

## 9.2: The Creators of Information Systems

The first group of people we are going to look at plays a role in designing, developing, and building information systems. These people are generally very technical and have a background in programming and mathematics. Just about everyone who works in creating information systems has a minimum of a bachelor's degree in computer science or information systems. However, that is not necessarily a requirement. We will be looking at the process of creating information systems in more detail in chapter 10.

### 9.2.1: Systems Analyst

The systems analyst's role is unique in that it straddles the divide between identifying business needs and imagining a new or redesigned computer-based system to fulfill those needs. This individual will work with a person, team, or department with business requirements and identify the specific details of a system that needs to be built. Generally, this will require the analyst to understand the business itself, the business processes involved, and the ability to document them well. The analyst will identify the different stakeholders in the system and work to involve the appropriate individuals.

Once the requirements are determined, the analyst will begin translating these requirements into an information-systems design. A good analyst will understand what different technological solutions will work and provide several different alternatives to the requester, based on the company's budgetary constraints, technology constraints, and culture. Once the solution is selected, the analyst will create a detailed document describing the new system. This new document will require that the analyst understand how to speak in systems developers' technical language.

A systems analyst generally is not the one who does the actual development of the information system. The design document created by the systems analyst provides the detail needed to create the system and is handed off to a programmer (or team of programmers) to do the actual creation of the system. In some cases, however, a systems analyst may create the system that he or she designed. This person is sometimes referred to as a programmer-analyst.

In other cases, the system may be assembled from off-the-shelf components by a person called a systems integrator. This is a specific type of systems analyst that understands how to get different software packages to work with each other.

To become a systems analyst, you should have a background in business and systems design. You also must have strong communication and interpersonal skills plus an understanding of business standards and new technologies. Many analysts first worked as programmers and/or had experience in the business before becoming systems analysts. The best systems analysts have excellent analytical skills and are creative problem solvers.

### 9.2.2: Computer Programmer (or Software developer)

A computer programmer or software developer is responsible for writing the code that makes up computer software. They write, test, debug and create documentation for computer programs. In the case of systems development, programmers generally attempt to fulfill the design specifications given to them by a systems analyst. Many different programming styles exist: a programmer may work alone for long stretches of time or may work in a team with other programmers. A programmer needs to understand complex processes and the intricacies of one or more programming languages. They are usually referred to by the programming language they most often use: Java programmer or Python programmer. Good programmers are very proficient in mathematics and excel at logical thinking.

### 9.2.3: Computer Engineer

Computer engineers design the computing devices that we use every day. There are many types of computer engineers who work on various types of devices and systems. Some of the more prominent engineering jobs are as follows:

- **Hardware engineer:** A hardware engineer designs hardware components, such as microprocessors. A hardware engineer is often at the cutting edge of computing technology, creating something brand new. Other times, the hardware engineer's job is to engineer an existing component to work faster or use less power. Many times, a hardware engineer's job is to write code to create a program that will be implemented directly on a computer chip.
- **Software engineer:** Software engineers do not actually design devices; instead, they create new programming languages and operating systems, working at the lowest hardware levels to develop new kinds of software to run on the hardware.
- **Systems engineer:** A systems engineer takes the components designed by other engineers and makes them all work together. For example, to build a computer, the motherboard, processor, memory, and hard disk all have to work together. A systems

engineer has experience with many different hardware and software types and knows how to integrate them to create new functionality.

- **Network engineer:** A network engineer's job is to understand the networking requirements and then design a communications system to meet those needs, using the networking hardware and software available.

There are many different types of computer engineers, and often the job descriptions overlap. While many may call themselves engineers based on a company job title, there is also a professional designation of "professional engineer," which has specific requirements behind it. In the US, each state has its own set of requirements for using this title, as do different countries around the world. Most often, it involves a professional licensing exam.

#### 9.2.4: References

*Careers in IT.* Retrieved November 13, 2020, from <https://www.itcareerfinder.com/it-careers/mobile-application-developer.html>

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