Computer Programming
Computer/Business Applications
Information Science

What career options will your degree in Computer Programming, Computer/Business Applications and/or Information Science afford you? We’ve assembled a series of career path overviews, job titles, and job descriptions to help you explore the possibilities and focus on a career track.

Job descriptions were compiled from actual online job postings and from Johnson & Wales’ DACUM (Developing a Curriculum) process (when we ask practicing professionals to detail the duties, tasks, skills and required work behaviors associated with their positions). Now is the time to collect all the information you can and make informed decisions about your career path. The information assembled here is a great place to start.
Career Paths in Computer Programming, Business Applications and Information Science

The following career paths and positions are described in this Career Track Guide.

**Database Administration**
- Business Analyst
- Data Modeler
- Database Developer
- Relational Database Analyst
- Database Administrator

**Software Development**
- Programmer
- Programmer/Analyst
- Software/Software Design Engineer
- Software Developer
- Systems Analyst
- Software Architect
Career Path #1: DATABASE ADMINISTRATION

Business Analyst
A business analyst supports users in gathering data by creating, executing and delivering database queries, and by participating in the definition, design and administration of current and new tools, including databases and analytical tools.

A business analyst:
• Investigates critical business processes in an organization.
• Gathers business requirements, documents existing processes, and performs a variety of data analyses.
• Act as a liaison between users and developers, by understanding ramifications of user requests on database design, coding, and other areas.

Data Modeler
A data modeler assists in the day-to-day support of a database environment. He/she works with the business analyst to define and document the logical data model, and with the database administrator to define and document the data structure. A data modeler is involved in object management, storage management, database monitoring, capacity planning, performance tuning and disaster recovery testing.

A data modeler:
• Participates in business requirements gathering sessions.
• Designs, codes, tests and implements scripts to manipulate and move data.
• Plans and conducts tests, and takes corrective action, as necessary.
• Coordinates quality control and auditing of databases.
• Works with the database administrator to establish database management standards.

Database Developer
A database developer assists with the design of data structures to support application requirements. The developer monitors and analyzes database performance.

A database developer:
• Ensures that database definitions conform to standards.
• Develops, tests, implements and maintains database applications.
• Provides assistance in database planning and design.
Job Descriptions

DATABASE ADMINISTRATION CONTINUED

Relational Database Analyst
A relational database analyst is responsible for formulating and refining business requirements, maintaining database integrity and testing system environments. An analyst creates reports and designs database queries.

A database analyst:
- Oversees work done by outside vendors and assists with implementation.
- Creates tools to ease processes, such as automating procedures, and implements technical solutions to operational problems.
- Determines, documents and tests data structures and architectures.

Database Administrator
A database administrator determines data requirements and designs efficient database structures to be used by developers. An administrator is responsible for providing consultation to programmers, as well as reviewing and implementing changes to existing databases, such as Oracle.

A database administrator:
- Researches, analyzes and recommends database management solutions.
- Monitors database performance and takes corrective action.
- Installs and tests new versions of database software.
- Assists in the design of new databases to support business needs and recommends changes to existing databases.
- Creates descriptions to enable developers to understand how programs should access data.
- Analyzes problems within the system and provides recommendations to improve the system.
- Ensures adequate security is in place to protect access from unauthorized users.
Career Path #2:
SOFTWARE DEVELOPMENT

Programmer
A programmer performs maintenance and modifications of programs and writes new programs according to predefined specifications. Knowledge of programming languages such as C++, Java, COBOL, Visual Basic, etc., is important. A programmer analyzes, identifies and resolves problems in a technically correct manner. This includes programming, coding, debugging and testing.

A programmer:
- Writes and prepares specifications, documentation and flow charts for computer programs based on an understanding of the business requirement.
- Gathers and documents user requirements to create system specifications for coding.
- Codes program modifications based on standards and procedures.
- Assists in the design and preparation of programs, preparing test data and debugging programs.
- Modifies and maintains software programs previously created.
- Tests software to ensure proper operation.

Programmer/Analyst
This programmer is a specialist in understanding how to use existing programs (and adaptations) to solve business problems. Familiarity with the business issues of industry segments is helpful. This can include knowledge of technologies developed to meet the needs of special industries, such as insurance, accounting, hospitality and more.

A programmer analyst typically:
- Develops codes, tests, executes and supports solutions.
- Works with designers, artists and finance personnel to understand scope.
- Is familiar with standard user interface protocols, data structure, program architecture and response speed.
- Uses various business analysis tools such as Pareto diagrams, process flowcharts and cause-and-effect diagrams to identify business solutions and gather requirements.
- Participates in design walk-throughs with end-users to verify accuracy of design in meeting business needs.
- Generates reports to evaluate solutions.
SOFTWARE DEVELOPMENT CONTINUED

Software/Software Design Engineer
A software engineer takes a requirement specification for software, develops or modifies an original design, implements and tests it, and delivers a product that meets all specified QA standards. Software engineers are focused on software requirements development; architecture, design and coding; unit testing; documentation updates; problem report analysis; user support and troubleshooting; and periodic 24-hour on-call support.

Other software engineer responsibilities include:
- Collecting requirements and analyzing usability.
- Ensuring specifications, design, criteria and performance schedules are maintained.
- Working well in a team environment with other software engineers.
- Resolving programming problems that will affect performance, cost or schedule.
- Assisting with product documentation.

Software Developer
A software developer is responsible for supporting existing applications, as well as developing new projects. The software developer is responsible for software design and architecture, implementation of design solutions, and resolving all programming related issues.

A software developer typically:
- Acts as a principal designer on development projects.
- Understands the software development life cycle, including documentation requirements and operation.
- Coordinates the production of software products from the initial stage of choosing the content providers and graphics creators to working with the programmers.
- Manages designers, programmers and other team members.

Systems Analyst
A systems analyst is trained to define, design, program, test, debug, maintain and document system solutions involving both hardware and software for complex projects. He/she defines, designs, develops, tests, documents, and implements system solutions. This requires working on all phases of systems analysis and programming activities. As a result, systems analysts must quickly become experts in each relevant department’s functions and business applications.
Software Architect
A software architect leads and coordinates technical activities throughout the project, and provides architectural oversight for the development of new and enhanced products. The software architect establishes the overall structure for each architectural view, such as the grouping of elements and interfacing between the groups. In addition, he/she drives the requirement analysis, design, implementation and testing phases of the project.

A software architect is responsible for:
• Liaising with product developers and managers to create software products with the right features, pricing, and development timelines.
• Ensuring the scalability, interoperability, reliability and performance of all strategic development initiatives.
• Providing technical advice to other departments by keeping up to date with the latest technology and user trends.
• Acting as the final arbiter for architectural, technical and design discussions.