

Q. What is Information Technology (IT)?

Information technology (IT) is concerned with technology to treat information. The acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunications are its main fields. The term in its modern sense first appeared in a 1958 article published in the *Harvard Business Review*, in which authors Leavitt and Whisler commented that "the new technology does not yet have a single established name. We shall call it information technology (IT)." Some of the modern and emerging fields of Information technology are next generation web technologies, bioinformatics, cloud computing, global information systems, large scale knowledge bases, etc. Advancements are mainly driven in the field of computer science.

IT is the area of managing technology and spans wide variety of areas that include computer software, information systems, computer hardware, programming languages but are not limited to things such as processes, and data constructs. In short, anything that renders data, information or perceived knowledge in any visual format whatsoever, via any multimedia distribution mechanism, is considered part of the IT domain. IT provides businesses with four sets of core services to help execute the business strategy: business process automation, providing information, connecting with customers, and productivity tools.

IT professionals perform a variety of functions (IT Disciplines/Competencies) that ranges from installing applications to designing complex computer networks and information databases. A few of the duties that IT professionals perform may include data management, networking, engineering computer hardware, database and software design, as well as management and administration of entire systems. Information technology is starting to spread further than the conventional personal computer and network technologies, and more into integrations of other technologies such as the use of cell phones, televisions, automobiles, and more, which is increasing the demand for such jobs.

What is Information and Communication Technology (ICT)?

Information and communications technology or **information and communication technology**, usually abbreviated as **ICT**, is often used as an extended synonym for information

technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions.

The expression ICT was first used in 1997 in a report by Dennis Stevenson to the UK government and promoted by the new National Curriculum documents for the UK in 2000. The term ICT is now also used to refer to the merging (convergence) of audio-visual and telephone networks with computer networks through a single cabling or link system. There are large economic incentives (huge cost savings due to elimination of the telephone network) to merge the audio-visual, building management and telephone network with the computer network system using a single unified system of cabling, signal distribution and management. This in turn has spurred the growth of organizations with the term ICT in their names to indicate their specialization in the process of merging the different network systems.

Who works in the field of Information Technology and what is the nature of job?

In today's advanced technological environment, the field of IT is very large; those who work in the field are computer hardware and software designers, computer engineers, and specialists who maintain large computer networks and database systems. IT professionals maintain databases for organizations and make sure that they are up to date and run smoothly. They resolve problems with the computers on their network by installing and maintaining the programs that run on them, monitoring overall system health and resolving problems such as computer viruses so that they do not spread quickly and cause network-wide system crashes.

What kind of Education does one need to work in the field of Information Technology?

To work in the IT field, individuals must have a combination of formal education and experience. Because the field is developing so rapidly, there is a wide range of educational opportunities available, and updating one's skills with experience pertaining to the newest

technologies out there is extremely important. Formal educational opportunities such as three and four year degrees like B.Sc./B.E./B.Tech etc in the field of information technology are abundant. Usually titled associate of science or Bachelor of Science degrees, these courses focus mainly on the majored area of IT. With classes like the principles of computer language, application server programming, enterprise software architecture, and information systems security, students receive a great deal of information regarding the IT industry. In addition to such core classes, these degrees also require courses in mathematics, communications, science, social and behavioral science, as well as some humanities. The length of the program determines how many classes in each area are necessary for graduation. For those looking to further their information technology degree, many colleges and universities now offer Master of Science and Ph.D programs in the field of information technology and information communication technology.

This is a specialized field and so academic and technical skills are very essential. There are various courses available at different institutions. Many diploma and degrees courses are there for those who have an aptitude and flair for the subject. These are:

- Bachelor in Computer Applications (BCA)
- Bachelor in Science with Computers (B.Sc)
- Masters in Computer Applications (MCA)
- M.Sc in computers
- Masters in System Management
- B.Tech and B.E
- M.Tech
- Certification Courses
- Diploma in Computer Applications
- Post Graduate Diploma in Computer Applications
- DOEACC's O, A, B, C level courses. For Details, check the DOEACC's website:

Q. What personal attributes are required to join the field of IT?

One should have the following personal attributes if one wishes to enter the field of IT:

- Flexibility and willingness to learn new things, technologies and adopt new methods of work
- Logical thinking
- Ability to focus and concentrate
- Creativity
- Accuracy
- Organizational and administrative abilities
- Confidence
- Ready to work for long hours and ability to work hard
- Ability to take decisions
- High intellectual capacity
- Ability to gel well with people and good communicational skills

What is the Future of Information Technology?

The IT field is evolving and developing every day. New technologies in computers and mobile devices are shaping the way the world communicates with one another, gets work done, and spends free time. There is a growing need for individuals with a love of the field, a curiosity for the future, and a desire to be a force in it. Jobs in the field are on the rise, and employers are on the lookout for fresh talent; those who want to play a part in IT's future have no limits on their potential or on the potential of their specific field.

What are the two main sectors in the field of IT?

Hardware: This includes the physical elements of the computer system and deals with the designing, manufacturing and maintenance of computers. This area also includes the assembling of the manufactured components of the computers.

Software: This includes the set of instructions by which a computer is programmed for working and performing the specified tasks. This realm includes the work of designing the programs for various purposes. Programs may be for controlling the functioning of the computers or they may also be some user-friendly programs for specific needs. The programs may also come in the form

of packages, which are designed for meeting the different kinds requirements for large number of people.

Functional areas in Hardware:

- **Manufacturing:** This involves the work of production and assembly of components of computer systems.
- **Maintenance:** People in maintenance look after the smooth functioning of the machine and help in rectifying and detecting the breakdown in them. They also help in taking preventive measures so that least amount of damage could be caused to the computer systems and peripherals.
- **Research and Development:** It involves designing of chips and circuits, computer architecture and integration of peripherals. It also includes improvement and upgrading of the existing systems.
- **Management:** Managers ensure that the development and production work goes on smoothly. They look after the allocation of resources and planning.

Functional areas in Software:

- **Manufacture:** This involves preparing the set of instructions or programs to let the computer work. This further needs combining of application of computer science and telecommunications principles and creativity.
- **Software development:** This involves updating and development of existing operations as well as their refining and improvement. All this is carried out in various stages like analysis, designing, construction, implementation etc.
- **Data entry:** The data for the programs, which are made, have to be fed in computers. So this work is done at data entry level.
- **Programmers/Coders:** They write and test programs and convert the strategies of the system analyst into working programs.
- **Application programmers:** They prepare programs either for general purpose or user-friendly programs or some specific programs for individual use along with testing and integrating them.

- **Support services:** They vary in nature and can range from helping a customers in the purchase of the software, suggesting its right kind of application and providing them with the required training at the initial stage of its use.

There are other technical areas where one can look for employment in this field:

- **Computer operations:** It requires handling of computer peripherals along with other accessories like CD-ROMs, disk drives, printers etc.
- **Database administration:** It involves management and maintenance of data.
- **Sales and Marketing:** The work here involves selling of the computer system and its marketing to different companies or individuals.
- **Data center management:** It involves management of the dedicated facilities, which houses the critical servers and other networking and backup equipments. Data-centers typically houses those equipment which have to be kept operational 24x7x365.

Q. What are the jobs available to IT professionals?

Software Engineers: They design programs and specialized packages for the required purposes. Their work even involves research and development.

Web developers: They are electronics and computer engineers who are engaged in developing websites for the Internet.

System analysts: They look after the work of final testing of the software and advising the clients on the purchase and installation of the computer systems. They also are responsible for researching the organizational procedures and planning their computerization.

Consultants: They provide expert guidance to the companies during the purchase of the computer system. System analyst or designers with considerable amount of experience can work as consultants.

Technical writers: they are involved in writing manuals for computers.

E-commerce: They are adept in the net-com business, e-commerce fundamentals and its security issues and assist in developing websites for commercial purposes.

Knowledge engineers: They are expert in designing of the computer systems, which are associated with a human expert, like medical diagnosis or safety systems for industry.

Webmasters: They handle the task of configuration and setting up of the websites and its development. They have to take care of the security of the websites and create firewalls against the hackers and stalkers.

Networking: This work involves designing of networks, implementation of support servicing and management.

Computer education: This job involves giving training to the end users, students or computer professionals in advanced technologies.

Which are the important IT Companies in India providing employment?

Some of the well-known software companies include Accenture, ADP, Apps Associates, Birlasoft, Broadridge, Cap Gemini, Capital IQ, Caritor ,CMC Ltd, Cognizant Technology Solutions, Computer Associates, Cordys, CSC, Cybage Software, Dell, DST Global Solutions, Google, HCL, HP ,IBM, IGate Global Solutions, Infosys, Larsen & Toubro Ltd, NUT Ltd, Microsoft, Oracle, Patni Computer Systems (P) Ltd, Persistent Systems Ltd., Sasken Communications, Sonata Software, Tata InfoTech Ltd, Polaris, Tata Consultancy Services, Verizon, Virtusa Technologies, Wipro Technologies Ltd, and Yahoo etc. Although the software engineering sector is currency Dependant, highly competitive and hectic, it is a lucrative career option. It surely offers a bright future for the IT professionals. Average Salaries for fresher's vary between 3.5 to 4.5 lakhs per annum depending on the recruiting Company

What is business process outsourcing (BPO)?

Business process outsourcing (BPO) is a subset of outsourcing that involves the contracting of the operations and responsibilities of specific business functions (or processes) to a third-party service provider. Originally, this was associated with manufacturing firms, such as Coca Cola

that outsourced large segments of its supply chain. In the contemporary context, it is primarily used to refer to the outsourcing of business processing services to an outside firm, replacing in-house services with labor from an outside firm.

BPO is typically categorized into back office outsourcing - which includes *internal business functions* such as human resources or finance and accounting, and **front office outsourcing** - which includes *customer-related services* such as contact centre services. BPO that is contracted outside a company's country is called offshore outsourcing. BPO that is contracted to a company's neighboring (or nearby) country is called near shore outsourcing.

BPO is distinct from information technology (IT) outsourcing, which focuses on hiring a third-party company or service provider to do IT-related activities, such as application management and application development, data center operations, or testing and quality assurance. In the early days, BPO usually consisted of outsourcing processes such as payroll. Then it grew to include employee benefits management. Now it encompasses a number of functions that are considered "non-core" to the primary business strategy. Now it is common for organizations to outsource financial and administration (F&A) processes, human resources (HR) functions, call center and customer service activities and accounting and payroll. These outsourcing deals frequently involve multi-year contracts that can run into hundreds of millions of dollars. Often, the people performing the work internally for the client firm are transferred and become employees for the service provider. Dominant outsourcing service providers in the BPO fields (some of which also dominate the IT outsourcing business) include US companies IBM, Accenture, and Hewitt Associates, as well as European and Asian companies Capgemini, Genpact, TCS, Wipro and Infosys.

Many of these BPO efforts involve off-shoring -- hiring a company based in another country -- to do the work. India is a popular location for BPO activities. Frequently, BPO is also referred to as ITES -- information technology-enabled services. Since most business processes include some form of automation, IT "enables" these services to be performed.

An offshoot of BPO is KPO -- knowledge process outsourcing. Considered by some to be a subset of BPO, KPO includes those activities that require greater skill, knowledge, education and

expertise to handle. For example, whereas an insurance company might outsource data entry of its claims forms as part of a BPO initiative, it may also choose to use a KPO service provider to evaluate new insurance applications based on a set of criteria or business rules; this work would require the efforts of a more knowledgeable set of workers than the data entry would. The current definition of KPO encompasses R&D, product development and legal e-discovery, as well as a number of other business functions. Also coming into use is the term BTO -- business transformation outsourcing. This refers to the idea of having service providers contribute to the effort of transforming a business into a leaner, more dynamic, agile and flexible operation.

What is Computer Science?

Computer science or computing science (abbreviated **CS**) designates the scientific and mathematical approach in information technology and computing. A computer scientist is a person who does work at a professional level in computer science.

Its subfields can be divided into practical techniques for its implementation and application in computer systems and purely theoretical areas. Some, such as computational complexity theory, which studies fundamental properties of computational problems, are highly abstract, while others, such as computer graphics, emphasize real-world applications. Still others focus on the challenges in implementing computations. For example, programming language theory studies approaches to description of computations, while the study of computer programming itself investigates various aspects of the use of programming languages and complex systems, and human-computer interaction focuses on the challenges in making computers and computations useful, usable, and universally accessible to humans.

As a discipline, computer science spans a range of topics from theoretical studies of algorithms and the limits of computation to the practical issues of implementing computing systems in hardware and software. CSAB, formerly called *Computing Sciences Accreditation Board* – which is made up of representatives of the Association for Computing Machinery (ACM), and the IEEE Computer Society (IEEE-CS) – identifies four areas that it considers crucial to the discipline of computer science: *theory of computation, algorithms and data structures, programming methodology and languages, and computer elements and architecture*. In addition to these four areas, CSAB also identifies fields such as software engineering, artificial

intelligence, computer networking and communication, database systems, parallel computation, distributed computation, computer-human interaction, computer graphics, operating systems, and numerical and symbolic computation as being important areas of computer science.

Q. Which is the nodal department for promotion of IT in India and what are its functions?

The Department of Information Technology is the nodal department for promotion of IT in India and its functions are:

- Policy matters relating to Information Technology, Electronics and Internet.
- Initiatives for development of Hardware / Software industry including knowledge based enterprises, measures for promoting Information Technology exports and competitiveness of the industry.
- Promotion of Information Technology and Information Technology enabled services and Internet.
- Assistance to other departments in the promotion of E-Governance, E-Infrastructure, E-Medicine, E-Commerce, etc.
- Promotion of Information Technology education and Information Technology-based education.
- Matters relating to Cyber Laws, administration of the Information Technology Act. 2000 (21 of 2000) and other Information Technology related laws.
- Matters relating to promotion and manufacturing of Semiconductor Devices in the country.
- Interaction in Information Technology related matters with International agencies and bodies.
- Initiative on bridging the Digital Divide, Matters relating to Media Lab Asia.
- Promotion of Standardization, Testing and Quality in Information Technology and standardization of procedure for Information Technology application and Tasks.
- Electronics Export and Computer Software Promotion Council (ESC).
- National Informatics Centre (NIC)
- All matters relating to personnel under the control of the Department.