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# Software Development Careers

Software development is the creation of new software products for commercial sale. Within a software development company, this process involves a team that commonly consists of systems programmers, application programmers, multimedia developers, and quality assurance (QA) testers. These positions require a variety of skill, but each person plays an important role in getting new software products into the market for purchase by consumers or other companies. See Table 1 for a comparison of salaries in the software development area.

Table 1: Software Development Careers

|  |  |
| --- | --- |
| Job Title | Salary\* |
| Systems programmer | $94,000 |
| Application programmer | $87,000 |
| Graphic artist/multimedia developer | $62,000 |
| Quality assurance tester | $61,000 |
| Sources: Bureau of Labor Statistics, U.S. Department of Labor; Application Development Trends\*Based on national averages that may vary widely by region. |

## Systems Programming

Systems programming is a highly specialized area of software development and involves writing instructions in C++, JavaScript, or other languages to accomplish a succession of tasks. These programmers have expertise in one or more computer languages and typically must focus on the technical details rather than the human aspects of software development. A systems programmer specializes in the development of system software rather than of application software. Programming requires a high level of technical knowledge that can be gained through a computer science degree or other training.

## Application Programming

The skills required for application programming are similar to those required for systems programming, but an application programmer works with application software. Application programmers may work on a project to develop new application software or on maintenance of existing application software. Similar to a systems programmer, an application programmer is typically professionally trained and usually holds a college degree in computer science. The professionals have studied techniques for software development that integrate multiple programmers working as part of a large team.

## Multimedia Development

Multimedia development is the use of computers to create and enhance web content with images, sound, and movies. The job title multimedia developer includes graphic artists, digital sound editors, and animation specialists. This growing area includes individuals who have a stronger background in the arts than in computer science.

## Quality Assurance

Companies that develop software also need people to test new products before they are released to the public. This testing process is called *quality assurance* (QA). QA testers carefully test each feature of a new product and record all deficiencies they uncover. A deficiency report is given to the developers so they can fix each problem before the product is released. QA testers often double as technical trainers, technical writers, or customer support specialists.

# Application Development Careers

Application development is a very large segment of IT work that uses commercial software to develop a system for a specific organization. A system could be a web page, a database, a single-user spreadsheet, or something as large as a custom information system. People working in the specific area of adapting software for use within a new system are sometimes called *programmers*, but the more accurate term is *application developer*. The major careers within the field of application development are system analyst, database administrator, network administrator, and web administrator.

Application development is highly paid and respected work that requires specialized training. Specialists in the field often work on a consulting basis, going from company to company creating new applications. Since applications are typically created for users to input data or interact with data, application developers must work closely with those who will use the application. This requires a mix of technical and interpersonal skills. The variety involved in this work makes it more interesting, but sometimes more stressful as well. Table 2 shows salary information for jobs within the application development category.

Table 2: Application Development Careers

|  |  |
| --- | --- |
| Job Title | Salary\* |
| Systems analyst | $73,000 |
| Database administrator | $72,000 |
| Network administrator | $69,000 |
| Web administrator | $66,000 |
| Sources: Bureau of Labor Statistics, U.S. Department of Labor; CNN\*Based on national averages that may vary widely by region. |

## Systems Analysis

Systems analysis involves gathering the requirements and developing a design for systems of distribution management, office information, management information, decision support, executive support, and factory automation. Both new information systems projects as well as modifications to existing information systems require some level of systems analysis. An individual who assesses the technical requirements and develops these types of designs is called a systems analyst.

## Database Administrator

Database administration is an important part of application development since the database is at the core of a company’s information system. A database administrator is responsible for the day-to-day operations of the database. This typically includes upgrading database software as needed, ensuring that the database provides rapid response time to users, integrating security strategies so only authorized users can access the database, and completing backups of the data on a regular basis.

## Network Administration

Network administration is another area that is integral to application development. Network administration involves the operations and maintenance of a company network, including a LAN, WAN, network segment, intranet, or interactions with the Internet. The individual responsible for these tasks is called the network administrator. On a daily basis, the network administrator must ensure that the network provides rapid response time to users, upgrade network software as needed, and set up the system so that only authorized network users have access to company programs and data. In addition, the network administrator troubleshoots particular problems with the network.

## Web Administration

One type of application development is the creation of web pages. Web administration includes keeping the site working and up to date. A web administrator, sometimes called a web master, has the job of developing and maintaining a website with multiple pages. More complex websites also require programming effort if their pages need to dynamically respond to the user, such as in the case of an e-commerce site or a search engine.