for positive contributions to society.

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Programme Educational Objectives (PEO)

The educational objectives of the Computer Science and Engineering (CSE) program represent major accomplishments that our graduates are expected to achieve within three to five years after graduation and more specifically, Program Educational Objective (PEO)

PEO I: Contribute effectively to the society by applying principles of computer science and engineering for analyzing the real world problems to produce Optimal and acceptable technical solutions.

PEO II: Sustain as good professionals by pursuing career / advanced studies and practice innovation in emerging technologies through lifelong learning.

PEO III: Build professionalism, team work, effective communication, ethical values and leadership qualities.

Programme Specific Outcomes (PSO)

PSO 1: Ability to apply good analytical, design and implementation skills to formulate and solve scientific and business applications pertaining to Algorithms, Computer Systems, Networks, Security, Data Analytics and Artificial Intelligence.

PSO 2: Ability to update knowledge continuously in the tools like Rational Rose, MS VISIO, NS, VMware workstation, Mobile Application Development tools and technologies like storage, Computing, communication to meet the industry requirements.

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Programme Outcomes (PO)

COMPUTER SCIENCE AND ENGINEERING GRADUATES ARE ABLE TO:

PO1:Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2:Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3:Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4:Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5:Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6:The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7:Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8:Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9:Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10:Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11:Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12:Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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Student's Corner

Why Cyber security will change the Internet of Things (IOT):

The Internet of Things has done something truly miraculous. It has allowed us to interact with others in ways we never thought possible before. With the Internet of Things, everything is connecting, communicating, transmitting, and analyzing. Every object is full of data and ready to share data. The Internet of Things is something that has arisen quite naturally as computerization of everyday objects becomes more and more quotidian.

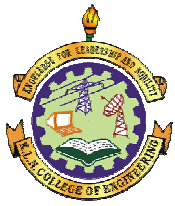### Everything is connected everywhere

We're surrounded by smart. Smartphone's, smart TVs, smart toasters, and doorbells. Anything and everything can fit a processing unit inside of it and everyone and everything is connected to the internet. In the short term, we've some immediate returns on productivity. When every smart device is communicating, self-repairing, and learning, things start going a lot smoother. From business processes to managing the home, smart devices connected under the umbrella of IoT are changing things for the better. Duties are simpler to accomplish, tasks easier to organize, and management is more enjoyable.

The Internet of Things leaves us open to cyber attacks

One key drawback of having all of these systems constantly connected to the internet is the threat of cyber attacks. We are far more susceptible to cyber attacks when our everything is connected everywhere. Hacking into your smart toaster, for example, could lead to finding a network node. This node could lead to the leakage of sensitive personal information. As we go into the future, these risks must be addressed. The implications of this are manifold. One thing that will be persistent in this constantly changing space will be that defense strategies will continue to evolve. In order to prevent hackers from having access to important data or even controlling certain tasks, the sophistication of defense mechanisms within IoT devices must be top tier.

How encryption can help

One strategy that is currently being employed is emphasizing the importance of user awareness, education, and safety. Storing and generating passwords will likely be made easier as well as to make individual users less exploitable. Securing passwords and attempting to educate users is only half the battle, however. Technologies like Block chain light the way for defense strategies. With Block chain, you've got a global, distributed ledger- one that is immutable and secure. How is a large secure infrastructure like this one managed and maintained? Block chain is built on encrypted keys and some other well-understood cryptographic principles. These principles will

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continue to be adopted in a piecemeal fashion and improved upon as the years' march on and hacking attempts grow more bothersome.

The Internet of Things: liability and innovation must be balanced

The question of liability will further innovation. Companies will look to remove blame by enacting safety protocols. When we're interconnected, shared blame can be a starting point for true innovation. "The broad range of connectable home devices-TVs, home thermostats, door locks, home alarms, smart home hubs, garage door openers, to name a few-creates a myriad of connection points for hackers to gain entry into IoT ecosystems, access customer information, or even penetrate manufacturers' back-end systems," Deloitte, the massive advisory firm, declares. As the opportunities for IoT open up, our risk management efforts must double, Deloitte suggests. "The IoT is forcing many business leaders to reassess their decentralized approaches to cyber risk management." Traditional architectures and security protocols won't work in IoT ecosystems. Therefore, we can expect cyber risk and IoT to evolve as they will continue to demand more from each other. As the IoT and cyber security technologies continuously advance. In the parallels are hackers who are constantly creating new bugs and exploits to crash systems and steal data.

The 3 Best Cyber security Solutions for Enterprises:

Cyber security is a threat for everyone but is especially dangerous for businesses as the penetration of a business's database could threaten an innumerable amount people's data. It is very imperative that a business conduct itself in the most secure way possible to avoid a breach of their internal systems. Luckily, businesses have the ability to use cyber security teams such as Symantec and AVG to protect itself from viruses and malware. Hacking attempts on businesses have reached all-time highs and will only increase as the level of interconnectivity around the world also increases. There is a parallel to the access of internet globally and the pressure on individuals to keep their data secure. Cyber security has to be one of the most, if not the most, important aspects of any business's profile. However, a business cannot solely rely on one of the cyber security teams to completely secure their infrastructure. Oftentimes an IT professional is required, either contracted or hired, to fully lockdown an intranet and secure a system. This means management of everything from password control to anti-fraud so that a company is not at risk of being besieged. There are, however, strategies that can be employed to ensure that your company stays safe and secure.

1. Secure the Network

One of the most important things a business can do is lock down its network both externally and internally. This can be done through a couple of ways. Firstly, if using WiFi, make sure that your

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access point is hidden and is encrypted using a firewall. This will create a harder barrier for hackers who will have to use tools and other devices to get through to your access point. This protects your internal network from external viruses and unwanted visitors. It is also important that if you are using a switch that it is the safest and most up-to-date machine. Update all of your devices regularly and have an employee monitor all of the traffic. The only way to truly secure a network is to keep a watchful eye and constantly encrypt.

2. Educate Staff

There is nothing more important than an educated employee who is knowledgeable of the threats and knows how to deal with them. Sometimes the most effective strategy is to bring in a cyber security professional that can break down what a virus is, how to create effective passwords, and how to encrypt files. The more knowledge your staff has of the threats the less likely you are to be exploited. There is nothing more dangerous than an employee who is ignorant of download policies who then accidentally downloads a virus and starts a breach. It is a frightening sight to see an employee desk with sticky notes embroidered with passwords and other sensitive information. Informing your employees of how to deal with technology in the safest way possible is the best way to prevent any hacks or exploits. So much of cyber security comes down to an individual keeping their information safe and using common practical knowledge. It is always important to hold your employees to the highest standard and in cyber security it is even more important.

3. Keep Updated

It is absolutely imperative that your technology stays up to date and is always on to the newest version. This can be a pain in the neck for IT professionals at your company but it is a necessary evil. Upgrading operating systems and server versions often brings new and higher levels of security. Even updating the Thin Client that your company uses can completely secure your employee teams. Even with the best software developed by the most qualified software engineers, older machines have loopholes that can be exploited through hard-coded USBs and CD-ROMs. It is also important that ports are encrypted so that only registered and known devices can be used on a computer at any time. Though it seems laborious and mundane registering all of the devices your company uses, including cell phones can make sure that no unauthorized users are ever on your intranet. This can be essential for locating the source of an attack or preventing one altogether. Even though updating all technologies can be expensive, being the victim of an attack is much more damaging.

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Conclusion:

For cyber security companies, the difficulty truly lies in creating tools that will protect all of the different devices that are now integral to an individual's life. There are no more households with just one computer or a person with just one internet connected device. We must protect the millions upon millions of devices that are used every second of the day and that job alone is both awesome and tremendous. Cyber security, however, will have to evolve to meet the new security demands brought on by the Internet of Things. Now a company must account for interconnected camera systems, telephones, automobiles and even refrigerators. Cyber security for businesses really comes down to educated employees and vivacious IT professionals. Whether you are contracting or employing IT specialists it is important to keep updated and have strong employee practices so that you do not fall victim to a cyber security breach. Keeping antivirus and firewalls up to date while constantly upgrading technology can ensure that your company will always be the hardest one to crack. Strong password policies and strict employee rules about information sharing will ensure that you never suffer an attack from the inside. The best solution for businesses is diligence as being on top of the game is the most surefire way to stay protected.

S.Anu (154301) / III-CSE/A

The 50 Highest Paying Jobs in Computer Science:

While "Software Developer" is only insalary.com's 8 hottest jobs of 2018list in terms of growth rate (demand), it probably goes without saying that there are many well-paying career opportunities in Computer Science and IT in general. If you're considering pursuing a computer science career, or just curious, here is a list of 50 of the top-paying jobs in the field. While salaries for some roles vary widely by location, industry, experience level, demand and sometimes as the wind blows, this list should give you a rough idea of the more financially rewarding IT-related roles.

50. Systems Analyst or Systems Engineer

This role is sometimes referred to as a Computer Systems Analyst, with duties that might overlap that of an IT Project Manager, if overseeing installation or upgrade of computer systems. This role typically analyzes an organization's computer systems and procedures; makes recommendations for process improvement; interacts with partners/ vendors and with programmers or programmer / analysts. Educational background might be technical, though this is more of an analytical than technical role that is focused on the business aspects of technology, including: analyzing the cost of system changes; the impact on employees; potential project timelines. Needs to interact with department managers on IT requirements; incorporate feedback from both internal and external users into business requirements documents; incorporate

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feedback from designers; contribute technical requirements; advise technical teams on their and their technology's role in the organization; provide guidance to programmer / developers with use cases.**Salary range**: $ 50-108K

49. Business Systems Analyst

This role focuses on specific computer systems – compared to a Business Analyst, who will analyze a broader range of processes and systems for an organization. Typically, it requires analytical skills and is business-focused, so often requires a BA background, not necessarily a B.Sc.. It does, however, require an understanding of computer systems and information, and more technical reporting and documentation procedures. Usually, understanding the SDLC (Software Development Life Cycle), UML (Unified Modeling Language) and other technical concepts and skills are often a requirement. The role has optional certifications which bring increased opportunities and compensation.**Salary range**: $ 75-109K

48. CRM Business Analyst

Aka CRM Analyst. CRM (Customer Relationship Management): front office functionality. This is typically a less technical role which may require a marketing or business degree- often a master's — combined with statistics, but usually requires certain technical knowledge such as database and CRM (Customer Relationship Management) software, specifically. Typical responsibilities / skills: analyze customer relationship data – especially within product channels-– using CRM software, and recommend strategy changes for building customer loyalty; define organizational procedures based on the data; document new procedures for internal use- typically for staff in sales, marketing and support.**Salary range**: $ 80-109K

47. Software Systems Engineer

Typical responsibilities / skills: development and upgrade of computer systems; either interact with data and system security staff or define necessary procedures for them to follow; design, develop and test software when necessary- often middleware; document procedures for internal use, and provide various system and operations documents; participate in various review meetings, including design, program and test reviews with inter-departmental co-workers; define a process for change management.**Salary range**: $ 76-111K

46. Solutions Architect

A Solutions Architect role is similar to other architect roles and can go beyond the scope of IT. experience with hardware and software systems is common requirement, as is an understanding of business operations. This role is sometimes but not always synonymous with a Director or

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CTO (Chief Technical Officer) position. Typical responsibilities/ skills; understand the SDLC (Software Development Life Cycle); have broad technical knowledge of computer systems; conduct process flow analyses; transform business/ customer requirements into technical requirements (functional design document); understand and have experience with databases; interact with developers and bridge different IT architect roles.**Salary range**: $ 79-112K

45. E-Commerce Analyst

Aka E-Commerce Business Analyst. Backgrounds for this role vary: computer science, finance, statistics, management, marketing, communications. While a bachelor's degree is standard, a master's degree is sometimes required. Typical responsibilities / skills: analyze customer e-commerce data for behavioral or other trends; setup or configure reporting or dashboards for easy internal access to such data; create customer profiles for demographic targeting; utilize Web analytics.**Salary range**: $ 79-114K

44. ERP Business Analyst

An ERP (Enterprise Resource Planning) Business Analyst focuses on "back office" functionality for an organization's various facets, including CRM, management, accounting, sales. Typical responsibilities / skills: have an understanding of typical business uses of ERP software; interact with various stakeholders to analyze business processes and gather requirements; incorporate business requirements to configure ERP software; interact with developers to build a reporting environment; document organization-specific customizations; conduct any necessary training sessions for use of ERP software and reporting environment. This role usually requires experience with a specific ERP solution.**Salary range**: $ 83-115K

43. Pre-Sales Engineer / Technical Engineer

Similar titles include Pre-sales Engineer, PreSales Engineer, Pre-sales Technical Engineer. This role is for a product advocate/ evangelist who works with internal sales staff and possibly offers technical consulting to potential customers prior to a sale. They give product demonstrations to sales staff and potential customers and handle the technical aspects of RFIs / RFPs (Requests for Information / Requests for Proposal). So the ability to communicate with both technical and no-technical staff and customers is important, especially to pass on customer requirements to Product Managers. It requires some level of technical knowledge, especially about the systems/ software being offered, and may require some certifications. Post-sales interaction with a client is a possibility.**Salary range**: $ 82-116K

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42. CRM Technical Developer

AKA CRM Developer. Most CRM (Customer Relationship Management) software has both internal and external (Web) components. Users can be internal (sales staff, support, admin, systems developers) and external (customers, vendors, partners, researchers). These are the users a CRM Developer needs to keep in mind when developing solutions. Typical responsibilities/ skills: experience with a specific CRM system; custom configure a CRM used by the organization; develop custom modules to extend CRM functionality; integrate CRM features into an organization's own computer systems, including for customer use – which requires experience with a programming or scripting language, and either server, desktop/ laptop, Web or mobile (phone, tablet) development experience as necessary; document custom settings, modules and features for different levels of user.**Salary range**: $ 89-119K

41. Portal Administrator

This role is focused on Web portals and often requires knowledge of a specific portal software platforms. E.g., IBM WebSphere, Microsoft SharePoint. Typical responsibilities / skills: interact with Web and other systems administrators; create or oversee creation of necessary portal databases and user profiles; configure and manage portal applications; perform configuration and upgrade process tests; oversee integration of new technologies into the portal; document portal use policies and procedures (internal); handle relevant trouble tickets; train developers, content managers and end-users as necessary.**Salary range**: $ 91-121K

40. Programmer Analyst

Aka Computer Programmer / Analyst. May have some overlap with a Business Analyst role, such as performing requirements analysis. In some organizations, there is a lot of overlap with a Software Developer role, and in other places, the two roles work together. Typical responsibilities / skills: design of applications from a high level first – such as by using flowcharts or other graphical views — as well as actual coding of software; testing and maintenance. Specific programming language skills influence salary ranges.**Salary range**: $ 69-122K

39. Network Analyst or Network Engineer

Sometimes referred to as a Network Support Engineer. The role sometimes overlaps with Network Architect roles. Typical responsibilities / skills: work with a variety of types of networks including LANs, WANs, GANs and MANs; determine network capacity requirements and ensure that the infrastructure can handle it; monitor and administrate the network; troubleshoot problems. Depending on the size of the organization, a person in this role might also setup, install and configure all types of hardware, from servers and printers to desktops and

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laptops, routers, switches, support internal network users. Non-standard work hours are a possibility.**Salary range**: $ 58-124K

38. Wireless Engineer

Typical responsibilities / skills: analyze wireless networking and communication requirements; design and develop network infrastructure; capacity planning; recommend system improvements; document necessary processes; develop any necessary software such as drivers; monitor systems use and performance; setup and run wireless network tests. A senior position might lead a team of junior and intermediate engineers.**Salary range**: $ 46-125K

37. Business Continuity Analyst

This role is primarily focused on focused on disaster recovery after a crisis with computer systems. Typical responsibilities / skills: develop strategies for disaster prevention and for resuming operations; ensure backup of data for the organization (process-wise); design and implement computer systems that will support continuous operations; interact with vendors when necessary; design and test recovery plans; report risk potential to senior management. The role may require risk management experience and knowledge of specific 3rd-party systems/ applications.**Salary range**: $ 87-125K

36. ERP Technical Analyst / ERP Functional Analyst

ERP = Enterprise Resource Planning. This is a broad term covering many "back office" facets of an organization — some technical, some less so. This role is often focused on an area of expertise within ERP software, or could require broad knowledge, depending on the specific position. ERP use is common in manufacturing companies, hence why backgrounds for this role vary, including information technology or a variety of relevant engineering education, depending on the industry and the organization. Typical responsibilities / skills: understand business operations and how ERP supports them, to be able to develop improvements; interact with various stakeholders; apply continuous improvement principles, processing mapping, and engineering principles; perform troubleshooting. This role typically requires experience with specific ERP solutions is common.**Salary range**: $ 90-125K

35. Database Administrator

Aka DBA. Sometimes has overlapping duties with Database Programmer, Database Analyst and Database Modeller, and may report to a Database Manager and/or Data Architect. Typical responsibilities / skills: maintain an organization's databases; design and implement databases, in coordination with a Data Architect; schedule and run regular database backups; recover lost data; implement and monitor database security; ensure data integrity; identify the needs of users and

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provide access to data stakeholders, data analysts and other users, as necessary. DBAs can have broad or specialized duties. E.g., divide tasks up: System DBA upgrades software for bug fixes and new features. Application DBA writes and maintains code and queries for one or more databases in an organization. The role may require certification.**Salary range**: $ 63-126K

34. Software Developer

Typical responsibilities / skills: produce the overall design of new software or modules based on requirements passed down; produce flowcharts, algorithms and anything else necessary for the actual coding. Junior developers might start out by maintaining (debugging) existing code / features rather than design new code. If code in an organization is not done separately by Computer Programmers, then it falls to the Software Developers — who might also do testing and debugging, or work with teammates who do that work.**Salary range**: $ 80-127K
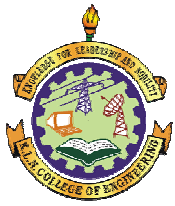
33. Telecommunications Manager

Typical responsibilities / skills: identify telecom needs for an organization, including voicemail; create policies for the installation and maintenance of telecom equipment and systems within an organization; take into account any compliance needs, especially for a publicly-traded company; oversee actual installation and maintenance of equipment (cabling, modems, routers, servers, software); manage of a team of telecom/ networking specialists; stay abreast of new telecom technologies for upgrade consideration; interact with vendors as necessary.**Salary range**: $ 76-128K

32. ERP Technical Developer

Typical responsibilities / skills: understand the SDLC (Software Development Life Cycle); interact with business teams to understand requirements; analyze technical problems in ERP configurations and assess risk; write any necessary code for extending an ERP platform's features, or to integrate with an organization's applications. This position usually requires experience with a particular ERP solution and with one or more facets/ modules.**Salary range**: $ 94-130K

31. Network Manager

Depending on company size, this role may overlap with Network Administrator. A Network Manager has overall responsibility for an organizations networks; ensures that networks are always running, especially if customers and/or partners rely on them; devises and implements a plan to either prevent or recover from a disaster. Overall, they are responsible for all the networks, local and non, that drive an organization, and for maintaining the hardware and cabling that goes with the networking infrastructure. That includes installing hardware and

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software, monitoring networks, etc., or managing a team of Network Analyst/ Engineers and/or the various Network Administrators. Certification may be required for some roles, depending on the networking technology used and especially if the role is significantly hands-on.**Salary range**: $ 94-130K

30. Network Security Administrator

Typical responsibilities / skills: implement and follow a network security plan; document the networking infrastructure, including any firewall protocols and policies, monitoring and disaster recovery plans; use vulnerability assessment tools to determine potential risks; monitor and investigate security breaches; recommend organizational security policies; keep up to date on changing networking technology, and review software and hardware to be able to recommend upgrades when necessary.**Salary range**: $ 95-130K

29. Project Manager, Applications Development

This role may overlap with Application Development Manager. This is a fairly technical role and sometimes requires a background as an application developer. An App Dev PM needs the ability to interact with co-workers from multiple departments, to keep them on track to achieve milestones, drive a project forward and resolve bottlenecks. They understand the SDLC (Software Development Life Cycle), budgets, project management principles, basic psychology of motivating people. This role sometimes requires industry knowledge and solutions, e.g., Financial software.**Salary range**: $ 88-131K

28. Systems Security Administrator

Overlaps with others administrator roles. Security administrators oversee access to an organization's computer systems, whether by internal or external users. Typical responsibilities / skills: develop and configure automated solutions for granting user access rights; oversee internal/ external user access rights manually when necessary; have knowledge of traditional and leading-edge security techniques and tools; understand security auditing procedures; determine security risks; investigate security breaches. This position may require knowledge of specific security-related software and applications.**Salary range**: $ 95-131K

27. Network Security Engineer

This role is typically responsible for network and server architecture; implementation, admin, upgrade of hardware and software, e.g., firewalls, etc.; enforcement of security policies set down by either the organization's Network Architect, Network Security Administrator, or similar position; monitoring and analyzing network usage for security issues; troubleshooting network

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problems; contributing to the selection of new technology and/or upgrades; contributing to the documenting of systems and processes; providing technical support for IT coworkers. Certification may be required. Knowledge of computer telephony technologies such as VoIP may be required, along with an understanding of relevant compliance issues. May require some physical effort, for cabling and installation work.**Salary range**: $ 99-131K

26. Data Warehouse Developer / Analyst

A data warehouse is a repository that combines data from several sources, internal and external, within an organization – e.g., sales and marketing – and is used for trend reporting. Typical responsibilities / skills for a Data Warehouse Developer: interact with business analysts to understand the necessary business logic; follow standards and procedures for databases set down by a Data Warehouse Manager; design and create databases for the purpose of data warehousing; design and run ETL (Extract, Transform, Load) procedures to extract external data and load into a data warehouse; test integrity of data warehouse; write and maintain any code necessary for data warehousing tasks including report generators. This position may require experience with specific 3rd-party applications, and often overlaps with Database Developer duties.**Salary range**: $ 60-133K

25. Database Developer

This role sometimes overlaps with Database Engineer or Data Warehouse Developer (see above job description) and can cover a broad range of tasks. Typical responsibilities / skills: data management and administration, data modeling, data warehousing, investigate data integrity issues; devise and conduct data tests for integrity, and follow an action plan for any necessary recovery; document access of specific databases for developers in other departments; work with logical and physical models of data; understand principles of distributed data, data redundancy; incorporate database updates as per stakeholder requirements; produce reports on analyzed business intelligence data; write database queries and complementary computer code to support internal applications, and which are possibly shared with developers in other departments. This may require knowing "back end" programming or scripting languages such as Java, Ruby, Python, Perl, etc., as well as knowledge of both traditional RDBMSes (Relational Database Management Systems) and newer NoSQL databases such as Cassandra, CouchDB, MongoDB, Hadoop and others. The role tends to require specific commercial database system experience, experience with database performance tuning and troubleshooting, and may require some forms of certification.**Salary range**: $ 73-134K

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24. Data Modeler

Typical responsibilities / skills: creates the Conceptual Data Model representing an organization's data requirements for various business processes; produces the plan for building the Logical Data Model(s) from the conceptual model. (The physical data model is the actual implementation (database) where data will be stored.) Data modeling (aka database modeling) covers business requirements for databases and is an organic process, so this role also requires adapting a database to business requirements changes.**Salary range**: $ 76-134K

23. Project Manager

For an IT project, this overlaps with Computer and Information Systems Manager. This is a broader role than for an Applications Development Project Manager and may not require as much of a technical background. Project Managers should have at least an understanding of — if not experience with — the computer systems or software being built / maintained. Responsible for defining, maintaining, and enforcing a project schedule; updating schedule when requirements change or project facets become overdue; keep projects on or under-budget. Other responsibilities and requirements: understand Agile development process (where necessary); run scrums; interact with multiple departments and many levels of co-workers, and convey to them the importance of their respective stakes while also keeping technical resources such as developers goal-oriented; update management on the status of projects, bottlenecks, requests for resources. IT Certifications such as PMP (Project Management Professional) can increase opportunities and salary.**Salary range**: $ 56-135K

22. Web Developer

This is a wide-ranging role that can include "front-end" (Web browser: JavaScript, HTML, CSS and related technologies) and "back-end" coding, or require specialization. Back-end coding could be using Java, Ruby, Python or Perl, etc., and might involve database queries and manipulation. A person focusing on back-end web development might also develop APIs (Application Programmer Interfaces) which layout a blueprint of commands for allowing integration of a software platform beyond its own code — such as for building the mobile version of a Web application, etc. Some jobs labeled "Web Developer" also have an expectation of front-end design, though such a role is usually denoted as Web Designer / Developer. Another role in this category is a Web Applications Developer, which involves integrating 3rd-party Web technologies.**Salary range**: $ 60-135K

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21. Product Manager, Software Development

Aka Software Product Manager. Usually "owns" (the development and maintenance of) one or more software products / applications / platforms within an organization; works with marketing, UX / design, developers, project managers, etc., in a largely cross-departmental role. Other requirements and responsibilities: be an evangelist for the product — internally and externally where appropriate; research the market and understand what the user wants — either in terms of improvements or new features; be an influential personality and possibly have an entrepreneurial mindset; be outward-facing and understand both customer needs and strategies for acquiring customers; have broad knowledge of relevant from products from various disciplines, not necessarily deep knowledge of one discipline.**Salary range**: $ 99-136K

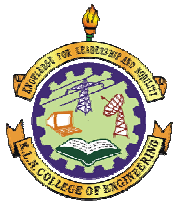### 20. Data Security Analyst / Information Security Analyst

Typical responsibilities / skills: determine security risks for an organization's computer systems, databases and networks; monitor external activity; install and configure security-related software (firewalls, encryption); understand compliance issues related to security, especially for a publicly-traded organization; make recommendations to management for security policies and procedures; design and run penetration testing (simulation of attacks); keep abreast of new attack techniques and implement means of preventing these.**Salary range**: $ 61-137K

19. Applications Developer

Aka Application Developer. Typical responsibilities / skills: focus might be on middleware applications; interact with business analysts to understand and incorporate customer and business requirements; understand the SDLC (System Development Life Cycle); follow design specs and programming standards for coding applications; develop and test application-specific software and modules; interact with quality assurance specialists. Possibly requires experience with multi-tier environments. Requires an understanding of specific programming/ scripting languages and development frameworks, and possibly specific database packages.**Salary range**: $ 69-137K

18. Technical Support

Aka Help Desk Technicians. The focus of a support tech's work is interacting with non-IT users, whether internal to a company or external. One group of technicians may support internal users of 3rd-party software, while another group may support internal and external users of company software. Responsibilities include being familiar with the software, hardware or systems they support, including keeping up to date with both new and retired features; knowing where to find the answers to questions that come in to the help desk; possibly contribute to a repository of FAQs (frequently asked questions).**Salary range**: $ 49-140K

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17. Manager, Design & UX

Aka, User Experience Design Manager. Typical responsibilities / skills: oversee the user experience for an application or portfolio of applications; interact with marketing/ business, technical and other departments to collect requirements and make recommendations; interact with product owner/ manager (sometimes UX owns the product); interact with technical managers, project manager, executive management; manage a team of UX Designers – hiring, management, resource planning, mentoring. This not always a strictly a technical role, though such a manager might have a background that combines management, interface design and coding — or at least be tech-savvy enough to understand what is and is not possible for an organization's software products.**Salary range**: $ 94-140K

16. Manager, Technical Services/ Help Desk/ Tech Support

This is a general technical manager role and in some organizations, this title can incorporate other managerial duties including overseeing networks, managing network engineers, databases, database analysts and developers and more. Typical responsibilities / skills: manage help desk/ technical support teams for both internal and external users; budget for support staff equipment and software; be involved in corporate plans for hardware and software upgrades; define service call procedures and policies and monitor employee behavior on calls; ensure the updating of relevant documentation. The role usually requires industry-related technical experience and can require physical effort.**Salary range**: $ 76-141K

15. Information Technology Manager

This role usually requires a technical background and leads a technical team, which could consist of developers, testers, analysts and more – whether or not the organization is technical. Typical responsibilities / skills: oversee the technical aspects of internal projects; maintain corporate IT procedures, with documentation; hire and lead a technical team to support the procedures; manage resources within a budget; keep up to date with new technologies, for recommending possible internal upgrades; interact with various departments, vendors and possibly consultants /contractors. The role can require a master's degree in computer science or a related field.**Salary range**: $ 99-142K

14. Business Intelligence Analyst

This is not always a purely technical role, though background could be and often is in computer science or a similar field. Usually, it's a business-focused role that analyzes and reports on data used within the organization. Reports are a key part of such a role and are targeted for executives

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who will make business decisions upon the recommendations. This could be IT process improvement, software and hardware upgrades, networking, etc. Typical responsibilities / skills: collection and analysis of business data for process improvement, similar to "continuous improvement" philosophy; ability to express technical topics in a form non-technical decision makers can absorb; ability to structure business intelligence for internally-defined purposes. The role can require an understanding of a specific software, particularly database systems, and may involved working closely with developers.**Salary range**: $ 101-142K

13. Mobile Applications Developer

This covers multiple related roles which require knowledge of at least one mobile operating system and development platform, such as Android or iOS, and the underlying programming languages. In some roles, Mobile Web development skills are a requirement. Typical responsibilities / skills: design, write and maintain mobile application code; port features for an app from another platform (such as desktop, Web, phone, tablet, wearable computing) to the mobile platform in question; integrate databases (internal) and REST APIs (internal and external); produce API components as necessary and document usage for other developers (internal and sometimes external); devise and run code tests in simulator or hardware; work with Quality Assurance staff for additional; testing log and fix defects. The role can sometimes require design skills for a front-end position.**Salary range**: $ 100-144K

12. Information Technology Auditor

Aka IT Auditor, Information Systems Auditor. Typical responsibilities / skills: reviewing and recommending compliance processes, especially for a publicly-traded company; determine and assess risk pertaining to technology, both for a single location and other corporate offices; audit an organization's computer systems and infrastructure for secureness; comply with company audit policies (e.g., if in a divisional office); draft a security breech prevention plan; define audit procedures; report audit findings. This role is more likely to require a background in MIS (Management Information Science) or business administration, although IT skills are valuable.**Salary range**: $ 67-146K

11. Quality Assurance Associate / Analyst

Software Quality Assurance (SQA) work is on of those unusual sets of roles where compensation varies widely. Companies that appreciate the value of proper testing and "code coverage" pay more for a good Software QA Analyst/ Engineer than they might for a Software Developer / Software Engineer, and thus often require a seasoned developer/ engineer. Other companies pay less much less and tend to employ QA testers — although both variations are sometimes referred to as a Software QA Engineer. In QA work, these are overlapping roles. The tester role

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is focused on running pre-defined test suites and verifying the results, reporting bugs or interacting with Software Developers/ Engineers. A QA Analyst / Engineer is more like to be the person designing test suites and improving code coverage to verify that everything that needs to be tested is being tested. The latter role can require experience with programming/ scripting languages and/or Web or Mobile platforms.**Salary range**: $ 57-147K

10. Database Manager

Aka DBA Manager; has a role that overlaps with other database specialists. Typical responsibilities / skills: oversee how data assets are managed within a company, including data organization and access: internally-generated private and public data, as well as externally-created (user) private and public data; data modeling; database design; define and ensure data backup processes; monitor and analyze database performance; troubleshoot data integrity issues; manage a team of other database specialists, including Database Administrators. The role may require an understanding of one or more traditional DBMSes or the newer technologies, as necessary.**Salary range**: $ 107-149K

9. UX Designer

Aka User Experience Designer. This role comes in various forms: desktop, Web, mobile, wearables. Typical responsibilities / skills: design software interface flow, user interactions, screen layout and organization, screen interaction (between screens), overall appearance (visual design), and optimizes the user experience — typically through iterative improvements and user feedback, to create engaging user experiences; create wireframes or more realistic prototypes — possibly with the help of front-end web developers or a web designer with the necessary development skills; recommend design patterns that are both tested (on other Web sites or apps or desktop software) as well as appropriate to the software at hand; define A/B Split Testing studies to determine which variation of an interface is more engaging. In some companies, UX teams own an application instead of a designated "content owner" and can thus request changes from software developers directly as needed. This is not necessarily a strictly technical role, and is always a creative role that involves an understanding of user psychology. However, it can require technical skills, especially if combined with another role, such as front-end Web development or front-end mobile app development. At the least, an understanding what is and is not possible for a particular software platform is important.**Salary range**: $ 65-150K

8. Manager, Software Quality Assurance (QA) / Testing

Aka Quality Assurance Manager, (S)QA Manager. Typical responsibilities / skills: oversee all IT-related quality assurance efforts within an organization- e.g., the entire application portfolio; manage a team of QA specialists (testers, QA analysts, leads, supervisors); interact with

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stakeholders; attend high-level project meetings for new/ updated computer systems; budget resources for inter-departmental efforts. Whether or not a QA Manager codes in their role, this position tends to require senior-level QA analyst experience.**Salary range**: $ 67-150K

7. Data Architect

Depending on the size of an organization, this role can overlap with that of over database specialists. Typical responsibilities / skills: provide a data architecture for an organization's data assets, including databases, data integration (combining data sources into one view), data access; define the formal data description, structures, models, flow diagrams, and overall metadata; enable stakeholders to manage their portion of the databases or data warehouse, under guidance and data access policies; have logical and physical data modeling skills, whether they're used in actuality or to oversee a Data Modeler's efforts; defines data warehouse policies including for Information Assurance. The role usually requires senior experience as a Database Developer/ Analyst / Engineer.**Salary range**: $ 111-153K

6. Manager, Data Warehouse

Aka, Data Warehouse Manager. Typical responsibilities/ skills: collect and analyze business data from external and internal sources; interact with stakeholders to understand and incorporate business requirements; database modeling, business intelligence skills, data mining, data analysis, reporting; oversee data warehouse integrity; oversee benchmarking of performance; manage a team of Data Warehouse Developer / Analysts.**Salary range**: $ 115-154K

5. Network Architect

Aka Computer Network Architect. Depending on the size of an organization, this role can overlap with that of other network specialists. Typical responsibilities / skills: design internal and intra-office networks, including physical layout: LAN, WAN, Internet, VoIP, etc.; monitor network usage and performance, devise network tests and evaluate them; incorporate any new business requirements so as to upgrade overall network architecture; do any necessary cabling, routers, and install and configure hardware and software; follow or recommend a budget for projects; choose or recommend the appropriate network components; sometimes report to a CTO (Chief Technology Officer). Network Architects usually have five or more years of experience as a Network Engineer, and supervise various other engineers in implement a networking plan. Besides a Bachelor of Science degree, depending on the employer and the specific role, sometimes an MBA in Information Systems is required as well. **Salary range**: $ 78-156K

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4. Software Engineer

Aka Computer Software Engineer. In government positions and some more established corporations, Software Engineer and other IT positions are often divided into Levels indicating experience / rank. Each higher rank incorporates more responsibilities for the role. While there is a theoretical technical difference between a Software Developer and a Software Engineer, many organizations use the term Engineer when they mean Developer. True "software engineers" are certified by an engineering board. While a Software Engineer creates/ tests/ documents software just as a Software Developer does, the former is more likely to also optimize software based on their technical, mathematical and/or scientific knowledge. They produce more reliable software through engineering principles. The salary range listed here covers any use of the title Software Engineer.**Salary range**: $ 61-160K

3. Manager, Information Systems Security

An Information Systems Security Manager oversees the security of company and customer data and computer systems in general. Typical responsibilities / skills: oversee all IT security needs for an organization; determine security requirements; document security policies; implement security solutions; manage a team of information security specialists. This role tends to require experience with computer or information science or a related field, experience with specific computer systems security software, and may require one or more certifications.**Salary range**: $ 115-160K

2. Manager, Applications Development

Aka Application(s) Development Manager. Typical responsibilities / skills: oversees an organization's internally-created software applications and platforms; gather application requirements; interface with VP Tech, marketing, project managers, managers of other teams; manage software analysts and/or developers for an organization's application portfolio; monitor timelines and resources; schedule projects where necessary. This role often requires senior-level experience with developing applications and may require experience with database design.**Salary range**: $ 86-162K

1. Applications Architect

Aka Application Architect. This title is sometimes misused and applied to what would otherwise be a software developer or software engineer position. Typical responsibilities/ skills: broad knowledge of software used within an organization; project management experience; senior-level software development experience; broadly oversee the entire software development (application portfolio) effort for an organization; define application architecture; interact with the various

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role-specific architects, project manager, customer representatives; interact with developers while enforcing architecture. This might require experience with specific programming languages and software development frameworks.**Salary range**: $ 66-183K

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Tech Trends

Latest Chrome update

Chrome 70 for Windows, MACOS and Linux lets users disable automatic log-on, implements a host of security tweaks, and adds support for Progressive Web Apps on Windows.Google this week upgraded Chrome to version 70, following through on a promise made to disable automatic sign-in after users and privacy advocates complained about changes in the prior edition.Chrome also sported patches for 23 security vulnerabilities as Google paid researchers $22,000 in bug bounties.Chrome updates in the background, so in most cases users can simply relaunch the browser to install the latest version. To manually update, select "About Google Chrome" from the Help menu under the vertical ellipsis at the upper right; the resulting tab either shows the browser has been updated or displays the download-and-upgrade process before presenting a "Relaunch" button. New-to-Chrome users can download it from this Google site.The Mountain View, Calif. Company updates Chrome every six to seven weeks. It last upgraded the browser on September 4.

Auto log-on backtrack

As of Chrome 69, signing into any Google service automatically also signed the user into Chrome. For example, logging into one's Gmail account also logged into one's Google account when Chrome opened. (That was the case whether a user had accessed Gmail using Chrome or another browser, like Firefox.)Because logging into a Google account allowed syncing of data - including bookmarks and passwords - between machines, and because some users did not want their data transiting Google's servers - ever - they strongly objected to the new model.When the blowback blew, Google said it would add an option to disable the automatic sign-in to Chrome 70. But it did not retreat from the position that such would be on by default.Chrome 70 did insert the option into Settings panel, called up when the user clicks the vertical ellipsis at the upper right and chooses "Settings" from the menu. After clicking the "Advanced" button on the Settings panel, the user can toggle the slider under "Privacy and security" marked with the phrase "Allow Chrome sign-in." A relaunch of Chrome will be necessary.With the slider toggled to the off position - moved to the left-the user can sign into a Google service, like Gmail, without also signing into Chrome.

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PWA and more anti-HTTP warnings

On Chrome running in Windows, Google added support for desktop "Progressive Web Apps," or PWAs, following the same move on Chrome OS with that operating system's version 67.PWAs are, as the name implies, web-based apps which have the look and feel of native-to-the-OS applications. Rather than run inside a Chrome frame, for example, they appear within the operating system's standard windowing. In Windows 10, a PWA operates like any other application, including installing to the Start menu.Google has pitched PWAs rather than Chrome-only apps- long available in its e-store- since it announced two years ago that it would drop them from the browser and point them toward Chrome OS-only.Google will add PWA support to the MACOS and Linux editions of Chrome with version 72; that should ship around the middle of January.Also new to Chrome 70 was another step in Google's longtime effort to secure the user by forcing site owners to abandon HTTP and institute HTTPS instead. As per Google's plan, Chrome 70 tags any HTTP site with an insecure icon- a small red triangle-and the text "Not secure" in the address bar as soon as the user interacts with any input field, such as a password field or one that requires credit card information.

More add-on lock-down

Earlier this month, Google made note of new ways it would lock down Chrome extensions -for years, the search giant has pointed to extensions as potential security nightmares- that included requiring developers to adopt two-factor authentication on their accounts (so criminals would have a tougher time hijacking those accounts, then feeding malicious add-ons to the Chrome Web Store) and giving users a way to limit the permissions an extension had been granted."Beginning in Chrome 70, users will have the choice to restrict extension host access to a custom list of sites, or to configure extensions to require a click to gain access to the current page," wrote James Wagner, product manager for Chrome extensions, in an October 1 post to a company blog. "While host permissions have enabled thousands of powerful and creative extension use cases, they have also led to a broad range of misuse because they allow extensions to automatically read and change data on websites."A right-click on an add-on's icon will bring up new options to, for instance, restrict the already-agreed permissions to just that page.*Computerworld* tested the add-on management enhancement on both Windows and MACOS, but neither version of Chrome 70 showed evidence of the new options. That wasn't surprising: Google often enables a Chrome feature only after a week or more has passed, perhaps to make sure the updated browser is in most users' hands.

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Patches and certs

Google also patched 23 security vulnerabilities in version 70, including six marked "High," the second-most serious ranking in its four-step system. The company cut checks worth $22,000 to researchers for reporting 15 of the bugs.In another security-related move, Chrome 70 made the last move in a series that Google (and other browser makers) instituted against Symantec-granted SSL (Secure Socket Layer) certificates. Any certificate issued by Symantec should trigger a "Not secure" warning in the browser's address bar, essentially telling the user not to trust that the website is legit.This was to be the final step in a process outlined more than a year ago, after Google and Mozilla - the maker of Firefox- charged Symantec and its partners with improperly issuing certificates, violating rules set by the CA/Browser Forum, a standards groups whose members include browser makers and certificate authorities. Google and others declared that Symantec's problems were endemic, and that the accumulated incidents were proof that it was untrustworthy in a critical way: that a website was what it claimed to be, not a fake set on stealing users' money or credentials or data.(Mozilla last week announced it was delaying a similar move on the part of Firefox, saying that "well over 1% of the top 1-million websites are still using a Symantec certificate that will be distrusted." That, Mozilla decided, was too many for it to proceed.)*Computerworld* used a list of sites that, as of late September, were still using a Symantec-issued certificate, and after spot-checking, found very few that had *not* switched in time for Chrome 70. Some took it to the wire, though, getting a new certificate just days ago.Chrome's next upgrade, version 71, is set to release December 4.

Atlassian revamps Jira Software, adds roadmaps tool

The redesign follows a multi-year migration of the popular issue-tracking app to the AWS cloud and the acquisition last year of Trello.Atlassian has overhauled its Jira Software Cloud issue-tracking application, adding a simplified user experience, new third-party integrations and a product roadmap tool.The Australian company has been laying the foundation to update Jira for a while, breaking down the application, created in 2002, into smaller microservices and moving it to the Amazon Web Services cloud. Thelatest stage in Jira's redevelopment is to modernize the user experience and interface.With a more streamlined and simplified application, Atlassian hopes to appeal to a wider range of business execs involved in the software-creation process, said Sean Regan, head of growth for Software Teams at Atlassian. "What we are seeing is that the software team is now made up of a more diverse group of functions," said Regan, with a range of business departments – from data scientists to marketing professionals – providing input on software development. "In order to accommodate them, we need to democratize and open up Jira and make it something that feels like a much easier collaboration experience, but still has the power that was necessary to do really complex work," Regan said.Pricing for the software varies by the number of users. It costs $10 per user per month for teams of up to 10 people; $7 per user

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per month for teams of between 11 and 100 users; and varying prices for teams larger than 100. The company also offers a free 7-day trial.**Redesigned UX**Atlassian has made it easier for individual teams to tailor aspects of Jira to better suit their needs, such as adding custom issue types or managing permissions and user roles; a new Jira "issue" component highlights relevant information more effectively. Regan said this "next-generation" of Jira Software has been influenced by Trello, the task management app acquired by Atlassian for $425 million in 2017.

Windows Server 2019 remains in release limbo

Distribution of Windows Server 2019, the on-premises, perpetual-license successor to Server 2016, stopped at the same Microsoft yanked Windows 10 version 1809.Almost lost in the noise about Microsoft yanking Windows 10's latest upgrade from distribution was the Redmond, Wash. company's decision to do the same thing with the newest Windows Server editions.Both Windows Server 2019 and Windows Server 1809 remained in limbo as of Monday."We have temporarily removed all media for Windows Server 2019 and Windows Server, version 1809," the company said in an Oct. 12 update to a blog post. "If you have already downloaded media, please don't install it and wait until more information is available to proceed. We apologize for any inconvenience this may have caused."Windows Server 2019 is the on-premises, perpetual-license successor to Server 2016, and like that software, will be supported using the standard 5+5 scheme, with five years of "Mainstream" support and another five years of "Extended" support. The former will expire Oct. 10, 2023, while the latter ends Oct. 10, 2028.

Windows Server 2019 is akin to the LTSC, or "Long-term Servicing Channel," version of Windows 10; LTSC is maintained with security-only updates but is not offered feature upgrades. It is a static OS that resembles Microsoft's pre-Windows 10 model. The same holds true for Windows Server 2019, which will not be offered new features or functionality.Organizations that want access to feature changes sooner than the *next*edition - which, if Microsoft sticks to its practice, would be Windows Server 2022, available in the fall of 2021 - must instead adopt the Semi-annual Channel (SAC) version. Again, like Windows 10, the Windows Server SAC delivers an upgrade twice each year, in the spring and fall (April and October, typically). The spring SAC is supported for only 18 months, but the fall SAC will be serviced with security and non-security updates for 30 months.Windows Server 1809, the first SAC of the Windows 2019 line - admittedly, the numeric labels can be confusing - was also removed from distribution shortly after its early-October debut.Microsoft has restarted delivery of Windows 2019's version 1809 only to the Windows Insider beta testing program. It will use that forum to determine when to renew general shipment.

P.S.Shobiga(164011) / II /C

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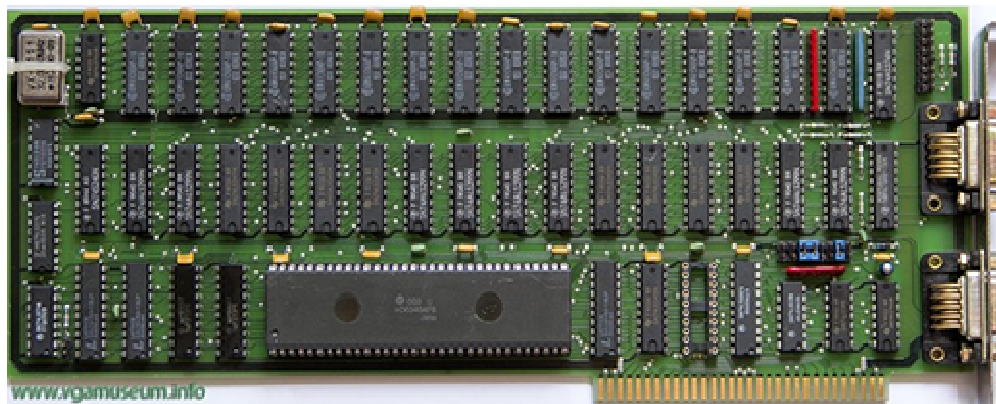Sivagangai District, Tamil Nadu, India

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GPU History: Hitachi ARTC HD63484
The second graphics processor

With the advent of large-scale integrated circuits coming into their own in the late 1970s and early 1980s, fueling the PC revolution and several other developments, came a succession of remarkably powerful graphics controllers. NEC introduced the first LSI fully integrated graphics chip in 1982 with the NEC μ7220, and it was wildly successful finding its way into graphics terminals and workstations, but not PCs built by IBM. It did get used quite extensively by aftermarket suppliers. Hitachi did NEC one better and introduced their HD63484 ACRTC Advanced CRT Controller chip in 1984. It could support a resolution up to 4096 × 4096 in a 1-bit mode within a 2 Mbyte display (frame) memory. The ACRTC also proved to be very popular and found a home in dozens of products from terminals to PC graphics boards. However, these chips, pioneers of commodity graphics controllers, were just 2D drawing engines with some built in font generation. That same year IBM introduced their EGA which with its many clones became the standard for mainstream PCs. But companies that wanted high-resolution, bit-mapped graphics, chose the Hitachi HD63484.

ISA-16 based ELSA workstation add-in board using Hitachi HD63484

_____

The LSI HD63484 was built with 2 μ CMOS technology and had around 60,000 transistors (a Motorola 68020 of the time had about 190k). The ARTC could run at 8 MHz. The ARTC introduced 12k — (4096 × 4096 pixels) screen resolution; that is 8 times bigger than HD (1920 ×1080); however, it was only 1-bit deep, but it offered a unique (at the time) interleaved access mode for "flashless" displays. If you wanted 16-bit color (which it supported) than you would have to drop down to 1024 × 1024 resolution, which was astounding at the time and only a few monitors could support it. However, the super high-resolution monochrome was targeted at the

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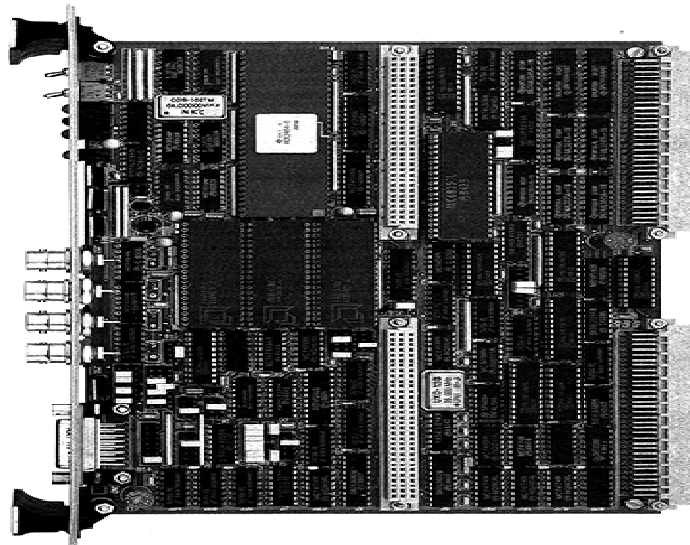Pottapalayam – 630 612
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emerging bit-mapped desktop publishing market. The chip had full programmability of the CRT's timing signal capability for whatever monitor you hung on it. The ARTC could support up to 2 Mbyte of video RAM and offered an asynchronous DMA bus interface that could be mapped to the PC ISA-16, VME or the P1014 16-bit busses, and according to the company, was optimized for the 68999 MPU family and the 68459 DMAC. With the DMA capability it was possible to provide Master or Slave synchronization to multiple ACRTCs or other devices.

Figure 1-1: Photo of the SYS68K/AGC-1A Board

1-2

VME   Force   Computer   add-in   board   based   on   Hitachi   HD63484   chip
_____
The chip offered a high-level command which reduced software development costs. In this way, the ACRTC converted logical x - y coordinates to physical frame buffer addresses. It supported 38 commands, including LINE, RECTANGLE, POLYLINE, POLYGON, CIRCLE, ELLIPSE, ARC, ELLIPSE ARC, FILLED RECTANGLE, PAINT, PATTERN and COPY. An on-chip 32-byte pattern RAM could be used for powerful graphic environments. Conditional drawing functions were available for drawing patterns, color mixing and software windowing, and it supported clipping and hitting.You could control four hardware windows with the ARTC, zooming and smooth scrolling in both vertical and horizontal directions. And it offered the capability of displaying up to 256 colors and the maximum drawing speed of 2 million pixel per second in monochrome and color applications which proved to be useful in high performance CAD terminals and workstations of the time.For those workstation users, there were eight user definable video attributes that could be set, and it also had light pen detection.The chip was very popular and got designed into several long-lifetime products. In order to provide a continued supply, clones of the chip developed using innovASIC's MILES- Managed IC Lifetime

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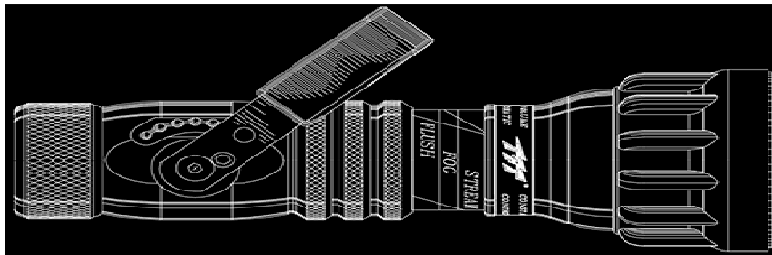**Website URL: http://www.klnce.edu**   **E-Mail ID :info@klnce.edu**

Extension System, cloning technology.Hitachi HD63484 graphics controllerwas in the early days of the PC and IBM had cleverly designed an expansion bus architecture that was only 8-bits wide in the original 1981 version of the PC, but by 1984 with the introduction of the PC AT, the bus got extended to 16-bits. With that came a flurry of graphics add in boards (AIBs), and the first generation of them used the NEC µ7220. By 1986 there were 88 AIBs and the Hitachi was displacing the µ7220, appearing in 22% of the AIBs. The ARTC was a breakthrough chip and by 1988 there were 194 AIBs being offered, and 24% of them had adopted the HD63484. The ARTC was being eclipsed by a new, more powerful, and programmable graphics processor, the Texas Instruments TMS34010, which we will discuss in the next installment of Graphics Chips Hall of Fame.Hitachi tried to extend the ARTC design to a 3D chip, but the bandwidth needed, and other issues were too complicated and as a result they failed in what was a valiant effort. For reasons only known to the management of Hitachi, the company abandoned the graphics market, just as it was about to take off.

Benchmarking

The original IBM PC came with an ISA-based AIB called the monochrome display adapter or MDA, and it established a set of instructions on how to drive a display. Therefore, to replace the MDA one had to build an MDA compatible board (the terms "card" and "board" were, and still are, used interchangeably). The MDA could only generate monochrome 7 x 9 dot characters.Right after the PC came out, the first independent graphics AIB supplier appeared, Hercules. Hercules offered the first bit-mapped AIB with a higher resolution 720 × 350. Also, during this period, entry-level graphics boards were also being introduced. In 1984, IBM, the standards setter, introduced the EGA - enhanced graphics adapter, which provided low resolution (640 × 350) 16-color bit-mapped graphics. The EGA chip was cloned by a half dozen suppliers and in one of the installments we will discuss the clones and their evolution.AutoCAD, a new low-cost, PC-based computer-aided design (CAD) program was introduce right after the PC. In 1983. Don Strimbu created a detailed single view of a firehose nozzle, which became known as "The Nozzle."

Don Strimbu's Nozzle was a 2D drawing benchmark

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The Nozzle was used as a benchmark to see how fast a graphics AIB could render it. It wasn't a totally fair test as the PC's processor and memory were also in the loop an could dramatically influence the result. But it was all we had at the time and was an appreciated and well used benchmark for several years. The iconic image has since been reimagined in 3D and we'll show that too in future installments.

H.Durga(154013)
II-CSE-A

Achievements

Faculty:

NAME &DESIGNATION OF THE STAFF	EVENT/AWARD	VENUE
Mr.B.ChandranSekaran Mr.R.AnandhaMurugan	Inspire Excellence Award contest - Silver Level	Infosys, Chennai
Mrs.P.Jeyadurga	Problem Solving Through Programming In C (ELITE)	NPTEL
Dr.M.Raghini	Database Management System (ELITE)	NPTEL
Mr.V.Bhaskar	Artificial Intelligence	NPTEL
Mrs.K.Arunasakthi	Problem Solving Through Programming In C (ELITE)	NPTEL

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Students:

Name of the Student	Name of the Program	Number of Days	Venue
Ms.Swetha rani P. Mr.Upilesh D.N	I3 INDYA TECHNOLOGIES *IOT CHALLENGE* 2016	2 Dsys	KLNCE
Ms.Vijayasri S.H. Ms.Ishwarya S.H. Ms.Harshini N.B. Mr.Vishwak N.D. Ms.Nikitha N.D. Mr.Sricharukesh	"TECUTHSAV 2K17 - CSE"	1 Day	Thiagarajar college of Engineering
Ms.Meenakshi.S Ms.Pavithra K.G. Ms.Madhumitha J.H. Ms.Preetha V	HONEYWELL	2 Days	MADURAI
Ms.Karthiga S.	"DIGITAL DREAMZ 2K17"	2 Days	Kalasalingam University
Ms.Aishwarya M.K. Ms.Aishwarya M.K. Ms.Ambika P.H.	"TECHNOTICS 17"	1 Day	KLNCIT
Ms.Preetha V. Ms.Madhumitha J.H. Ms.Meenakshi S. Ms.Srija A.H. Ms.Pavithra K.G. Ms.Dheepthi S.B	SMART INDIA HACKATHON 2K17	1 Day	KLNCIT
Ms.Anu S.	"CZENIA '17' "	1 Day	Velammal college of Engineering and technology

Employment Opportunities for CSE Student

Employment opportunities in state government sector

Government of Tamil Nadu offering various Direct recruitment to the services of the TN state recruiting through Tamil Nadu Public Service Commission (TNPSC) and TN VelaiVaaippu (Employment Exchange). The Tamilnadu state (Capital City: Chennai) run various Public Sector Units, Statutory corporations and Cooperative societies.

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About TN VelaiVaipu: TN VelaiVaippu is an employment and Training Job registration portalof Employment and Training Department, Govt. of TamilNadu. 8th, 10th, 12th, Graduate and Post Graduate TN Jobseekers are required to register TN VelaiVaippu Official website.

Govt Jobs in Tamilnadu: Looking for the Tamil Nadu Government Jobs 2018 through TN VelaiVaippu, You will have to get yourself register through the *TN VelaiVaippu Online Employment Registration*system. Department of Employment and Training oversees the *TN VelaiVaippu online renewal system.* www.recruitmentnjobs.net will give you all the latest jobs from TamilNadu, candidates are required to visit this website daily for the latest jobs. We update our website daily for the candidates of TamilNadu who are looking for the TN Govt. jobs. Just look at the given section for more jobs.

Government jobs in Tamil Nadu 2018:

Latest TN Govt jobs vacancies. Updated on 23 October 2018. Find latest Government for freshers in Chennai, Coimbatore, TN for 10th pass/12th pass, IT-Software, Engineering, Diploma etc. from a number of job opportunities in Government category. FreshersworldGovt Jobs page have become one of the all-time resource for the candidates and users where you can locate the Job openings in Government Sector TN. Here, you can see huge opportunities on Central Government Jobs (UPSC, SSC etc) as well as State Govt Jobs 2018 (KPSC,MPPSCetc) both for freshers and experienced Candidates in TN. In this page, Freshersworld listed cities Location), Education-wise Govt Jobs 2018 (Technical/non-Technical). Find more than 10000 numbers of Latest Govt. Jobs vacancies in different divisions published across India. Upcoming and frequently Government Jobs 2018 is refreshed in this page instantly. Check Freshers world Govt jobs page frequently and we ensures that all new upcoming TN Govt. jobs 2018 gets notified to all our visitors. Freshers world is the one stop place for latest upcoming government job notification across various industries and sectors within India.

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very hard but not impossible. List of government jobs are Civil Services - IAS, IPS, IFS, State public service commission (SPSC) - MRO, Tahsildar& RTO, PSUs - IARI, Tamil Nadu Agricultural University, Annamalai University, Anna University,SpicesBoard,Christian Medical College,Tamil Nadu PSC, Government Lecturer/ University Professors, Govt Scientist - DRDO & ISRO, Defence services - Army,Navy& Coastal guard, Indian Railway, Banking, Insurance - ADO/AAO, Govt Doctors. However A good pay package is not a gift, it needs to be earned, and to earn it one must successfully compete with lacs of aspirants who take the entrance exams every year. To be successful one must start his/her preparation early.

Use Freshersworld as a guide for TN Govt jobs **Exam Preparation:** Before preparing for any govt jobs exams you should always trust your ability to achieve what you want to and make a difference with whatever you can. From Freshersworld we can use online resources to boost your prep, free of cost, and in a short amount of time.

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eligible candidates, so that interested candidate can get placed in Tamil Nadu Govt sector. The recruitment notifications are based according to the number of posts available for particular positions. Tamil Nadu state government has different departments like agriculture, police, railway, defence, banking, teaching, research & development, pharmaceutical etc., depending upon the age, educational criteria, positions, exams etc candidates can apply for the latest Govt jobs in TN through freshersworld.com, we update you with latest & upcoming jobs in the earliest with detail job information & description. The recruitment process is completely based on candidate performance in written examination & personal interview conducted by various department of Tamil Nadu state government. Freshers or experienced like engineers, diploma, 10th, PUC, any degree holders looking for government jobs in Tamilnadu, Chennai can register here to get recruitment notifications for various Govt job openings in Tamilnadu.

Government jobs in Tamil Nadu - Upcoming Govt Jobs in TN: Tamil Nadu Government provides recruitment notification every year and publishes various types of Latest TN Govt jobs available in all sectors. In our website we will update Upcoming TN Govt jobs with all details to benefit Freshers/Experienced candidates including all educational qualifications like SSC/10th pass, PUC/Intermediate/12th pass, Engineering, Graduation/Degree holders/PG degree holders.Freshersworld go through daily Government Jobs in Tamil Nadu that published in Employment News, and we will alert all the candidates with detail information through our free job alert TN GovtRecruitmentNotifications.

Current Government job vacancies in TN 2018: Complete recruitment information to apply online is listed here (No of Vacancies, Educational Qualification, Selection Process, etc.). Candidates interested can apply through the Educational TN Govt online job portal and also check candidate's eligibility, age limit, and detail application process with important dates. TN online Govt job portal provides huge recruitment opportunities for the freshers, graduates, 10th pass/12th pass, Diploma, Engineering candidates mainly looking and preparing for Competitive Examinations 2018 Coimbatore, Chennai Govt jobs. Here On our website, we are providing the complete and Best information regarding all kinds of Govt jobs in TN with latest Notifications. Register with Freshersworld and get free job alerts for Latest jobs.

Central Govt. Public Sector Units in TN:

  * Neyveli Lignite Corporation Limited (NLC), Chennai
  * Bharat Heavy Electrical Limited (BHEL), Trichy
  * Chennai Metro Rail Limited (CMRL), Gopalapuram, Chennai
  * Chennai Petroleum Corporation Ltd.(CPCL), Chennai
  * Nuclear Power Corporation of India Limited (NPCIL), Kancheepuram
  * National Textile Corporation Limited (NTCL), Coimbatore

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* BharatiyaNabhikiyaVidyut Nigam Ltd., Chennai
* Ennore Port Ltd., Chennai
* Hindustan Photo Films Manufacturing Co. Ltd., Ootacamund
* Madras Fertilizers Limited, Chennai
* SethusamudramCorpn. Ltd., Chennai
* Tamil Nadu Trade Promotion Organization, Chennai
* United India Insurance Company, Chennai
* RailTel Corporation of India Limited, Chennai

Tamil Nadu Government Organizing Industries:

* Tamil Nadu Newsprint and Papers Limited (TNPL)
* Tamil Nadu Cement Corporation Limited (TANCEM)
* Tamil Nadu Magnesite Limited (TANMAG)
* Tamil Nadu Industrial Explosives Limited (TEL)
* Tamil Nadu Minerals Limited (TAMIN)
* Tamil Nadu Small Industries Corporation Limited (TANSI)
* Tamil Nadu Co-operative Sugar Federation (TNCSF)
* Tamil Nadu Salt Corporation Limited (TNSC)
* Southern Structurals Limited (SSL)
* Tamil Nadu Paints and Allied Products Limited (TAPAP)

TamilNaduGovt. approved Banks:

* TamilNadu Industrial Cooperative Bank Limited (TAICO Bank)
* TamilNadu Co-operative State Agriculture & Rural Development Bank.
* TamilNadu State Apex Co-operative Bank (TNSC Bank)

Employment Opportunities in Governments in India and Public and Financial Sectors:

Thousands of annual employment opportunities are available in the Governments of India and states like former Andhra Pradesh, and the public and financial sectors. This summarizes the types of jobs available for fresh graduates by broad categories. It also explores emerging employment opportunities in India in specific selected public sectors, and the economy in general. It briefly outlines the minimum educational qualifications, entrance/application procedures, etc. for jobs in central and state governments. It concludes with the suggestion that fresh graduates in India, encouraged by their teachers and employment counsellors, may need to explore more sustainable employment in government and public sectors.

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Introduction:

Most students, especially in engineering, management and other disciplines, aspire for employment in domestic and international private/corporate organizations. These aspirations are based primarily on peer group and parental expectations. This is at least partly because they are not equally aware of more sustainable employment opportunities in central and state governments and economic and financial public sectors. Such employment may offer lower salaries compared to the private sectors. But the procedures for recruitment, retention and pro-motion etc. are under prescribed norms, and guidance of the Union Public Service Commission and Ministry of Human Resource Development, or State Public Service Commissions.

Government Sectors in India/ Central Government Services:

Hundreds of employment opportunities for fresh graduates from universities and colleges are annually available in Indian Administrative Service, Indian Police Service, Indian Forest Service, Indian Revenue Service, Indian Foreign Service, Indian Economic Service, Indian Information Service, and in various Central Government ministries, departments and agencies. Furthermore, Central Government owned public enterprises (CPSUs) and banks (CPSBs) offer similar number of annual employment opportunities. Recruitments and promotions in the Central Services are as per the guidelines of Union Public Service Commission. CPSUs and CPSBs have prescribed by their own governing board.

State Governments:

In the Government of Andhra Pradesh (bifurcated in 2015 into Telangana and Andhra Pradesh) general annual openings exist in various departments and agencies, starting with Deputy Collector(Group I), Municipal Commissioner (Group II), Junior Inspector (Group III), and various departments, e.g., Transport, Social Welfare, Medical and Health, Education, Judicial and many State-owned enterprises. Recruitments and promotions in the State Government are under the directions and guidance of State Public Service Commission and boards of State-owned enterprises. All in all, the number of jobs annually available for fresh graduates and post-graduates in Central Government and State of Andhra Pradesh (now Telangana and Andhra Pradesh) alone may add to thousands. Similar number of annual employment opportunities exist in other States in India, and public enterprises and financial sectors.

Minimum Qualifications and Other Stipulations:

All applicants to Central and State government services except Group IV, mostly manual workers should have at least a Bachelor's degree in any discipline from an academic institution recognized by India's University Grants Commission, Association of Indian Universities.

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Minimum age limits are generally in the early 20s. There are specified quotas for socio-economically disadvantaged communities like Scheduled Castes and Scheduled Tribes, Other Backward Classes, sometimes also for women and local/state populations. There are also service or post-specific eligibility criteria, advertised application procedures, entrance tests and interviews as per Ministry of Human Resource Development, UPSC, and other concerned central organizations like CPSUs and CPSBs boards, and their counter parts at State levels.

Banking and Financial Sectors:

Banking sector in India is growing rapidly, more and more services adding to the banking services, such as insurance, pension, and other financial products. As the accounts have increased around 20 percent, there is a scope for increasing employment opportunities in the banking sector. If the employment opportunities increase in proportion to the accounts, for 7.25 lakh employees, the increase would be 1.45 lakhs. No sector has seen such a rapid growth. Unlike in the private sector banks, pay differentials are low and job security is high in the public sector banks. Clearly, these developments offer thousands of annual employment opportunities in the public financial sectors.

Concluding Remarks: It has outlined the large number of employment opportunities in government of India, public sector and financial enterprises, infrastructural, energy and banking and financial sectors, and the Indian economy more broadly.

Jobs through UPSC IES exam

Indian railway service of engineers, Indian railway stores service, central engineering service, Indian defences service of engineers, Indian ordinance factories service, central water engineering grade —A service, central engineering service group A, assistantexecutive engineer-border roads engineering service, assistant executive engineer P&T building works grade A service, central power engineering service-grade A, Indian telecommunication service.

Research Organizations

Opportunities in Defence Research and Development Organization (DRDO), BABA atomic research center (BARC), Department of Atomic energy and Department of space.

Entrance into BARC through GATE

BARC under the central government offers many scientist level jobs taking GATE score as a standard. DAE graduate fellowship program for engineering graduates is also being offered.

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Defence Research and Development Organization (DRDO)

DRDO plays a very important role in the research and development of weapons, missiles and other advanced technical equipment to enhance the countries defence system. There are almost 50 laboratories working under its control and there are so many jobs in these centres as junior engineers and scientists.

ENGINEERING JOBS 2018:

Engineering Graduates, who pursing final year or recently completed engineering degree holders get your discipline wise suitable Government jobs - latest recruitment / vacancy details here. Engineering Graduates recruiting Government of India owned Public Sector Undertakings Companies / Organizations List: BHEL, BEL, Coal India, HPCL, EIL, BPCL, Mazagon Dock, MECON, NACL, NLC, NMDC, SAIL, NTPC, IOCL, ONGC, Power Grid, Railtel, RITES, UCI etc.

Educational Qualification:Four Year B.E. / B.Tech full time regular course/s from AICTEapproved / UGC recognized University/Deemed University. Some vacancies required to GATE qualified candidates.

Other Government Jobs for Engineers (Fresher's & Experienced Candidates):

Fresh and Experienced IT Graduates get Government Jobs in IT Sector Here. Information technology (IT) in India consist of two components: IT Services and business process outsourcing (BPO). IT field is playing an major role in Indian Economy, This sector generating 2.5 million direct employment in India. Government of India Major IT Organizations such as Centre for Development of Advanced Computing (CDAC), National Informatics Centre (NIC), Education and Research Network (ERNET India), Haryana State Govt owned Haryana State Electronics Development Corporation Limited (HARTRON) and Software Technology Parks of India (STPI).

CDAC -> C-DAC is the premier Research and Development organization of the Department of Electronics and Information Technology (DeitY), Ministry of Communications & Information Technology (MCIT) for carrying out R&D in IT, Electronics and associated areas. CDAC Branches Located at Pune (Headquarters), Ahmedabad, Bangalore, Chennai, Delhi, Hyderabad, Kolkata, Mohali, Mumbai, Noida and Thiruvananthapuram.

NIC -> NIC is a Premier Science & Information Technology Organization in India. The NIC is under Ministry of Communications and Information Technology's Department of Electronics & Information Technology. Its providing State of Art Solutions for Information Management and Decision Support in Government and Corporate Sector. A number of Services are being provided by NIC to all the Government Ministries / Departments / States / Districts.

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Higher Studies and Scholarship in Indian University

Under its NarotamSekhsaria Scholarship Programme, the Foundation awards interest free loan scholarships to Indian students with a consistently good academic record. Scholarships are offered for post graduate studies at prestigious institutions in India and abroad, in the fields of Pure Sciences, Applied Sciences, Social Sciences and Humanities, Law, Architecture and Management.

HIGHLIGHTS OF THE SCHOLARSHIPS IN INDIA

A merit-based interest free loan scholarships programmeDesigned for the brightest minds who wish to pursue them postgraduate scholarships for studies in India and abroadSelected students to be awarded scholarship amount of up to Rs. 20 lakhs as per the assessment of the Foundation A unique mentoring programme designed for the awardees for nurturing and assisting them in achieving their desired goals

Eligibility Criteria

Indian national, residing in India students below 30 years of age as on January 31, 2014Graduates of a recognized university (Students in the final year of the degree course and those Awaiting results are also eligible to apply). Students planning to pursue post graduate studies at prestigious institutions from Fall 2014 Students who have applied and awaiting a decision from the university are also eligible to apply but the award of scholarship is subject to securing admission.

JN Tata Endowment for the Higher Education of Indians:
Loan Scholarship Process:
J. N. Tata Endowment awards
A one-time loan scholarship only at the beginning of the course to Indian nationals for full time Postgraduate/Ph.D./Postdoctoral studies abroad and in India, in all fields, irrespective of caste, creed, gender or community. The amount to be awarded to each Scholar by way of the loan scholarship is determined on the basis of the norms laid down for the purpose, and does not cover the full cost of studies. The amount awarded as the loan scholarship ranges between Rs.1,50,000/- and Rs.6, 00,000/-. All applicants do not necessarily qualify for the maximum amount. The selected scholars may also qualify for a gift scholarship and travel assistance from our allied Trusts as may be decided at the sole discretion of the Trustees of the concerned Trusts. A gift scholarship can be for a maximum amount of Rs. 10,00,000/- and the travel grant can be a maximum of Rs. 50,000/-.

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Eligibility Criteria:

Applicants should be India nationals who are graduates of a recognized Indian University, with a consistently good academic record and other achievements to their credit. Students in the final year of the degree course and those awaiting results are eligible to apply. Mid-career professionals up to the age of 45, with a good academic record and experience in their fields for further research, specialization or training may also apply. Candidates need not have the admission/offer letters from the Universities to which they have applied for the academic year 2016-2017 at the time of making the application. Candidates going abroad for seminars, conferences and undergraduate studies are not eligible for the J. N. Tata Endowment Loan Scholarship**.**

NAROTAM SEKHSARIASCHLORSHIP PROGRAMME:

The NarotamSekhsaria Foundation under its Scholarship Programme awards interest-free loan scholarships to Indian students with a consistently good academic record. The scholarship amount (up to a maximum of Rs.20 lakhs) is decided as per the assessment of the Foundation. The scholarships are awarded to students who wish to pursue their postgraduate studies in the fields of Pure Sciences, Applied Sciences, Social Sciences and Humanities, Law, Architecture and Management at prestigious Indian and international universities.

Eligibility Criteria

Indian Nationals residing in India. Students below 30 years of age. Graduates of a recognized university (students in the final year of a degree course and those awaiting their results are also eligible to apply). Students having sought admission for a postgraduate degree programme at any prestigious university for the fall in take (Those who are awaiting a decision from a university are also eligible to apply. However, the award of the scholarship is subject to them securing admission)

Application Procedure

Applications for the NarotamSekhsaria Scholarships for Higher Studies are invited by the Foundation in the month of January for every academic year. The mode of application is online. The candidate is required to complete the registration online at http://pg.nsfoundation.co.in. Upon registration, the login credentials will be sent to the registered email ID. Once the registration is complete, an application fee of Rs. 500/- is payable either online through Net Banking or offline by sending a Demand Draft issued in favour of the NarotamSekhsaria Foundation. On receiving the application fee, the candidate will be able to access the form online by logging in with the provided login credentials. Completed application forms should be

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submitted before the closing date. Only candidates shortlisted for the next round of the selection process are contacted by the Foundation. They are required to produce duly certified supporting documents. The next round of the selection process is the interview round, for which candidates are required to come down to the Foundation's office.

Supporting Documents

1. Mark sheets of Std. Xth, XIIth, and all years of the undergraduate degree certificates.
2. Score cards of any qualifying examination taken (Eg. GRE, GMAT, CAT, GATE etc.).
3. Copy of the admission letter(s) from the university, if obtained.
4. Reference letters (in a sealed envelope).
5. Statement of the course fee and any other financial document (this would include any other letter indicating the receipt of a scholarship, other source of funding, fee waiver etc.).
6. Attested copy of the passport.
7. One passport size photograph.
8. Latest Income Tax Returns of parents.

Selection Procedure for the Scholarship

All applications will be screened for shortlisting. Only shortlisted candidates will be informed between the months of April-May. It is mandatory for all the shortlisted candidates to attend a personal interview in Mumbai in the month of June. *Please note: The interview is thebasis for final selection.*

Post Selection Formalities

The Foundation announces the final list of scholars towards the end of June or first week of July.

Documentation

It is mandatory for all the scholars to submit attested copies of the following documents within the timeline as decided by the Foundation:
1. The letter confirming admission to the college/ university for the proposed course of study.
2. I-20 in case of students admitted to the universities in the United States and a copy of the letter highlighting the financial support in case of study.

Scholarships for Indian students aspiring to study abroad.

The past decade has seen a massive increase in the number of Indian students going abroad for higher studies. Earlier the trend was for Indian students to complete an undergraduate degree in India, work for a few years and then go abroad for a postgraduate education. We see positive

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changes now, as students aspire to even do their undergraduate study abroad and also opt for vocational job-centric courses in Australian TAFE Institutes. The important factors that contribute to the increase in numbers of Indian students going abroad for higher studies are: Awareness of value of an international

Degree Faster approval of study loans by banks

Increase in number of scholarships

Available This article examines some of the top

scholarships on offer for Indian students and their brief descriptions.

Aga Khan Foundation International Scholarship Program:

The Aga Khan Foundation provides a limited number of scholarships each year for postgraduate studies to outstanding students from developing countries who have no other means of financing their studies. Scholarships are awarded on a 50% grant: 50% loan basis through a competitive application process once a year in June or July. The Foundation assists students with tuition fees and living expenses only. The cost of travel is not included in AKF scholarships. Half of the scholarship amount is considered as a loan, which must be reimbursed with an annual service charge of 5%. A guarantor is required to co-sign the loan agreement. The payback period is five years, starting six months after the study period funded by the Aga Khan Foundation.

Chevening Scholarships:

Chevening Scholarships are the UK Government's global scholarship programme, funded by the Foreign and Commonwealth Office (FCO) and partner organizations. The programme makes awards to outstanding scholars with leadership potential from around the world to study postgraduate courses at universities in the UK. The Cheveningprogramme was established in 1983 and has developed into a prestigious international scheme. There are over 42,000 Chevening alumni around the world who together comprise an influential and highly regarded global network. The programme provides full or part funding for full-time courses at postgraduate level, normally a one-year Master's degree, in any subject and at any UK university.

Commonwealth Scholarship and Fellowship Plan:

This is one of the most well-known and popular scholarships available to students from Commonwealth countries. In India this scholarship is managed by the Commonwealth Scholarships Commission, the British Council and the Government of India. Students aspiring to study courses in Engineering and Technology, Science (Pure and Applied), Agriculture and Humanities and Social Sciences are eligible to apply for scholarships. The preliminary selection of candidates for scholarships is carried out in India by the Ministry of Human Resource

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Development (MHRD), Department of Education, and Government of India. Eligible applications are verified and short-listed and this is followed by personal interviews of the applicants in New Delhi.

Hornby Scholarships:

The A.S. Hornby Educational Trust offers the Hornby Scholarship to students who aspire to study an ELT course in the UK. Applicants need to have an IELTS score of 6.5 or above and should be accepted at an institution in the UK for studying a postgraduate ELT course.Applicants should have at least five years' hands on and direct experience as an English language teacher/teacher trainer. Alternatively, they should have been involved in some sort of developmental work as trainers or managers. The scholarship will cover the tuition fee of the course.

USIEF Scholarships:

The United States India Educational Foundation was established to promote academic partnerships between Indian and American universities and provide Indian students the opportunity to study in top American universities. The Tata Scholarship at Cornell University, Brands University Scholarship and The University of California Berkeley Scholarships are some of the popular scholarships offered by USIEF and its partners. Students are also advised to visit the website of the Ministry of Human Development for details of other scholarships that Indian students are eligible to apply and offered in partnership with other governments.

Admission procedure for Foreign University

Admissionprocedure for Foreign University

With the right kind of planning and guidance, one can study in abroad at very low costs and even free on a scholarship. Application process makes the vital difference and is the most important criteria. A good degree is a stamp of excellence that marks you for life. It can enhance your career and prepare you for leadership in your country or anywhere in the world. Whatever your reason for deciding to study abroad you will find that higher educational broad adds considerable value to your professional development.

A SIMPLE FIVE ADMISSIONPROCESS:

- Understand the requirements
- Take Competitive exams
- Prepare applications

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- Submit the application and wait for the decision
- Apply for visa

WELL IN ADVANCE:

The application process for studying abroad is time consuming and requires applicants to start preparing well in advance of their anticipated start date. It is very important to begin the admission process earlybecause in many cases application deadlines are far in advance of the start of the semester (sometimes as many as ten months).

STATEMENT OF PURPOSE:

The personal essays, and/or statement of purpose, also play a very important role in the process of evaluating your application for both admission as well as financial aid because it gives the faculty assessing your application their most significant impression of you as an individual. In the statement of purpose, which must be concise, the student must define his or her academic goals, and/or research plans; it should include justification for choosing the academic program and specialization, and for selecting the particular college as well as the advantages and benefit of studying that particular course.

The 6 basic steps for applying abroad are:

DocumentsReporting Identifying country, universities and the course of your interest
Request universities for Application forms
Taking various required tests
Arranging and preparing Essays and recommendation letters
Completing and Sending Application forms along with required various test scores to the universities

Competitive exams to get admissions into Universities abroad: Competitive entrance exams includingSAT, MCAT, LSAT, GMAT, GRE, IELTS and the TOEFL are required for admission to study universities and colleges in abroad.

WRITE COMPETETIVEEXAMINATIONS

Good performances in competitive _Study Abroad' examsalso help you to win scholarships and other forms of financial aid, no small consideration for a majority of the applicants. Some of the most popular, and most important, international entrance exams include the SAT, MCAT, LSAT, GMAT, GRE, IELTSand the TOEFL. These are required for admission to universities and colleges in various countries across the globe.

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TOEFL:

The TOEFL is held throughout the year, usually on weekends; for 2012 in India, the TOEFL is to be held only on weekends, both in the metros and the tier 2 and tier 3 cities. The IELTS, conducted by the British Council, is held in 71centers spread all over the country, over four times a month.

GRE:

The Graduate Record Examination (GRE) is another popular examination among Indian students aspiring to study in the USA or Canada. It is a fairly standardized test that measures the verbal, mathematical and general analytical skills of the candidate.

SAT:

The Scholastic Aptitude Test (SAT) test, required for entry into some university in US if you have not completed an equivalent, is of two types - the Reasoning Test to check the general writing skills and grammar and the Subject Test to check a candidate's knowledge in the subject chosen. The SAT is owned, developed and conducted by the College Board of the United States of America. Within the USA, the SAT is offered seven times a year, generally on the first Saturdays of October, November, December, January, March, May and June. Most other countries follow the same dates.Competitive entrance exams are a standardized and reliable mode of evaluating the millions of applicants who aspire to study abroad every year!

REQUESTING APPLICATIONFORM:

This is the first stage of your application process. At this stage, you can write to the selected 25-30 universities. You can directly request application materials from the universities. There are two ways to get application forms:
1. Requesting Application Forms via Email.
2. Downloading from the university website.

Recommendation letter:

A recommendation letter is a signed statement from a person who knows you well professionally or has taught you in a subject that is related to the course you are applying to. It should list your positive and negative qualities, strengths and weaknesses, your character and integrity and other such information. The author or teacher must indicate his position, how long he/she has known the applicant and in what capacity. Many universities have their own format and questions that have to be answered by the person who is giving the letter of recommendation on your behalf. Letters, which do not give enough information, can jeopardize a candidate's chances of selection.

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Undergraduate:

Students who are applying for a Bachelor program or any other undergraduate course would be required to submit a secondary school report and transcripts (report cards) of the final exams. The report form should be filled out by a school official like the principal, counsellor or headmaster.Students applying for Graduate courses (MBA,MS etc) are required to submit an official transcript from each college or university that they have attended after secondary school with complete details of the subjects, credits involved and other details like correspondence courses. If the transcripts are in a language other than English, then it must be translated into English only by the issuing authority or university otherwise it may not be acceptable.

Admission Stage:

Universities usually inform students of their admission decisions well in advance of the beginning term. if you have received admission in more than your university, you will have to decide which you want to attend. At this stage, you should compare a few objective and mostly more subjective criteria.

i) Objective Criteria:

Best program curriculum, length of program, choice of courses
Best funding offers or best program with respect to costs
Cost of living
Strength of related departments/program

ii) Subjective Criteria:

Overall reputation of university/department/programLocation-region, safety of neighborhood
ClimateSocial lifeFacilities availableAccommodation & housing
Basically the decision factors at this stage would be mainly three points:
Best program
Best funding offer
Best for your personal goals and needs

What to do once you have been accepted:

Each college will tell you exactly what steps to follow to confirm your acceptance of their offer of admission and how to prepare for your first term. This information will be included with the letter of admission or in materials that will be sent to you shortly thereafter. You must respond with a "yes" or "No" for each offer of admission. You may also be required to submit a financial deposit to the institution that you plan to attend. This is to guarantee your place in the class.

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Make sure you do not miss any deadlines.We realize how important it is to have a safe and comfortable place to live. North Wales is considered to be a very safe area to live and study, with friendly, local people who are sure to give you a warm welcome.

If you are in the waiting list:

You may receive a letter that informs you that you are on a _waiting list'. This generally means that the admission office determined that you were qualified for admission but there was not enough room to admit all qualified applicants. If you are placed in the waiting list of a college you wish to attend, you will be asked whether you are interested or not. If you say yes, you may be offered admission if space becomes available. If you are placed in the waiting list of your first choice college and confirmed in the second choice college, you may do the following steps to remain on the safer side:

Accept the offer of the second choice university and pay the deposit
Accept the offer of remaining in the waiting list of the first choice university
An enjoyable, safe lifestyle for Students:
There are many opportunities to participate in a variety of activities alongside your academic studies, including sports, community activities, and exploring the outstanding country side around our campus. So, there are tremendous ways to study in abroad.

Abstract: This document proposes the ways to follow to get admitted in a university in USA.

INTRODUCTION

The first phase of the admission includes the GRE/GMAT and TOFEL/IELTS exams. These two exams are the primary gate way to enter. Apart from just appearance in these above mentioned exams, a good score is mandatory in order to choose a good college/university or to get a scholarship. These exams are written in order to apply for an MS or MBA respectively. The exams mentioned latter are to check the English proficiency of the candidate. The ETS (**www.ets.org**) plays a vital role that includes a to z process of admissions.

GRE

GRE is Graduate Record Examination that is exclusively required to get through a university abroad. The number of attempts are endless but the duration between two consecutive appearances is 60 days and the validity of GRE score is 5 years. The colleges take up either the first, last or the average score.

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IELTS/TOFEL

These exams are written in order to prove the English learning and understanding capability of a candidate. Here IELTS and TOFEL completely differ from each other. IELTS includes a test for British English whereas TOFEL includes a test for American English. Both comprises of Listening, Speaking, Reading, Writing (LSRW).

CHOOSING THE UNIVERSITY

The major part of the admission process starts from here as the name of the university will be the will be the thing of the day. The universities and colleges are generally ranked under several bases, out of which parameters such as semester fee, availability of hostel within a mile, parttime job availability, accommodation, student to teacher ratio, popularity of the department or specialization, research and placement activities etc.…

TIME OF APPLICATION

The applying process can be done twice a year. In fall (August) or in spring (February). The choice of the period is up to the students. Semester System will have three semesters every year. Spring (Jan),Summer (May),Fall (August)

PROCEDURE

The application is a pure and complete online process. The procedure can be done only through the respective college websites. The admission process for a season should start nearly 11 on the prior to the date of admission in order to complete the entire process successfully. If online application is not available for a particular university, then download paper application from the university's website. Then send the following documents to university's graduate admission office. Requirements may change from university to university. Visit the university and department website for exact requirements and conditions.

GPA

GPA means Grade Point Average. It is the standard measure of performance of a student in USA. It is similar to the 100%scoring system in India. There is an institution called WES. They will evaluate your transcripts to calculate your GPA and send the reports to universities.

DOCUMENTS REQUIRED FORAPPLICATION

I. DD/Bank check for Application.
II. Recommendation letters.
III. GRE/TOEFL/GMAT/IELTS Score Xerox.

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IV. Bachelor's Degree certificate.
V. SSC/10th or Equivalent Certificate
VI. 12th/ intermediate or Equivalent certificates.
VII. Affidavit and I20 form.
VIII. Photo Copies of first and last pages of your passport.
IX. SOP (Statement of Purpose).
X. Other documents…

STATEMENT OF PURPOSE

Statement of purpose is one of the strongest part of the documents, which decides the career of the candidate. Attempts to copy an SOP may lead to rejection of application.

PASSPORT AND VISA

The passport and VISA are mandatory wherein a special interview has to be attended to get the VISA to the respective country. Hence the process of applying for visa can be done 3 to 4 months earlier, after the admissions have been finalized in a university.

TRAVEL AND PACKAGING

It's better to have a checklist to get ready with all the essential luggage. The transportation shall be arranged through airways prior to the commencement of the college / university. The luggage should meet out the flight requirements compulsorily.

Competitive exams to get admissions into Universities in abroad

Competitive entrance exams including SAT, MCAT, LSAT, GMAT, GRE, IELTS and the TOEFL are required for admission to study universities and colleges in abroad. Thousands of aspirants migrate to various parts of the world every year to complete their higher studies. Whilst the global study abroad scene has opened up tremendously to accommodate students of all academic backgrounds and interests, there are still certain present academic standards that need to be met in order to gain admission to a university or college abroad. These are achieved by clearing competitive international entrance exams. Good performances in competitive study
abroad' exams also help you to win scholarships and other forms of financial aid, no small consideration for a majority of the applicants. Some of the most popular, and most important, international entrance exams include the SAT, MCAT, LSAT, GMAT, GRE, IELTS and the TOEFL. These are required for admission to universities and colleges in various countries across the globe; at times, the need may be a combination of one or more of these and other tests/examinations specific to that country and its education system.

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TOFEL & IELTS

The TOFEL and the IELTS probably top the list with regard to the sheer number of students across the world needing to undertake one or the other to demonstrate English language proficiency. The widest possible selection of universities and colleges accept TOEFL scores, including the top 100 in the UK, U.S, Canada, Australia and New Zealand. The IELTS is a mandatory exam for Indian and other non-native English speakers, especially in the Commonwealth countries, for entry into most reputed universities and colleges overseas, and occasionally for immigration requirements as well. The TOEFL is held throughout the year, usually on weekends; for 2012 in India, the TOEFL is to be held only on weekends, both in the metros and the tier 2and tier 3 cities. The IELTS, conducted by the British Council, is held in 71 centres spread all over the country, over four times a month.

GRE & GMAT

The Graduate Record Examination (GRE) is another popular examination among Indian students aspiring to study in the USA or Canada. It is a fairly standardized test that measures the verbal, mathematical and general analytical skills of the candidate, though the format has undergone quite a few changes over the years. It is an admission requirement for many graduate courses, especially in engineering and the sciences, in the USA. Management aspirants need to take the GMAT, which is an admissions assessment for business colleges. Average GMAT scores are in the range of 570-580; however, for top school admissions a score of at least 700 is almost mandatory. New sections have been introduced recently, such as Integrated Reasoning, which have made the test more competitive than before. GRE and GMAT tests are available throughout the world in more than 500locations, though you will have to book your slot in advance.

SAT

The Scholastic Aptitude Test (SAT)test, required for entry into some universities in the USA if you have not completed an equivalent, is of two types- the Reasoning Test to check the general writing skills and grammar and the Subject Test to check a candidate's knowledge in the subject chosen. The SAT is owned, developed and conducted by the College Board of the United States of America. Within the USA, the SAT is offered seven times a year, generally on the first Saturdays of October, November, December, January, March, May and June. Most other countries follow the same dates.

MCAT & LSAT

Other competitive study a broad examinations include the MCAT and the LSAT, mandatory for getting into medicine and law respectively in the USA. The MCAT is a multiple-choice test that is designed to evaluate the examinee's aptitude and knowledge about relevant subjects, while the

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LSAT that is administered by the Law School Admission Council for students who wish to pursue a career in law in the USA, Australia and Canada.

List of admission tests to colleges and universities

This is a list of standardized tests that students may need to take for admissions to various Universities and Colleges. Tests of language proficiency are excluded here. Only tests not included within a certain secondary schooling curriculum are listed. Thus, those tests initially focused on secondary-school-leaving, e.g., GCE A levels in the UK, or French Baccalaureate, are not listed here, although they function as the de facto admission tests in those countries.

Australia

STAT – Special Tertiary Admissions Test, aptitude test for non-school leavers
UMAT – Undergraduate Medical Admissions Test, required for under graduate entry to many Australian and New Zealand undergraduate-entry medical and dental schools
GAMSAT – Graduate Australian Medical School Admissions Test, required for graduate entry to many Australian graduate-entry medical and dental schools
PQA – Personal Qualities Assessment, required for entry into health sciences, including undergraduate Medicine, for a growing number of Australian universities
GAT – General Achievement Test (VCE Students - Victorian Certificate of Education)
United States (and Canada)
SAT – formerly Scholastic Aptitude Test
SAT Subject Tests
ACT – formerly American College Testing Program or American College Test
THEA – Texas Higher Education Assessment
GED – High School Diploma Equivalent
PERT – Replaced Accuplacer as the standard college placement test in Florida
CAEL – Canadian Academic English Language Assessment
Competitive entrance exams are a standardized and reliable mode of evaluating the millions of applicants who aspire to study abroad every year, so take your time, prepare well and get ready to go places.

International Entrance Exams:

A study abroad program for higher studies has always been considered as an enriching and challenging experience. Along with a rewarding career, students also get an experience about new cultures, customs and ideas that help in molding their personalities. Thus, the reason why hundreds of aspirants migrate to various parts of the world to complete their higher studies goes way beyond academics. To get admission into an American university or that of other countries,

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you need to clear international entrance exams. Sometimes, you not only appear for these exams entrance to these elite institutes but also to win scholarships. The amount of funding you get also depends upon your performance. Therefore, it is very important to get a good score. There are a plethora of international entrance exams such as **SAT, MCAT, LSAT, GMAT, GRE etc.** thatcater to different educational courses.

MOST POPULAR INTERNATIONALENTRANCEEXAMS TO ENTER INTO THEABROAD COLLEGES:

Listed below are the most important international examinations that secure green cards for the students seeking admission in offshore courses.
- **SAT**
- **MCAT**
- **LSAT**
- **GMAT**
- **GRE**
- **IELTS**
- **TOEFEL**

SIGNIFICANCE:

- Depending upon the level and course of study, students need to take up a few tests for entry into academic programs abroad such as **TOEFL, IELTS** (English proficiency tests) and **GRE,GMAT or MCAT.**
- Each of the above mentioned exams have different test formats, scoring patterns and thus require different preparation strategies.
- International entrance exams are a uniform, standardized and reliable mode of evaluating applicants.
- Every year millions of students, all over the world, send in their applications to foreign universities. It is on the basis of this performance that a deserving few are chosen.
- Select your area of interest, university of choice and the application procedures.

AdmissionsRequirements for PostGraduate Courses:

- Students who are seeking admissions for post graduate courses need to have a graduate degree of **3 years'** duration in any stream equivalent to the foreign university bachelor degree. Alternatively, students who have successfully completed the undergraduate course in abroad countries can also apply for the post graduate admissions. For admission in few post graduate courses, four year degrees like **B.E. or B.Tech** may be required as

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these are considered equivalent to foreign university bachelor's honors degrees. Successful completion of several Indian master's degrees like **M.A.** and **M.Sc**. are also accepted for post graduate admissions in foreign universities.

- Admission forms can be obtained from the respective university's website, filling them and either submitting them online or through posts. The form need to be supplemented by the complete details of the students' previous academic records from the respective universities or institution. All the details, attested by the registrar, have to be provided.

- If the student has completed the undergraduate course from a non-UK country, then he/she will have to take the **IELTS** English proficiency exam conducted by the British Council or the **TOEFL** exam. If convinced that thestudent's medium has been Englishthroughout, someuniversities may waive these tests. All international students who want to enrol themselves in a post graduate management course have to take the **Graduate Management Admission Test(GMAT)** and score well in it. Without a good **GMAT score** (700 or more for top universities),admission in management based courses are hard to accept by foreign universities. All universities require complete transcripts/mark sheets/related documents of the previous academic records to be submitted at the time with the application forms along with the letter of recommendation and a statement of purpose.

APPLICATION PROCEDURE FOR FOREIGN UNIVERSITY-WHY STUDYABROAD

No two applicants have the same reason(s) for studying abroad. For one it could be as simple as not getting into the right college/university in India and for the other it can be because there are not very many job opportunities in his/her field of study and for many, an easy way of a secured future. Whatever your reason for deciding to study abroad you will find that higher education abroad adds considerable value to your professional development. A good degree is a stamp of excellence that marks you for life. It can enhance your career and prepare you for leadership in your country or any wherein the world. It can broaden your horizons and expose you to a variety of perspectives, the latest technology, and state-of-the-art research and training. You can make contacts with colleagues abroad which may lead to collaborations with leading international researchers after you return to your home country. With the large number and variety of colleges and universities outside India, you are certain to find one that matches your needs and interests, no matter what your criteria. And what's more, with the right kind of planning and guidance, you can study abroad at very low costs and even free on a scholarship. Application process makes the vital difference and is the most important criteria.

APPLICATION PROCESS

The application process for studying abroad is time consuming and requires applicants to start preparing well in advance of their anticipated start date. It is very important to begin the

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admission process early because in many cases application deadlines are far in advanceof the start of the semester (sometimes as many as ten months). You also need to allow time for scheduling any standardized tests needed for admission and then having the results of these tests sent to schools. There is no uniform world-wide application system. Each college or university establishes its own unique policies.

The 6 basic steps for applying abroad are:

- Identifying country, universities and the course of your interest
- Request universities for Application forms
- Taking various required tests
- Arranging and preparing Essays and recommendation letters
- Completing and Sending Application forms along with required documents
- Reporting various test scores to the universities For a detailed and printer friendly format calendar and checklist of applying abroad process to help you with your college admissions planning.

SELECTING UNIVERSITIES

Selecting universities is a very time consuming and important process not only from the admission point of view but also because applying to universities are very expensive by Indian standards. Hence it has to be restricted to around 6or 8 universities which are best matchedfor your requirements. The best university for you may not be the famous ones, but those that offer you your field of study as well as meet the other criteria important to you. The range of academic options as well as available universities are so wide that it is not possible to select the best in on ego and it may take some time. The basic steps involved in the process of selecting universities are:

Level	Criteria for short listing	Number of colleges Shortlisted
I	Self-Evaluation	**50**
II	1. Academic Eligibility	
	2. Academic Record (Grade point Average)	
	3. Standardized Test Scores	**25-30**
	4. Financial Aid Considerations	
	5. Other issues	
III	Application Stage(After receiving prospectus & forms)	**6-8**

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Self-Evaluation (Level-I)

The first step is identifying your goals and needs which can be done by self-evaluation.

A - Identify your reasons for pursuing higher education abroad
Are you motivated by career goals, job prospects, academic interest and personal satisfaction?
What particular specialization are you interested in?
It is important to match your objectives with what the universities offer. If your aim is research in some particular field, you should apply to universities with specialized departments in that field. If you are interested in practical experience, you should apply to universities located close to the commercial centers and important cities.

B - Realistically assess your academic and professional background

Are you a competitive student?
Are you dedicated and hardworking?
How good is your academic record?
Do you have any work experience or research work related to your field of study?
Do you have any credentials in extracurricular activities?
Only if you have a good academic background, you should apply to highly ranked universities. If you feel you are moderately placed, you should apply to mid ranked universities.

C - Get an academic focus

Do you have a relatively clear idea of your field of study?
Have you spoken to your professors, read journals to know more about your field and other new fields?
Education abroad is very different from education in India. Most universities abroad have a very flexible system where you can select your courses and focus more on your field of interest. There are also many specialized courses which may suit your needs.

D - Realistically assess your financial abilities

Will you get a financial assistance from the university?
Can you or your family finance your education and stay?
Are you eligible for funds from educational trusts ?

The application process itself costs about Rs. 25,000 - Rs. 30,000/- towards examination fees, postage, university application fees etc. Tuition and living expenses are also high and depend on

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the country you wish to study in. For a visa, you must be able to demonstrate your ability to fund your education and stay abroad.

Level-II

It is best to narrow down your choice to25 - 30 universities after this stage by looking at the following:

- Program offerings (B.A, B.S, B.E, M.S, M.B.A, D.A, Ph.D., etc.)
- Specialization, faculty, thrust of the programs
- University Rankings
- Program Length
- Cost – Tuition, Living expenses etc.
- Availability of Financial Assistance to International Students
- Entrance Requirements (Bachelor Degree in same field, Work Experience etc.)
- Tests(SAT, GMAT, TOEFL etc. and minimum scores)
- Accreditation status (Professional accreditation for some programs)
- Student Profile (Percentage of international students, average work experience levels, etc.)
  Enrolment – Total available seats and the size of the school
- Location (Country, Climate, semi-rural, metropolitan city etc.)

Facilities

Types of Institution -- Public or Private These are the usual criteria. You could prioritize your criteria out of this list and shortlist the number of universities on that basis to about 30. You could further shortlist your choice on basis of specific issues like tuition fees, availability of financial etc.

Here we give some details of most important criteria for selecting universities -- academiceligibility, standardized tests, Grade Point Average and Financial Aid.

1. AcademicEligibility

Each university and college has its own requirements for admission. There is considerable flexibility in the acceptance policies of most schools. The requirements are different for different countries.

We list here the most common requirements:

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Graduate & Postgraduate Programs (MA, MS, MBA etc.)

CANADA & U.S.A.

Most Universities require qualifications comparable to a U.S.Bachelor's degree (Four Year Degree Program). A minimum of 16 years of formal education. In Indian context, it implies either qualifying in professional 4 years course like engineering or other such courses. If you have completed a 3-year degree program in India, the advisable plan of action to maximize eligibility for U.S. and Canadian graduate schools is to apply for a Post Graduate degree herein India. A one-year university affiliated program will make up for the fourth year of a U.S. Undergraduate degree.

AUSTRALIA & NEW ZEALAND& U.K.

Most New universities accept the Indian graduation system of three years for entry into most post graduate courses. An Indian bachelor degree like B.A., B.Com. Or B.Sc. is equivalent to a Bachelor (Ordinary) Degree. However, some courses and universities may require a qualification equivalent to Bachelor(Honor's) Degree in these countries, which require 16 years of formal education, which would mean another year after graduation or a four-year degree course like B.E., B. Tech or other such courses' Confirmation can only be obtained by either writing directly or formally applying to the universities concerned. However, for most Universities, a good first degree from a leading university in India or its equivalent is essential.

2. Academic Record and Grade Point Average

Your past academic record is one of the most important deciding factors in getting admission to a college abroad. Most schools require you to have a reasonably good academic record especially for programs and courses offering a master's or doctoral degree. Each university has its own minimum requirement for its programs, which are flexible depending on the candidate profile. Universities in each country have their own marking and evaluation systems, which are considerably different from the Indian system. For e.g., U.S. follows the GPA (Grade Point Average) system which are based on 5 points scheme - A,B, C, D & F. It is advisable not to convert your marks in the Indian system of grading to the American Grade Point Average system or any other system since the conversion may not be accurate. You may attach an explanatory note from your college to indicate your rank in your class and/or university. The letter may also indicate your place as compared to the class and the university average and the number of students in the class and the number of colleges and students in the university. You may also provide any other information or documents that you feel may help you in the admission process.

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3. Standardized Test Scores

Every university has its own minimum requirements and scores with respect to standardized tests. Check out the requirements of the universities and short-list the ones that will accept your scores.

English Proficiency Tests

Fluency in English is mandatory for education abroad whether in U.S., U.K. or any other country. You would be required to take tests like TOEFL,IELTS, TSE or other tests depending on the country, university and program you are applying to. The minimum scores required in these tests vary depending on the college and program. Individual departments and colleges usually set their own minimum requirements for admissions.

Other Tests

Different programs and colleges require you to take certain standardized tests for admission and there is a certain minimum that you have to score in those tests to get admitted to those universities. For a management graduate course, you are supposed to take GMAT and similarly for graduate course in engineering, you are supposed to take GRE. For undergraduate courses, one has to take SAT.

4. Financial Aid

Most Indians are concerned about the high cost of education abroad and seek information on opportunities for financial assistance. The expenses for education abroad include tuition fees, living expenses, health insurance, transportation etc. This is an important criterion for selecting the courses as well as universities. It is important to understand that most universities offer financial assistance to international students based primarily on merit and rarely on need. The amount, and type of assistance offered varies based on the university, department and level of study. Assistance of funds is more likely in Graduate studies and less in Undergraduate courses. Similarly, chances of assistance are more in specific countries like U.S.A. and U.K. Also funds are more likely to be available in fields like Engineering, Physical Sciences and Biological sciences, rather than in courses like Humanities, Social Sciences and Management.

Application Stage (Level III)

Once you start receiving application forms and material, go through in detail for the various requirements and deadlines like the application deadline, minimum scores required in the standardized tests, recommendation letters needed and other such information. This is the first stage of your application process. At this stage, you can write to the selected 25-30 universities.

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You can directly request application materials from the universities. There are two ways to get application forms:

1. **Requesting Application Forms via email:** You can request application forms from theuniversities website. Most universities have a form on their website which can be completed online to request application material.

2. **Downloading from the university website:** Many universities have a downloadable andready to print versions of their application forms on the net. These can be used for applying just as regular forms.Tabulate all these requirements and compare them with your objectives and group the universities under three categories:

1. Schools that seem to match your requirements
2. Schools are not suited to your needs
3. Schools that do not completely fit in any of the above two categories

Admission Stage (Level IV)

Universities usually inform students of their admission decisions well in advance of the beginning term. If you have received admission in more than one university, you will have to decide which one you want to attend. At this stage, you should compare a few objective and mostly more subjective criteria. The points you should focus on:

Objective Criteria
- Best program curriculum, length of program, choice of courses
- Best funding offers or best program with respect to costs

Subjective Criteria

- Overall reputation of university / department / program
- Location-region, safety of neighborhood
- Climate
- Social life
- Facilities available
- Accommodation & housing

Basically the decision factors at this stage would be mainly three points:

- Best Program
- Best funding offer

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- Best for your personal goals anneeds It is essential to do a lot of research on the universities and their offerings. Colleges and universities offer varied educational packages. You will have to find out which of these are likely to meet your goals by spending time in the reference library. The more time and effort you put in and the better you utilize your researching skills, the greater are your chances of achieving your goals.

What to do once you have been accepted:

Each college will tell you exactly what steps to follow to confirm your acceptance of their offer of admission and how to prepare for your first term. This information will be included with the letter of admission or in materials that will be sent to you shortly thereafter. You must respond with a "Yes" or "No" for each offer of admission. You may also be required to submit a financial deposit to the institution that you plan to attend. This is to guarantee your place in the class. Make sure you do not miss any deadlines.

If you are in the waiting list:

You may receive a letter that informs you that you are on a ‗waiting list'. This generally means that the admission office determined that you were qualified for admission but there was not enough room to admit all qualified applicants. If you are placed in the waiting list of a college you wish to attend, you will be asked whether you are interested or not. If you say yes, you may be offered admission if space becomes available. If you are placed in the waiting list of your first choice college and confirmed in the second choice college, you may do the following steps to remain on the safer side:
1. Accept the offer of the second choice school and pay the deposit
2. Accept the offer of remaining in the waiting list of the first choice school
If you get admission later in your first choice school, you can join that but you will have to forfeit your deposit (usually around US $50-$500) otherwise you can decide to study in the second choice school.

Applying for student visa

Visa:
Each country has its own procedure for visas. For more details, check out the requirements and formalities of each country:
- Canada(http://www.infozee.com/canada/visa.htm)
- New Zealand (www.infozee.com/nz/visa.htm)
- U.K. (www.infozee.com/uk/visa.htm)
- U.S.A (www.infozee.com/uk/visa.htm)
- Australia (www.infozee.com/australia/visa.htm)

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GRADUATE APPTITUDE TEST FOR ENGINEERING

Many of them who are going finish engineering would think about writing GATE exam. For that we must know about it.The Graduate Aptitude Test in Engineering (GATE) is an all India examination that primarily tests the comprehensive understanding of various undergraduate subjects in engineering and science. GATE is conducted jointly by the Indian Institute of Science, Bangalore and seven India Institute of Technology (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) on behalf of the National Coordination Board –GATE, Department of Higher Education, Ministry of Human Resources Development (MHRD), and Government of India. The GATE score of a candidate reflects the relative performance level of a candidate. The score is used for admissions to various post-graduate programs (e.g. Master of Engineering, Master of Technology, and Doctor of Philosophy) in Indian higher education institutes, with financial assistance provided by MHRD and other government agencies. Recently, GATE scores are also being used by several Indian public sector undertakings (i.e., government owned companies) for recruiting graduate engineers in entry-level positions. It is one of the most competitive examinations in India.

Eligibility to attend GATE exam:

Bachelor _s degree holders in Engineering/Technology/ Architecture (4 years after 10+2/Post B.Sc./ Post-Diploma) and those who are in the final year of such programs. Master_s degree holders in any branch of Science/Mathematics/ Statistics/ Computer Applications or equivalent and those who are in the final year of such programs.Candidates in the second or higher year of Four-year Integrated Master_s degree programs (Post-B.Sc.) in Engineering/ Technology.Candidates in the fourth or higher year of Five-year Integrated Master_s degree programs or Dual Degree programs in Engineering/Technology. Candidates with qualifications obtained through examinations conducted by professional societies recognized by UPSC/AICTE (e.g. AMIE by iE (i), AMICE (i)by the institute of Civil Engineers (India)-iCE(ii)) as equivalent

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to B.E./B.Tech. Those who have completed section A or equivalent of such professional courses are also eligible.

Gate Exam Disciplines:

Aerospace Engineering	Metallurgical Engineering
Geology and geophysics	Chemical Engineering
Agricultural Engineering	Computer science and IT
Instrumentation Engineering	Physics
Architecture & planning	Chemistry
Mathematics	Production &industrial Engineering
Bio Technology	Electronics & Communication
Civil Engineering	Electrical Engineering
Mechanical Engineering	Textile Engineering & Fiber science
Mining Engineering	Ecology & Evolution

The examination is of 3 hours'duration, and contains a total of 65 questions worth a maximum of 100 marks. The question contains both multiple choice question and numerical answer type. There is no negative mark for numerical answer.

Dr. S. Miruna Joe Amali,ASP/CSE