Administrator/·NET Programme

Administrator/·NET

Help Desk/I/II/III/Network

Administrator/·NET Programmer/C++

Help Desk/I/II/III/Network

Help Desk/I/II/III/Network

Administrator/·NET Programmer/C++

Programmer/C++

GLOSSARY OF JOB DESCRIPTIONS
FOR INFORMATION TECHNOLOGY

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Technology

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ABOUT THE GLOSSARY

Having access to the latest information technology (IT) job descriptions is essential to both employers and job seekers. Companies must effectively recruit people with the appropriate skills and experience, while IT professionals need to better understand the expertise required for each position as they chart their career paths.

To help organizations and technology professionals in these pursuits, we're pleased to offer the *Glossary of Job Descriptions for Information Technology*. Information in this booklet was derived from the thousands of full-time and project placements made through Robert Half Technology locations and the market knowledge of our account executives.

While the *Glossary* provides an overview of typical responsibilities and skill requirements, variations do occur based on company size, industry, local employment conditions and other factors. For more information or to request a copy of our annual *Salary Guide*, which contains average starting salary ranges for the positions referenced in the *Glossary*, please contact our office nearest you or call 1.800.793.5533.

Job descriptions help organizations clearly identify the key criteria for positions within the company. They also make the resume screening, interview and selection stages more efficient. By clearly defining the requirements for a job opening, hiring managers can better determine the ideal person for the role.

Well-written job descriptions also help job seekers understand the expectations of the position and enable them to compare their skills with those needed to be effective in the role. Many companies post job descriptions online when recruiting for an open position. This is an opportunity for applicants to customize their resumes and cover letters according to the requirements of the job. Candidates who tailor their job search materials to the needs of prospective employers have a better chance of making it through the initial screening and hiring process.

A well-executed job description accomplishes the following objectives:

- Establishes the framework for defining the job and analyzing appropriate hiring criteria
- Gives candidates a clear idea of what to expect and helps to deter those who are unqualified for the job from applying
- Helps the hiring manager decide on a competitive pay range based on market value for the various responsibilities of the position
- Serves as a tool for setting expectations and establishing objective measures for performance appraisals
- Provides a preliminary idea of how easy or difficult it will be to find someone to fill the opening

The following categories represent a basic template of what a typical job description might include and the specific information it should convey:

Position title – The full title of the job and, if possible, the title of the person to whom the candidate will report

General description – Two to three sentences outlining the position's overall responsibilities

Key responsibilities – The specific tasks the applicant will be asked to carry out on a daily basis

Skills and attributes – The hiring criteria that will be used to evaluate candidates, such as skills, experience, knowledge or traits required to perform the job

Educational requirements – Any degrees, licensing, certification or training that a candidate must have in order to be eligible for the position

The more time spent developing an accurate and detailed job description, the more likely the hiring process will produce positive results.

CHIEF INFORMATION OFFICER (CIO)

CIOs need broad knowledge of all aspects of IT. They must have strong analytical, strategic-planning and communication skills. The ability to collaborate effectively with other senior managers in order to define, articulate and champion the ways in which technology requirements relate to the firm's business is critical. A bachelor's degree in computer science, information systems or a related area is expected, and a master's degree is often required by employers. CIOs typically have at least 10 years of managerial experience in IT, though larger firms may require more.

Typical duties include:

- Developing and directing the firm's overall IT strategy
- Working closely with other senior management, including the chief executive officer, chief technology officer, chief operations officer and chief financial officer, to coordinate data systems policies and procedures
- Providing vision and leadership in all aspects of IT management and operations
- Approving all major system hardware and software purchasing decisions

CHIEF TECHNOLOGY OFFICER (CTO)

CTO candidates require in-depth knowledge of all aspects of a firm's data technology infrastructure. They also need the tactical managerial skills to lead the IT department in attaining the company's current and future technology goals. They typically have a degree in computer science or a related field and at least seven to 10 years of experience in IT management. In larger companies the CTO may report to a chief information officer or a chief operating officer. Candidates need excellent interpersonal and problem-solving skills as well as the ability to plan and execute projects within time and budget constraints.

Typical duties include:

- Setting the firm's overall technology standards and practices
- Making recommendations as well as explaining technology solutions to senior management through presentations and advocacy
- Managing the implementation of data systems and monitoring their effectiveness in meeting business unit needs
- Providing leadership and managing a staff of direct reports in functional areas such as systems operations, LAN/WAN architecture, and hardware and software support

CHIEF SECURITY OFFICER (CSO)

CSO's need extensive experience in the field of information security as well as state-of-the-art knowledge of this rapidly evolving and critical business function. Employers look for a minimum of a bachelor's degree in information systems or a related field as well as 10 or more years' experience with a focus on information security. The position requires excellent judgment and outstanding planning abilities in order to create and maintain complex security systems.

Typical duties include:

- Managing enterprisewide security policies and systems
- Developing, implementing and monitoring long-term information security strategy
- Ensuring the firm meets all mandated security standards
- Coordinating work with all vendors, contractors and consultants to maintain and enhance data security

VICE PRESIDENT OF INFORMATION TECHNOLOGY

The vice president of information technology position requires a proven track record of leadership in technology management, including excellent communication, analytical and organizational skills. A bachelor's degree in computer science or a related field and five to 10 years of increasing responsibility are typical requirements for the job. Strategic planning and tactical implementation are important attributes for this position as well.

Typical duties include:

- Managing the day-to-day, overall operations of the IT department
- Working with the firm's senior IT team to help plan and coordinate both short- and long-term systems strategy and implementation
- Serving as a liaison between nontechnical business units and IT, communicating technical information and plans
- Managing the department's hiring, promotion and review processes

INFORMATION TECHNOLOGY MANAGER

Information technology managers need a technical background as well as excellent managerial skills. Because they direct the work of other employees, these individuals require strong interpersonal and communication abilities. Analytical thinking also is very important as this position often involves problem resolution and process development. In addition, a strong customer-service orientation is a must. Employers look for a bachelor's degree in an IT-related field plus at least five years of experience with the specific types of business systems, hardware and networking services utilized by the firm. Demonstrated leadership also is required.

Typical duties include:

- Analyzing workflow, delegating projects and meeting departmental goals
- Developing and monitoring performance standards
- Providing input on hiring decisions for technical staff
- Implementing and monitoring new projects

MANAGER OF APPLICATIONS DEVELOPMENT

Candidates seeking a manager of applications development position need a thorough technical background combined with outstanding managerial and leadership talents. They must have strong oral and written communication skills, project management experience, and proven abilities to facilitate multidisciplinary project teams in accomplishing strategic goals. Employers look for a bachelor's degree in computer science, information systems, engineering or related fields. Depending on the size of the department, the company may seek from five to 10 or more years of combined development and managerial experience.

Typical duties include:

- Assuming overall management responsibility for all aspects of the applications development department and its staff
- Planning, coordinating and monitoring the progress of development projects to ensure their ongoing alignment with business goals
- Hiring, training, motivating and evaluating staff
- Serving as a liaison to senior IT management, reporting on the status of current projects, identifying issues and assessing their impact, and proactively recommending solutions

PROJECT MANAGER

Project managers must have demonstrated knowledge and experience with project management methodologies in order to work with intricate, multifaceted projects. They need superb communication and interpersonal skills to collaborate with the development team and make project presentations. Employers look for a bachelor's degree in an IT- or business-related field, as well as a background in applications development and five or more years of experience managing complex projects. Project management certifications, such as those from the Project Management Institute, also are highly recommended.

Typical duties include:

- Managing overall coordination of IT applications development projects, from planning through implementation
- Setting project scope, priorities, deadlines and deliverable schedules
- Facilitating discussions and consensus among various project stakeholders such as analysts, applications programmers and clients
- Managing and monitoring project budgets and expenditures

SYSTEMS ANALYST

Candidates for a systems analyst position must be excellent analytical thinkers and problem solvers as well as effective communicators. They need a broad understanding of, and experience working with, hardware and software systems, including their installation, maintenance and life cycles. Employers look for a minimum of a bachelor's degree in information systems, computer science or a similar field, along with five or more years of experience working with specific applications and/or operating systems.

Typical duties include:

- Analyzing systems hardware and software problems and developing technical solutions
- Translating user and/or system requirements into functional technical specifications
- Writing detailed documentation, which is used by the applications development team for translation into actual program code
- Installing, testing and debugging application systems

APPLICATIONS ARCHITECT

Applications architects require a high level of technical expertise combined with excellent planning, coordination and communication skills, as well as the ability to work on teams. Practitioners must have experience with relevant development tools and specific application and system architecture, in addition to a strong understanding of object-oriented design. A bachelor's degree in computer science or information systems is normally required, and a master's degree is highly desirable. Employers seek a minimum of eight years of related work experience and often look for specific software skills such as Asynchronous Java and XML (AJAX), C#/C++ and Linux/Apache/MySQL/PHP/Perl (LAMP). Expertise in the design, development and deployment of enterprise-level N-tier architecture in a Microsoft.NET or Java Enterprise Edition framework often is required.

Typical duties include:

- Designing major aspects of the architecture of an application, including such components as user interface, middleware and infrastructure
- Providing technical leadership to the applications development team
- Performing design and code reviews
- Ensuring that uniform enterprisewide application design standards are maintained
- Collaborating with other stakeholders to ensure architecture is aligned with business requirements

DEVELOPER/PROGRAMMER ANALYST

Developer/programmer analysts must have strong analytical and problem-solving abilities. They must understand and conceptualize applications from both a technical/programming perspective and a business point of view. Because they deal with both technical personnel and business managers/administrators, as well as participate on project teams, they need strong interpersonal and communications skills. Excellent programming abilities in common languages and frameworks such as C#/C++, Java Enterprise Edition/AJAX and Microsoft.NET are needed for the coding aspects of the position. Most employers look for at least a bachelor's degree in computer science, information science or management information systems, and relevant job experience.

Typical duties include:

- Analyzing business application requirements for functional areas such as finance, manufacturing, marketing or human resources
- Writing code, testing and debugging software applications
- Recommending system changes and enhancements
- Documenting software specifications and training users

BUSINESS SYSTEMS ANALYST

Business systems analysts should have a solid understanding of business functional areas, business management issues and data analysis. Exceptional written and oral communication abilities are required. Leadership, initiative and advanced computer skills, including programming experience, are also integral. Employers often seek at least a bachelor's degree and several years of computer applications and business experience. For more technically challenging positions involving complex business systems, a master's degree with a concentration in information systems may be required.

Typical duties include:

- Analyzing complex business problems and assessing how automated systems can be implemented to solve them
- Formulating and defining the objectives and scope of business systems
- Gathering data and analyzing business and user needs in consultation with both business managers and end-users
- Providing IT support for regulatory and compliance activities
- Making recommendations on hardware and software procurement to support business goals

LEAD APPLICATIONS DEVELOPER

Candidates for lead applications developer positions need a solid background in applications programming and experience leading a technical team. Employers look for a bachelor's degree in computer science or a related field along with three to five years or more of experience in technologies such as Visual Basic.NET, PHP, C#/C++ and Microsoft.NET framework development. In addition, individuals need several years of proven success as a team leader, as this role requires directing and motivating coworkers and working closely with other managers while multitasking and prioritizing resource needs.

Typical duties include:

- Leading a development team in the design, development, coding, testing and debugging of applications
- Coordinating the effective use of the development team's time and ensuring efficient communication between team members and other IT functional areas
- Providing feedback and suggestions for process and product improvement
- Acting as a technical mentor and advisor for the development team

TECHNICAL WRITER

Technical writers must possess the ability to communicate complex information clearly and concisely. They need excellent interpersonal skills in order to elicit detailed facts from subject-matter experts (for example, applications developers), in addition to advanced writing and editing skills. Technical writers also need to be adept in document-creation applications such as Adobe FrameMaker, RoboHelp and Acrobat, and Microsoft Word and PowerPoint. Employers' requirements vary depending on the complexity of documentation needed but usually include a bachelor's degree in English, journalism or information sciences plus several years of experience in a technical setting.

Typical duties include:

- Documenting the specifications, design, features and operation of applications
- Writing and editing user manuals, help systems and other technical documents
- Designing and formatting documents using document-creation software
- Interviewing applications developers and other technical resource personnel to ensure the accuracy of all information presented

DIRECTOR

Director-level consultants, typically found in a consulting services environment, assume a senior-level management role. As a result, this position requires a seasoned professional with outstanding judgment as well as leadership, interpersonal and communication skills. It also calls for strategic thinking, the use of decision-making authority, and taking formal responsibility for meeting business-unit goals. Candidates need strong project management experience and the ability to monitor and manage multiple initiatives concurrently, as well as excellent staff management skills. Employers often seek a master's degree, such as an MBA or other relevant graduate degree. In addition, 10 to 15 years of significant business experience, including leadership positions in consulting and project management, are typically required.

Typical duties include:

- Establishing and maintaining relations with clients' senior-level managers
- Developing overall practice strategy, tactics and goals
- Managing the consulting staff, including head count, final hiring and firing decisions, and staff development and mentoring
- Performing engagement analysis, and making recommendations and presentations to the consulting firm's senior management on new business opportunities and expansion of the firm's consulting practice and client base

PRACTICE MANAGER

The practice manager position requires extensive IT experience combined with outstanding leadership, communication, presentation, customer service, analytical and project management skills. Individuals must possess excellent business and financial savvy, as well as experience with resource allocation and profit-and-loss management. At a minimum, a bachelor's degree in business or an IT-related field is required, while an advanced degree may be preferred. Employers typically look for 10 years of IT industry experience with at least five years in a technical consulting management role. Candidates also must be willing to travel.

Typical duties include:

- Developing project scope, goals and strategic plans for delivering company products and services to clients
- Managing, recruiting, evaluating and mentoring a team of project managers and consultants
- Managing and meeting engagement booking and revenue targets
- Identifying, developing and managing client relations, in addition to meeting with client management for project support and presentations

PROJECT MANAGER/SENIOR CONSULTANT

Project managers/senior consultants need a combination of subject-matter expertise and project management skills. They must possess excellent communication, interpersonal and team leadership abilities as well as the capacity to work with cross-functional teams to accomplish overall project goals. Employers seek at least a bachelor's degree (a master's may be preferred) in computer science, management or an IT-related discipline; specific consulting subject-matter expertise; and at least five years of experience managing projects from inception to completion.

Typical duties include:

- Developing and managing project specifications, technical design and requirements
- Setting project timelines, milestones and deadlines
- Coordinating work with cross-functional team leaders and monitoring and reporting on project status
- Assigning tasks to staff consultants and supervising work

STAFF CONSULTANT

Candidates for a staff consultant position need excellent analytical, problem-solving, customer relations and communication skills, along with the ability to work well in a team environment. They must have industry-specific expertise as well as project-oriented IT experience. A minimum of a bachelor's degree in computer science, business or a field related to the area of consulting is expected. Several years of business experience plus two or more years of consulting experience — including full-cycle project implementation — also are typical requirements. Extensive travel may be required.

Typical duties include:

- Assisting with project planning and requirement specifications
- Developing prototypes and alternatives in coordination with other team members
- Executing and delivering projects within time and budget constraints
- Understanding client needs and developing and maintaining excellent client relations

SENIOR IT AUDITOR

Senior IT auditors are responsible for developing and managing complex audits of an organization's information systems. They must have in-depth knowledge of business processes as well as process controls and risks, and understand how this relates to relevant IT audit procedures. These professionals have experience working with a variety of technology platforms and must be familiar performing network, web, database and technical audits. These positions commonly require a bachelor's degree (a master's degree may be preferred) in computer science, information systems, business or a related field and an average of five years' relevant experience in IT auditing.

Typical duties include:

- Establishing objectives and procedures for audit review of computer systems
- Developing and implementing testing and evaluation plans for IT systems and controls to gauge conformity with industry standards of efficiency, accuracy and security
- Presenting written findings and recommendations to senior management
- Providing independent verification in connection with the Statement on Auditing Standards (SAS) No. 70 reporting requirements, Sarbanes-Oxley Act compliance and similar regulations

IT AUDITOR

IT auditors must have broad knowledge of the technical infrastructure and architecture of computer systems as well as exposure to a variety of platforms such as operating systems, networks, databases and enterprise resource planning (ERP) systems. These professionals must possess excellent interpersonal skills, including communication, presentation and leadership abilities. Employers typically seek at least a bachelor's degree (a master's degree may be preferred) in computer science, information systems, business administration, finance or a similar field. A certified information systems auditor (CISA) accreditation also may be required.

Typical duties include:

- Testing and evaluating IT systems and controls for conformity with industry standards of efficiency, accuracy and security
- Providing independent verification of compliance with statutory requirements and similar regulations
- Making recommendations for systems operations and process improvement
- Developing risk-based audit plans

DATABASE MANAGER

Database managers must have an in-depth understanding of all aspects of database technology. Employers generally look for applicants with at least a bachelor's degree and five years of experience in an Oracle, Microsoft SQL Server, IBM DB2 or similar environment, along with multiyear experience in a technical management position. Database managers need to be creative, analytical thinkers who can not only lead a team of database professionals, but also effectively communicate, plan information system strategy and make presentations to senior IT managers.

Typical duties include:

- Maintaining and supporting a company's database environment
- Providing input to a chief technology officer or chief information officer regarding company data standards and practices
- Developing and managing departmental budgets
- Making personnel decisions and work assignments
- Managing capacity planning, disaster recovery and performance analysis

DATABASE DEVELOPER

Database developers need a thorough understanding of relational database theory and practice. They must be analytical and adept at problem solving. They also should be good communicators. A bachelor's degree in computer science or a related field often is sought, although database experience can be substituted with some employers. Familiarity and experience with major enterprise database programs such as Microsoft SQL Server, Oracle or IBM is essential, and professional certification (Microsoft Certified Database Administrator or Oracle Certified Database Administrator, for example) in these programs is a plus. Since many web applications now interface with databases, experience in Internet technologies also is valuable.

Typical duties include:

- Developing database objects and structures for data storage, retrieval and reporting according to project specifications
- Implementing and testing database design and functionality, and tuning for performance
- Providing support to database administrators and interfacing with business users to ensure the database is satisfying business requirements
- Designing and developing back-end database interfaces to web and e-commerce applications

DATABASE ADMINISTRATOR

Candidates for the database administrator role need a strong technical foundation in database structure, configuration, installation and practice. Employers seek individuals with knowledge and experience in major relational database languages and applications such as Microsoft SQL Server, Oracle and IBM DB2. At least two years of postsecondary education is typically required. Professional certifications from Microsoft, Oracle and others also are valuable. Effective database administrators must have keen attention to detail, a strong customer-service orientation and the ability to work as part of a team.

Typical duties include:

- Managing, monitoring and maintaining company databases
- Making requested changes, updates and modifications to database structure and data
- Ensuring database integrity, stability and system availability
- Maintaining database backup and recovery infrastructure

DATA ANALYST/REPORT WRITER

Strong analytical, quantitative and problem-solving abilities are required for this position, along with a thorough knowledge of relational database theory and practice. Employers look for a bachelor's degree in computer science, information systems or a related field, plus several years of experience working with major database platforms such as Microsoft SQL Server, Oracle and IBM DB2. In addition, excellent communication skills and the ability to work both independently and collaboratively with data systems teams are required.

Typical duties include:

- Analyzing complex data systems and documenting data elements, data flow, relationships and dependencies
- Developing automated and reusable routines for extracting requested information from database systems
- Compiling detailed reports using data reporting tools such as Crystal Reports, and making recommendations based on their findings
- Working in partnership with business analysts, data architects and database developers to build data transactional and warehousing systems

DATA ARCHITECT

Candidates for data architect positions require a high level of analytical and creative skills, along with in-depth knowledge of data systems and database methodology, design and modeling. They must be able to communicate effectively in order to plan and coordinate data resources. A working knowledge of network management, distributed databases and processing, application architecture, and performance management are highly valued. Employers generally seek a bachelor's degree in computer science or a related field as well as experience with Oracle, Microsoft SQL Server or other databases in various operating system environments such as Unix, Linux, Solaris and Microsoft Windows.

Typical duties include:

- Understanding and evaluating business requirements and translating those into specific database solutions
- Creating data design models, database architecture and data repository design
- Working with the systems and database administration staff to implement, coordinate and maintain enterprisewide data architecture
- Providing leadership in establishing and documenting data standards
- Creating and testing database prototypes

DATA MODELER

Data modelers must possess excellent data analysis and problem-solving skills, and be able to both communicate effectively and work as part of a team. Employers normally request a bachelor's degree in computer science, IT or mathematics in addition to several years of relevant data management experience. Candidates should be familiar with data modeling tools and methodologies and be knowledgeable in database system applications, stored procedures and data warehousing.

Typical duties include:

- Analyzing organizational data requirements and creating logical and physical models of data flow
- Interviewing key project stakeholders, documenting findings and making detailed recommendations
- Working with database administrators and reporting teams to ensure the availability of standard and ad hoc data reporting in a production environment
- Addressing data-quality issues with clients and management

DATA WAREHOUSE MANAGER

The data warehouse manager role requires an in-depth background in database theory and practice combined with hands-on experience in data warehousing technology. Managers should have excellent analytical abilities as well as project management experience. Proficiency in warehousing tools and architecture is a must, as is technical proficiency in database languages and applications such as Oracle, Microsoft SQL Server and IBM DB2. A bachelor's degree in computer science or the equivalent, along with five or more years of experience in a data warehousing environment and three or more years in technical person-nel management, are typical prerequisites.

Typical duties include:

- Designing, developing, and maintaining data warehouses and data mart systems
- Working with database developers, administrators and managers to ensure that data systems conform to enterprise data architecture and strategy
- Developing and implementing strategies for gathering data from operational databases as well as third-party vendors for inclusion in the warehouse
- Providing leadership in managing technical resources as well as staff

DATA WAREHOUSE ANALYST

Data warehouse analysts must have excellent research, analysis and problem-solving skills, as well as good oral and written communication abilities. A bachelor's degree in computer science or a related field, along with extensive knowledge of relational database theory and three to five years of work experience in database systems, are typical employee prerequisites. Employers also seek candidates who possess experience with data modeling and architecture. A professional certification in a database application such as Microsoft SQL Server or Oracle also is valuable.

Typical duties include:

- Collecting, analyzing, mining and leveraging data stored in data warehouses
- Researching and recommending technology solutions related to data storage, reporting, importing, etc.
- Working with business analysts to translate data requirements into logical data models
- Defining user interfaces for interacting with data warehouses and data marts

BUSINESS INTELLIGENCE ANALYST

Candidates for business intelligence analyst positions need a strong background in all aspects of database technology with an emphasis on the use of analytical and reporting tools. Employers seek a bachelor's degree in computer science, information systems or engineering as well as several years of experience with database queries, stored procedure writing, and OLAP and data cube technology. Excellent written and oral skills are a must.

Typical duties include:

- Designing and developing enterprisewide data analysis and reporting solutions
- Reviewing and analyzing data from multiple internal and external sources
- Communicating analysis results and making recommendations to senior management
- Developing data cleansing rules

QA/TESTING MANAGER

QA/testing managers have an extensive background in assurance methodologies and proce-dures along with excellent written and oral communication, problem-solving, organizational and presentation skills.   Employers typically look for six or more years of experience in QA along with several years of technical managerial experience and a bachelor's degree in information systems, computer science or a related field.

Typical duties include:

- Managing a group of quality assurance analysts/testers and directing their work
- Establishing quality assurance and/or quality control policies in accordance with best practices and defining benchmarks and measures
- Preparing budget and staffing plans and recommendations
- Ensuring proper coordination and collaboration with technical teams

QA ANALYST/TESTER

Candidates for QA analyst/tester positions must have excellent problem solving skills along with keen attention to detail and outstanding written and oral communication abilities.   A bachelor's degree in computer science or a related discipline teamed with several years of experience in a QA environment are typical requirements, although work experience can sometimes be substituted for formal education.

Typical duties include:

- Developing and executing software test plans
- Identifying and facilitating issue resolution with functional and technical groups
- Managing software beta test programs
- Documenting test results

SENIOR WEB DEVELOPER

Companies hiring senior web developers seek individuals with extensive experience in all phases of the web application development life cycle, as well as an excellent understanding of customer needs and business strategy.   Candidates should have expertise in the develop-ment of multiplatform, distributed applications and object-oriented programming.   In addition, they should be adept at working in a team environment and mentoring more junior colleagues. Employers normally seek a bachelor's degree in computer science, electrical engineering or a related field, plus a minimum of five years of experience working with a mix of web technolo-gies such as AJAX, Adobe Flash, SOAP and HTML/DHTML.

Typical duties include:

- Providing creative vision and managing the planning and implementation of web-based applications
- Coordinating and communicating cross-functional activities between product development, marketing, product management and other teams in bringing new applications online
- Diagnosing and fixing bugs found by quality assurance testers
- Overseeing application coding and providing technical expertise and mentoring to other developers
- Increasing online exposure through search engine optimization best practices

WEB DEVELOPER

Web developers should have an in-depth knowledge of Internet protocols and applications in addition to a solid understanding of business strategy.   They need strong communication skills and the ability to work both individually and as part of a team.   Employers typically seek individuals with a bachelor's degree in computer science or a related field, plus at least several years of web-related experience.   Work experience can sometimes be substituted for the educational requirement.   Candidates should be well-versed in web technologies and tools such as AJAX, ASP, ColdFusion, SOAP, HTML/DHTML, LAMP and others.

Typical duties include:

- Gathering business requirements and developing specifications for web-based applications
- Providing technical assistance to web administrators
- Integrating websites with back-end systems such as databases
- Writing test plans and test results

WEB ADMINISTRATOR

Candidates for web administrator positions need a thorough understanding of web technology and the Internet. They should be experienced in working with firewalls, intranets, domain name services, servers, and the related hardware and software required to administer a website. Familiarity with web services, TCP/IP, FTP, HTTP and HTTPS, LDAP and similar Internet protocols also is required. A bachelor's degree in a computer-related field and at least two to three years of experience in a web administration role are standard requirements, although additional experience in web-related positions may sometimes be substituted for formal education. In addition, web administrators should have excellent communication and customer-service skills and the ability to work well in a team environment.

Typical duties include:

- Installing, customizing, updating and maintaining corporate internal and external web pages and sites
- Creating and analyzing reports on web activity, number of hits, traffic patterns and similar performance metrics
- Monitoring customer feedback and responding to inquiries
- Recommending network, server, and related equipment and software upgrades and improvements

WEB DESIGNER

Web designers must be creative and possess excellent design and conceptual skills in combination with an in-depth knowledge of the technology and software applications used to create web pages. They need to be familiar with HTML, XML, JSP, CSS, PHP, AJAX and similar web protocols as well as the following Adobe web page and design applications: Photoshop, Illustrator, Acrobat, Dreamweaver and Flash. The ability to multitask and adapt to changing priorities and new technologies also is essential. Employers may require a bachelor's degree in fine arts, graphic design or communications but often are more interested in three or more years of design and production experience and a strong portfolio of web designs.

Typical duties include:

- Working with design teams, marketing staff and developers to create a consistent and compelling visual style for a company's website
- Designing and formatting web pages
- Testing and troubleshooting web page features
- Creating artwork to appear on web pages

ELECTRONIC DATA INTERCHANGE (EDI) SPECIALIST

EDI specialists should have a solid background in information systems technology and a working knowledge of data communication protocols. They must be detail-oriented with excellent problem-solving skills and the ability to work independently. A bachelor's degree in computer science or a related discipline is normally required. In addition, employers typically look for several years of IT-related experience, plus three or more years with EDI system administration, design, analysis and development.

Typical duties include:

- Implementing and monitoring EDI systems, including data mapping, translation and interface
- Coordinating relations and serving as liaison to internal users, vendors and other external partners with respect to data interchange standards
- Performing system testing and quality control checks
- Developing and maintaining EDI documentation

E-COMMERCE ANALYST

E-commerce analysts must possess a strong background in Internet technologies along with excellent communication, interpersonal, analytical and problem-solving skills. They also should be familiar with business and marketing concepts and be comfortable making recommendations based on strong attention to detail and strategic thinking. Employers typically seek a bachelor's degree in business, computer science, marketing, economics or a related field of study, plus a minimum of three years of professional IT experience, including work in web-related functions.

Typical duties include:

- Analyzing business and user requirements and making recommendations regarding the design and development of web-based e-commerce solutions
- Coordinating work with web designers and other technical specialists for the implementation of e-commerce websites
- Training and mentoring colleagues on Internet strategy and best practices
- Testing and evaluating e-commerce site performance and monitoring site analytics

MESSAGING ADMINISTRATOR

Messaging administrators must be detail-oriented with excellent problem-solving, communication and documentation skills.   They should have hands-on experience working with the hardware and software components of messaging systems such as Microsoft Exchange, Outlook, Active Directory and Lotus Notes, plus BlackBerry and other handheld devices.   Messaging administrators must be comfortable in a fast-paced environment with rapidly changing technology.   A bachelor's degree in computer science, computer information systems or a related field, plus two to three years or more of experience working with the messaging systems used by the employer, are standard requirements.

Typical duties include:

- Implementing, administering and maintaining electronic mail and groupware systems, including associated servers, operating systems, and backup and recovery programs
- Troubleshooting and fixing system problems and service requests, and providing high-level technical support for unresolved help desk issues
- Formulating and documenting standard procedures for messaging system administration
- Identifying areas for enterprisewide system improvements and upgrades, including trending analysis and capacity planning
- Planning, documenting and testing appropriate messaging-related disaster recovery and/or business continuity systems

NETWORK ARCHITECT

Individuals pursuing this position need an extensive background in all aspects of networking technology. They must possess excellent written and oral communication skills along with strong interpersonal and leadership abilities. Employers generally seek a bachelor's degree in a computer-related field along with at least seven years of experience with network operating systems such as Windows Server, Novell and Cisco.   Network architects also should have experience working with routers, switches, cabling and other essential network hardware. A networking certification from sources such as Microsoft, Cisco or Novell also is highly valued.

Typical duties include:

- Assessing business and applications requirements for corporate data and voice networks
- Planning, designing and upgrading network installation projects
- Establishing and maintaining backup, version-control and viral defense systems
- Troubleshooting network architecture and making recommendations for system fixes and enhancements
- Making recommendations for leveraging network installations and reducing operational costs

NETWORK MANAGER

Companies hiring network managers seek candidates who have experience working with data and voice networking, along with an excellent operational knowledge of network hardware and software.   In addition, network managers need outstanding interpersonal, management, and oral and written communication skills, as well as the ability to multitask. Employers look for 10 or more years of experience in a networking environment combined with at least several years of experience managing technical personnel. A Microsoft, Cisco or similar professional certification also is valuable.

Typical duties include:

- Directing day-to-day operations and maintenance of the firm's networking technology
- Collaborating with network engineers, architects and other team members on the implementation, testing, deployment and integration of network systems
- Providing reports to IT management regarding network system performance, utilization and compliance
- Managing and mentoring a staff of network technicians

NETWORK ENGINEER

Network engineers must be detail-oriented and have in-depth knowledge of networking hardware and software. A bachelor's degree in computer science or electrical engineering and five or more years of experience in areas such as network design and implementation, LAN/WAN interfacing, security, Internet protocols and TCP/IP, and server and network infrastructure are typical job requirements. A professional certification, such as the Cisco Certified Internetwork Expert (CCIE), also is highly desirable.

Typical duties include:

- Engineering enterprise data, voice and video networks
- Establishing and operating network test facilities
- Maintaining a secure transfer of data to multiple locations via internal and external networks
- Working with vendors, clients, carriers and technical staff on network implementation, optimization and ongoing management
- Providing high-level support and technical expertise in networking technology, including LAN/WAN hardware, hubs, bridges and routers

LAN/WAN ADMINISTRATOR

LAN/WAN administrators need solid technical skills and experience with a variety of network protocols, software and hardware involved in LAN and WAN operations. The position requires strong troubleshooting, analytic and diagnostic skills along with good communication abilities. In addition, firms may require the individual to be on call 24/7 in case of network failures or emergencies. While some employers prefer a bachelor's degree in computer science or information systems, five or more years of work experience as well as professional certifications offered by Microsoft, Cisco and others often can be substituted.

Typical duties include:

- Administering the operation of all LAN/WAN-related network services according to company policies and procedures
- Coordinating and implementing network software and hardware upgrades
- Troubleshooting and resolving LAN/WAN performance, connectivity and related network problems
- Administering LAN/WAN security, antivirus and spam control measures

TELECOMMUNICATIONS MANAGER

Telecommunications managers should have extensive backgrounds in telecommunications practice, including hands-on experience with associated hardware and software. They should have excellent communication, staff management, problem-solving and organizational abilities. Employers generally seek a bachelor's degree in a related field along with a minimum of five years of telecommunications experience plus two or more years as a supervisor or manager.

Typical duties include:

- Overseeing a team of analysts and technicians who support a firm's telecommunications infrastructure
- Managing the telecommunications budget and analyzing expenditures for cost containment
- Evaluating equipment vendors, building relationships with service providers, and coordinating equipment installation, relocation and removal
- Researching and making recommendations to IT management related to telecommunications systems upgrades, improvements and long-range strategy

TELECOMMUNICATIONS SPECIALIST

Telecommunications specialists need a detailed understanding of telecommunications theory and practice. They should have solid technical skills as well as interpersonal and organizational abilities. Employers may seek an associate's degree in electronics or a related field but are equally interested in several years of hands-on experience with communications equipment. Experience working with the specific hardware used in the company's telecommunications system, as well as cabling and transmission test equipment, is highly valued.

Typical duties include:

- Installing, configuring and maintaining voice, data and video equipment
- Installing and testing cabling
- Investigating and resolving trouble ticket items; making necessary equipment repairs
- Resolving circuit issues
- Maintaining system logs and records

MANAGER

An in-depth background in computer operations combined with supervisory experience is required for the position of operations manager. Managers should have excellent planning, project-management and problem-solving skills, along with superior communication and interpersonal abilities. A bachelor's degree in a computer-related field or equivalent work experience are standard requirements. Firms normally seek a minimum of five years of operations experience in combination with three or more years of managing technical personnel.

Typical duties include:

- Directing and managing the daily activities of the computer operations department
- Supervising a staff of computer operators and other technicians, assigning their duties and preparing performance reviews
- Analyzing system malfunctions or technical problems and directing appropriate resolution to ensure uninterrupted operations
- Coordinating operations information and activities with other IT managers

COMPUTER OPERATOR

Computer operators need to be detail-oriented team players with good analytical and troubleshooting skills. Candidates also must possess the ability to multitask. They should have a strong service orientation and be able to maintain a flexible work schedule. Employers seek candidates with a good working knowledge of the hardware and operating system environment used by their firm. A formal postsecondary education often is less critical than several years of related work experience, although system certification is a valuable asset.

Typical duties include:

- Operating and monitoring mainframe computer equipment and peripherals
- Performing system backups
- Identifying equipment problems and initiating corrective action
- Keeping required logs and system records according to departmental procedures

MAINFRAME SYSTEMS PROGRAMMER

Systems programmers must possess experience with mainframe computer programming languages and applications development. They should be analytical problem solvers with good communication and organizational skills and have the ability to work individually and as part of a technical team. Typical requirements include a bachelor's degree in computer science or a related field, plus three to five years of progressively more responsible work experience in the development of complex systems in a mainframe environment. Additional work experience can sometimes be substituted for the educational requirement.

Typical duties include:

- Designing logic, writing code, testing and debugging mainframe computer applications
- Installing and implementing programs and upgrades
- Diagnosing and resolving system problems in coordination with other technical team members
- Documenting procedures for mainframe configuration and operation

DATA SECURITY ANALYST

Data security analysts must possess a thorough understanding of all aspects of computer and network security including such areas as firewall administration, encryption technologies and network protocols. Analysts need strong oral and written communication, analytical, and problem-solving skills, as well as excellent judgment and self-motivation. They should be able to multitask and work well under pressure. Employers generally seek a bachelor's degree in a computer-related field along with three to five years or more of practical data security experience. A professional certification such as the Certified Information Systems Security Professional (CISSP) designation also is a valuable asset.

Typical duties include:

- Performing security audits, risk assessment and analysis
- Making recommendations for enhancing data systems security
- Researching attempted breaches of data security and rectifying security weaknesses
- Formulating security policies and procedures

SYSTEMS SECURITY ADMINISTRATOR

Systems security administrators must demonstrate technical knowledge of data systems security procedures and familiarity with systems hardware and software. They should have good communication skills and the ability to work well in a team setting. A bachelor's degree in computer science or a related field plus several years of computer systems and security-related experience are typical requirements for the job, although relevant work experience can sometimes be substituted for a four-year degree.

Typical duties include:

- Creating, modifying and deleting user accounts
- Monitoring systems security and responding to security incidents
- Participating in security systems testing
- Ensuring integrity and confidentiality of sensitive data

NETWORK SECURITY ADMINISTRATOR

Individuals interested in a network security administrator position need a strong technical background, including working knowledge of network management protocols, networking architecture, authentication practices and security administration. They also should have excellent troubleshooting and communication skills. Employers typically seek a bachelor's degree in a technical field along with three to six years of relevant experience.

Typical duties include:

- Implementing network security policies and procedures
- Administering and maintaining firewalls
- Managing, monitoring and updating virus-prevention systems
- Monitoring security advisory groups to ensure all necessary network security updates, patches and preventive measures are in place
- Performing intrusion detection analysis

SOFTWARE DEVELOPMENT

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PRODUCT MANAGER

Product managers need a blend of business and marketing talent combined with technical knowledge. They should have excellent communication skills, including the ability to deal effectively with both technical staff and business/sales professionals, as well as a capacity for seeing the big picture in terms of product life cycle. Requirements include a bachelor's degree in computer science or business, plus five or more years of experience in software product management. For some positions, an MBA is highly desirable.

Typical duties include:

- Coordinating work with software engineers and developers to define product requirements
- Working with sales and marketing to define customer needs, market potential, competitive analysis and marketing strategy
- Writing product information materials to brief sales personnel on product features and benefits
- Assisting with trade show presentations of the product

SOFTWARE ENGINEER

Candidates for a software engineer position should have broad information systems experience. They should be adept at working in a team environment and possess excellent communication and problem-solving skills. Most jobs require a minimum of a bachelor's degree in computer science, electrical engineering, computer engineering or a related discipline. Several years of experience in specific programming languages, such as C#/C++, Java or Visual Basic.NET, depending on what the employer is using, also is valuable.

Typical duties include:

- Designing and creating engineering specifications for software programs and applications
- Working with quality assurance to develop software test plans
- Collaborating with hardware engineers to assess and test hardware and software interaction
- Implementing a specific development methodology
- Documenting software specifications

SOFTWARE DEVELOPER

Software developers need to be detail-oriented and have excellent problem-solving and analytical abilities. They should have good communication skills and be able to work independently and as part of a development team. Employers normally require a bachelor's degree in computer science or a similar field but may accept a two-year technical degree if combined with several years of practical experience. Equally important are programming skills in languages and frameworks such as C#/C++, HTML, Java/Java Enterprise Edition, Microsoft.NET and SQL Server. A minimum of two to three years of programming experience is a typical requirement. Complex projects may call for additional years of demonstrated achievement.

Typical duties include:

- Coding, testing and debugging programs according to computer engineering specifications
- Modifying, expanding and updating applications
- Communicating with a team that includes analysts, engineers and quality assurance testers in order to coordinate and document application development and testing
- Developing software prototypes

MANAGER

Managers of technical support services need extensive experience with supported software and hardware as well as excellent interpersonal, business management and customer-service skills. The position also requires strong leadership skills. Employers typically seek a bachelor's degree in information systems or a related discipline with at least five years of operations and support experience plus three or more years in a managerial role. Professional certifications such as the Microsoft Certified Systems Engineer (MCSE), the Help Desk Institute's Help Desk Manager (HDM) certification or experience with the Information Technology Infrastructure Library (ITIL) also are valuable.

Typical duties include:

- Managing the daily operations of a firm's help desk and support services
- Managing staff, including hiring, training, scheduling work assignments and conducting evaluations
- Monitoring response times, evaluating user satisfaction levels and making recommendations for improvement
- Evaluating and managing technical support systems hardware and software and making recommendations regarding upgrades or changes
- Negotiating, writing, and reporting on internal and external service level agreements

DESKTOP SUPPORT ANALYST

Candidates for a desktop support analyst position should have extensive experience with desktop hardware, software applications, operating systems and network connectivity. They must be customer-service oriented and proactive in anticipating and resolving problems while maximizing efficient use of computing resources. A bachelor's degree in a computer-related field and three to five years of experience installing and supporting PC and laptop hardware and software are standard requirements, although some employers are willing to substitute work experience for formal education. Additional requirements may include professional certifications from entities such as HDI (Desktop Support Technician or Support Center Analyst), CompTIA (A+ Certification) or Microsoft (Microsoft Certified Professional or Microsoft Certified Systems Administrator).

Typical duties include:

- Maintaining an inventory of installed software, managing software licensing, and creating policies and procedures for upgrades

- Working with hardware and software vendors to verify timely product delivery and ensuring that new equipment is installed and ready to operate on schedule
- Analyzing and making recommendations for hardware and software standardization
- Creating user accounts and managing access control based on company policies

SYSTEMS ADMINISTRATOR

Systems administrators should possess strong problem-solving, analytical and communication skills in addition to in-depth technical knowledge of systems hardware and software. Employer requirements vary depending on system complexity, the types of operating and network systems being supported and the size of the organization. While some employers require a bachelor's degree in computer science or a related field, others may accept an associate's degree or technical training certificate. Three to five years of experience working with the specific types of hardware and software systems used by the company are generally required.

Typical duties include:

- Installing operating system software, patches and upgrades
- Analyzing, troubleshooting, and resolving system hardware, software and networking issues
- Configuring, optimizing, fine-tuning, and monitoring operating system software and servers
- Performing system backups and recovery
- Conducting server builds

HELP DESK (TIERS 1, 2 & 3)

All help desk personnel need excellent problem-solving, communication and interpersonal skills, along with patience, a positive, customer-friendly attitude and the ability to work in a team environment. In addition, they should have a strong technical understanding of the various hardware, software and networking systems being supported. Employer requirements depend on the help desk position level. Tier 1, an entry-level position, normally requires less than two years of work experience and may require an associate's degree or completion of coursework at a technical school. Tier 2 positions typically require two to four years of work experience and may require a bachelor's degree, or a two-year degree and additional, equivalent work experience in a help desk setting. Tier 3 positions often require four or more years of help desk experience, a bachelor's degree in computer science or a related field, and/or professional certification, such as the Help Desk Institute's Customer Support Specialist (CSS) or Help Desk Analyst (HDA), A+ certification or the Microsoft Certified Systems Engineer (MCSE) designation. ➤

Typical duties include:

(Tier 1)

- Taking initial telephone or e-mail inquires and troubleshooting and managing relatively simple hardware, software or network problems that can be resolved in five minutes or less
- Recognizing and escalating more difficult problems to Tier 2 support
- Logging call activity

(Tier 2)

- Resolving more complex issues requiring detailed systems and applications knowledge. These are issues that have been escalated from Tier 1 support and may require five to 15 minutes to settle
- Using judgment and making the decision to generate a trouble or work order ticket for issues that cannot be resolved via telephone or e-mail and will require an on-site visit to the user's PC or workstation

(Tier 3)

- Researching and resolving the most difficult and complex problems that other help desk levels have been unable to resolve
- Analyzing and identifying trends in issue reporting and devising preventive solutions
- Mentoring other help desk personnel on hardware and software problem analysis and resolution

INSTRUCTOR/TRAINER

Candidates for an instructor/trainer position require a combination of in-depth subject-matter expertise plus excellent communication and presentation skills. They must be able to explain sometimes difficult technical material clearly and patiently to students of varying levels of proficiency. Candidates should be outgoing and comfortable working with diverse groups of people while maintaining professionalism at all times. A bachelor's degree in a related subject area may be preferred by some employers. Breadth of technical knowledge and one to five or more years of training experience also are required. Certification, such as a Microsoft Certified Trainer designation, also can be useful.

Typical duties include:

- Determining training objectives and developing a course curriculum
- Creating course materials, handouts, instructional aids, audiovisual materials and similar teaching aids
- Conducting classroom training
- Testing and evaluating student performance

PC TECHNICIAN

PC technicians need excellent problem-solving and customer-service skills, as well as thorough knowledge of PC hardware, software and network connections. Employers look for relevant training, which may include an associate's degree or completion of coursework through a technical school, as well as hands-on experience working with PC hardware and software. One to five years of previous experience may be required depending on the complexity of the position. Professional certification such as the A+ certificate or Microsoft Certified Professional (MCP) designation also provide important skills validation and may be a requisite.

Typical duties include:

- Installing, configuring and maintaining desktop and laptop PCs and peripherals such as printers
- Installing and configuring application and operating system software and upgrades
- Troubleshooting and repairing hardware and network connectivity issues
- Removing old equipment and performing data migration to new machines

DISASTER RECOVERY/BUSINESS CONTINUITY ANALYST

Individuals interested in a disaster recovery/business continuity analyst position need excellent analytical, organizational, communication and documentation skills. A background in project management and/or business or systems analysis, and in-depth knowledge of a business sector such as finance or securities is considered ideal. Employers typically seek five or more years of experience in IT-related positions along with several years of disaster recovery and business continuity planning experience. A minimum of a bachelor's degree in computer science or a related field is a standard educational requirement.

Typical duties include:

- Analyzing critical business functions and defining the scope and impact of disaster scenarios
- Designing, planning and implementing an enterprisewide disaster recovery plan
- Analyzing existing systems and recommending redundant, fault-tolerant solutions to ensure business continuity and duplication of all critical data
- Devising, scheduling and implementing disaster recovery tests and analyzing results
- Documenting business continuity and disaster recovery procedures, and making presentations and recommendations to senior management
- Ensuring that the firm and its data systems are in compliance with regulations such as the Sarbanes-Oxley Act, Gramm-Leach-Bliley Act and Health Insurance Portability and Accountability Act

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