

FUNDAMENTAL OF IT & PROGRAMMING

Information technology, or IT, encompasses a wide range of industries and networks that facilitate the exchange, storage and security of data and information. Job opportunities are plentiful in information technology as long as you have the right skills and qualifications. By understanding the requirements and duties of a computer information technologist, you can make an informed decision about pursuing an IT career. In this article, we define IT, clarify what an information technologist is, list IT careers and explain how to enter the field.

What is information technology?

Information technology involves using computers and telecommunications to research, design and build information management systems. Both computer hardware and software applications are foundational elements of these processes. IT requires developing, administering and providing support for communication networks and databases. Professionals in this sector ensure individuals and organisations can gather, process and exchange data securely.

What is an information technologist?

An Information technologist is a trained specialist who can create, install, manage and support various components of IT systems. They might specialise in computer hardware, software, communications networks, databases or security systems. They ensure that organisations have efficient and updated technology for the smooth flow of data and information. Additionally, they establish and share security protocols to protect the networks they administer. They may work independently or as part of a team, reporting to an IT manager.

What does an information technologist do?

Depending on their job, an information technologist can have a range of routine and long-term duties. Some typical tasks include:

- Installing, testing and maintaining computer hardware, software, systems, networks and associated devices
- Troubleshooting system issues and providing technical support to users
- Setting up accounts and providing technical training for organisations' staff
- Building databases for storing and accessing data
- Performing periodic database audits
- Backing up data on servers and creating reliable data retrieval protocols
- Overseeing data migrations
- Managing network security configurations, user permissions and firewalls
- Coordinating with external contractors and vendors on infrastructure development
- Developing new procedures and strategies to enhance technological efficiency

How much money does an information technologist make?

An information technologist makes a national average salary of [₹3,10,440 per year](#). Pay may vary according to your role, education, experience and employer. Information technologists with extensive experience and up-to-date technical skills can expect to have high earning potential.

What are examples of information technology careers?

With an IT degree, you can pursue the following careers:

- Computer programmer
- Software engineer
- Cloud system engineer
- Applications engineer
- Web developer
- User experience (UX) designer
- Quality assurance tester
- Support specialist
- Systems analyst
- Database administrator
- Data quality manager
- Data scientist
- IT security specialist
- IT technician
- IT director
- Network engineer
- Interactive digital media specialist
- Help desk technician

Used interchangeably in many scenarios, there are some fundamental differences between the two titles. It is important to know the exact differences when you are trying to apply for jobs in this domain. In this article, we will discuss the differences between coders and programmers in terms of skills, education, job roles and salaries.

Is there a difference between coding and programming?

Coding is the act of translating a human language into instructions that a computer can understand. To provide instructions to a computer, a coder must choose a suitable means of communication. Computers comprehend machine language or binary code. However, instead of coding in binary languages, coders use assembly language or high-level languages. Assembly language is much less complex than machine language but is still very difficult to master. Most coders today use high-level languages (HLLs) which bear some similarities to human languages and are easier to work with. In short, coding only refers to the act of writing code.

A programmer develops machine-level programs that can be executed with a specific intent to get a required set of results. It involves careful planning and design of the overall program, followed by formal code writing and compiling, to ensure that human inputs and the computer's outputs stay in sync. Coding is only a small part of a programmer's work and can be considered a subset of programming. Programmers often have to manage other tasks along with coding, like designing, testing, debugging and planning.

Skills

Coders should know one or more programming languages, the associated syntaxes and useful keywords. A programmer, on the other hand, should know how to create algorithms and design solutions to given problem statements. Programmers should also be good with data processing

and project management. They often need to create logic in programming and design and analyse complex programs.

As far as technical skills or tools are considered, coders only need to use text editors as part of their job. They may sometimes have to test their code for bugs and errors, for which they use basic compiler software. In comparison, a programmer needs to be well versed in using a wider range of tools such as modelling programs, code generators, analysis tools and testing frameworks.

Education

Both coding and programming are skill-based fields where formal qualifications are only indicators of your experience. While some employers look for candidates with a degree in computer science or a related field, you can also practise as a coder or a programmer without a degree or formal education. These professionals need to learn programming languages thoroughly to become experts in their field. You can pursue certifications in your preferred coding languages. These are some of the popular languages:

- Python
- Java
- JavaScript
- C++
- C# (C Sharp)
- Visual Basic

Companies that hire programmers may sometimes have formal educational requirements for certain positions. The most common is a bachelor's degree in computer science engineering or B.Tech in computer science engineering (commonly shortened as CSE), which takes 4 years to complete. Programmers can also pursue higher education in their field through master's level courses, such as M.Tech in computer science and engineering. Postgraduate courses typically take 2 years to complete.

Job roles

Coders may additionally take on job roles such as developers or testers, but their primary task is to write code. Coding is usually done with a trial-and-error approach, while programming involves a more methodical approach and great attention to detail. Programmers may handle a range of tasks from basic code writing and testing to project management.

Here are some of the common job responsibilities of programmers:

- Coding and testing software and applications
- Developing and deploying software and applications
- Fixing bugs in existing code and troubleshooting programs
- Collaborating with production, design and marketing teams
- Preparing documentation for projects
- Providing support and training for third-party software
- Resolving and responding to customer queries

Salary

The average base salary for a coder is [₹2,39,645 per year](#). Depending on their experience, this figure can go up to [₹4,43,182 per year](#) for senior coding positions. The average base salary for a

programmer is ₹2,99,587 per year. Senior programmers can make an average base salary of up to ₹4,64,212 per year.

Job prospects

Coders largely work on a remote basis and often lend their services as freelancers on short contracts. Programmers, on the other hand, typically work as full-time employees with companies, under a variety of job roles. They usually have client-facing jobs and may have a team of professionals assisting them.

Here are some of the popular job profiles for programmers:

- **Computer programmer:** A computer programmer is tasked with writing, compiling, testing and debugging code. They also solve issues that come up during the coding process and find solutions to problem statements given by clients. They are responsible for making sure that the products they develop are up to the client's prescribed quality standards. Programmers may also be tasked with training users on how to use their products effectively.
- **Web developer:** As a web developer, your primary duty is to design and create web pages and the user interactions within web pages. Web developers evaluate and test websites to ensure that they adhere to quality and security standards before they go live. They are also responsible for the continued maintenance and troubleshooting of websites.
- **Program analyst:** A career in program analysis combines the job roles of a computer programmer and a systems analyst. Analysts oversee the coding and development process to find weak areas and optimise for efficiency and quality. They may also prepare support materials and documents to help clients use their products effectively.
- **Computer systems engineer:** Computer systems engineers are experts at optimising the efficiency and functionality of computer systems. They may design and implement systems like local area networks and web servers for their clients. A systems engineer may also specialise in the maintenance, diagnosis and troubleshooting of computer systems.
- **Software developer:** Software developers ideate, design and create software programs for different kinds of computer systems. Software development is a fairly competitive field, and developers usually have to specialise in one or more coding languages to perform their job well.
- **Mobile app developer:** App development is a relatively new field, but it is one of the fastest-growing technical careers in the world. App developers design and create software for hand-held devices like tablets and mobile phones. They also test and assess the quality of applications prior to publishing.

Which is better between coding or programming?

Coders do not have to take on the additional job responsibilities of programmers like project management and application design. The base requirement for a coder is just that they must be able to understand and navigate one programming language well. As a coder, if you have command over several coding languages, it is a bonus. However, coding is also a very competitive field. To stand out from your competitors, you should have strong algorithm skills and the ability to translate logic into code.

Programmers have to familiarise themselves with a wide variety of tools, languages and software to be effective in their respective fields. As a programmer, you have a lot more to learn to ensure that the program you develop works and performs as intended. To become a good programmer, you need an in-depth knowledge of the processes and workflows that are essential to software/application/web development. Becoming a successful programmer often takes years of experience.

Is a coder the same as a software engineer?

Software engineers are professionals who apply the principles of software engineering to the development, design, testing and maintenance of computer software and systems. Most software engineers have formal qualifications or a degree in computer science engineering. However, you may pursue any stream of engineering, pick up skills like coding, get experience in a relevant domain and then apply for software engineering positions.

Software engineers can perform several tasks, like testing, debugging, designing, maintenance, programming and coding. In this way, software engineers and programmers have similar job profiles. Coding is again a subset here, while software engineering becomes the superset. Coders need not be software engineers, but software engineers should have some experience or knowledge of coding.

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