NAF Principles of Information Technology

Lesson 14

Working in Information Technology

Student Resources

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Student Resource 14.1

Reading: IT Employment Overview

The types of employment offered in the field of information technology are numerous and greatly varied. Technology has become a major component of almost every industry—including finance, hospitality and tourism, engineering, publishing, and medicine—so plenty of jobs are available for people with the right education and skills.

The US Department of Labor’s Bureau of Labor Statistics reports the following median annual salaries in May 2015:

* Computer programmers: $79,530
* Computer support specialists (such as help desk): $51,470
* Computer system analysts: $85,800
* Database administrators: $81,710
* Hardware engineers: $111,730
* Network administrators: $77,810
* Software developers: $100,690
* Web developers: $64,970

Types of Employment

As an IT professional, you will have several different options for employment. You may choose to work for an IT company, designing software, managing networks, and so on. You may choose to work for a non-IT company, handling its web design, networking, or general IT needs. Or you may work as an independent consultant with a consulting firm.

**If you choose to work for an IT business**, your employer might be:

* A start-up company that is creating a new hardware, software, or networking product
* An established company like IBM that develops a wide variety of hardware, software, networking, and web products, offering lots of opportunities to move from one field to another
* A company such as Google that is constantly charting new fields in Internet and web technologies
* An established company that specializes in creating software or hardware devices specific to one particular sector, such as telecommunication or security
* A company that handles the IT needs of other customers (e.g., Internet service providers, cloud providers)
* An educational company that teaches people how to use the latest hardware and software

In this case, you need to think not only about what technologies you like and are good at, but also about the company culture that suits you best: big or small, established or start-up company, many products or just a few products.

**If you choose to work for a non-IT business,** your employer might be:

* A hospital that uses IT to manage huge databases of client records, networks that keep them connected in all sorts of ways, and computers used in cutting-edge medical technology
* A bank or financial institution that has massive databases of financial information, interactive banking for clients, very sophisticated websites, thousands of people working in IT security to keep transactions safe, and an extremely high requirement for computer system reliability
* An online business such as Travelocity or Amazon.com that uses computer hardware and software to make its business run—these types of companies have a wide spectrum of jobs for IT professionals
* Almost any major business or educational institution today that relies on computers and the Internet to function

In this case, it’s important to find the type of company that is interesting to you, both in terms of the services or products it provides and the scope of the IT department where you would be working. If you are working for a small company, you may need a broader range of knowledge and skills. If you are working at a larger company, you could work on the same project for an extended period of time.

**If you work for a consulting firm**, you could be asked to handle projects and assignments for many different companies in many different industries and locations. Usually, consultants in IT work on one project for a specified period of time, such as six months, and then go on to another project. The work is often project-based. Once the project is finished, you go on to another assignment.

Specializations within Information Technology

Once you have determined which kind of company you’d like to work for, you need to think about what kind of job you’d like to have. As we’ve already established, there are lots of possibilities out there. Here are some of the most common jobs:

**Administrator:** You can be a system administrator, a network administrator, a web server administrator, or a database administrator. Administrators are responsible for running the technical systems in an organization. They are in charge of making sure that everything is running smoothly and that the performance of the system is kept at a maximum. Tasks might include troubleshooting, software installation and configuration, securing the hardware and/or software, creating user accounts, performing backups and other administrative tasks, and possibly some programming. Administrators must maintain their system carefully, because system failure will usually result in great productivity loss for the company. Being an administrator usually requires a bachelor’s degree in computer science or a related field. As an administrator, you would play a very important role in a company and maintain a high productivity level for all involved employees.

**Programmer:** Programmers write, build, and test software programs. Some programmers write application programs, which are programs that enable users to perform a specific function. Microsoft Word is a good example of an application program. Other programmers write system programs, which are programs that control how a network, workstation, or system CPU handles its task. Sometimes programmers are called *software engineers* or *developers*. Programmers need to be detail-oriented, logical thinkers who are patient and able to work under pressure. They also need good communication skills to communicate with other team members. Most employers require a bachelor’s degree in computer or information science, although mathematics, engineering, or other science degrees may also be acceptable. Recently, employers have been expecting candidates to know C#, Visual Basic .NET, C++, and/or Java, among other programming languages. A good understanding of SQL (Structured Query Language), which is the special language programmers use to access the information in databases, is also very important. As a programmer, you would have the opportunity to create exciting new software. If you worked for a very successful company, it is possible that code you wrote would assist millions of people every day.

**Technical support:** Technical support jobs are about helping people utilize technology. This might be helping other employees with their computer systems or installing hardware for your company’s customers. Technical support can also be found in the form of online or over-the-phone customer service, where you can walk customers through problems and help them troubleshoot. Technical support jobs require expertise in areas relevant to the type of support you would be providing. As a technical support person, you could help all sorts of people reap the benefits of new technology, even people who don’t have technological expertise. This is a very good entry-level job to get some experience working in the computer industry.

**Quality assurance:** Working in quality assurance (QA) involves testing products to make sure the consumer’s experience will be as trouble-free as possible. The job involves running test situations on the product and documenting results, especially when the product fails in some way. QA work requires strong analytical skills and attention to detail. With a job in QA, you would help bring a better experience to the customers of your company. QA jobs can be in hardware or software, or in complete system installations such as servers and networks.

**Hardware engineer:** Hardware engineers research, design, develop, test, and oversee the installation of computer hardware. Such hardware may include computer chips, circuit boards, systems, modems, keyboards, and printers. A bachelor’s degree in engineering is required for almost any entry-level job in this area. Engineers need to be analytical and detail oriented but also curious and creative. They need good people skills because they often work on teams. Hardware engineers are an important part of modern innovation. Exciting applications come about more rapidly when there is newer, more powerful hardware available.

**Technical marketing engineer:** Technical marketing engineers work with the technology a company is developing in order to determine what capabilities consumers will desire most from the company’s products. These capabilities could be related to both hardware and software. A bachelor’s degree in business, marketing, or the specific technology being worked with is usually required. Relevant technical skills related to the product, such as Java or HTML for online applications, are important—as are interpersonal skills related to marketing. As a technical marketing engineer, you would assist in making new products that are relevant to consumers’ needs, instead of just making more junky products that people aren’t interested in.

**Analyst:** Analyst jobs include system analyst, networking analyst, and database analyst. Analysts help businesses determine what computers, software, types of networks, and architecture are required to get the most out of their system. They begin by analyzing what people need from their computers, and then they design a system that can do those tasks. They may draw diagrams or charts to show how the information will travel through the computer systems between people who need it. An analyst will try different tools to design the fastest, easiest, and least expensive system and then make recommendations for what computers and software to purchase or design. Once the system is planned, the analyst tests it to make sure that it works and is easy to use. Analysts usually have a bachelor’s degree in computer science, information science, or information systems management, and some also get a master’s in business. They need to have good problem-solving and logical-thinking skills. They also need good speaking and writing skills so that they can explain their system, and strong people skills because they usually work as part of a team.

**Project manager:** Project managers are generally team leaders and are in charge of creating high-quality products before a deadline. Project managers make important decisions regarding priorities, schedules, and workload and make sure that their team is working quickly and effectively. A bachelor’s degree is generally required, along with experience with the type of product you will be working with. Good communication skills are a must, because you must work with your team and with nontechnical employees in other departments of the company. Being a project manager means having a big responsibility, but it is still a sought-after position because it is well paid and represents advancement in the company.

**Web developer:** Web developers make websites by laying out how words and art should appear on a computer screen. They also need to make sure that a website will appear correctly on a variety of different platforms, including mobile devices, and they test the site to make sure it’s easy to use. They make sure the site will load quickly, they update the site, and they fix anything on it that breaks, such as a link that doesn’t work. They may also be in charge of deciding what kind of technology they will use for the website: the server, the software, and so on. They need to know several different types of software and should be familiar with HTML, CSS, and programming languages like JavaScript and PHP. Some web developer jobs will be available to people with an associate’s degree, but for the more complicated jobs, the higher-paying jobs, or the supervisory jobs, a bachelor’s degree is needed. As a web developer, you can help offer a more exciting experience to your website’s visitors.

**Technical writer:** Technical writers work at large original equipment manufacturers such as IBM, Hewlett-Packard, and Cisco, or at software companies such as Microsoft and Oracle. Technical writers develop everything from user guides and white papers to marketing materials. Many large computer companies, including Microsoft, Cisco, and HP, offer courses and exams that people take to become certified to work with their products. Technical writing teams develop the courseware and exams used for that certification training. As a technical writer, you would be producing documents that other people would learn from, so your ability to communicate clearly is very important. You need good writing skills and must be able to work well on a deadline. Most technical writers have a bachelor’s degree in business writing or English. A job as a technical writer often leads to other jobs, such as trainer, editor, or project manager.

**Chief information officer (CIO):** The CIO is responsible for guiding a company’s information technology department. The CIO may also be called the chief technical officer, vice president of information technology, or director of information technology. The CIO is part of a company’s senior management and may be a corporate officer; the CIO usually reports directly to a company’s chief executive officer (CEO), which is an indication of how important this position is.The CIO’s job is very demanding and requires long hours, although CIOs are also very well paid. A CIO needs strong strategic thinking and planning skills, a solid technology background, good leadership and managerial skills, strength in decision making and negotiation, and effective communication skills. Almost all CIOs have bachelor’s degrees, and many have MBAs or other advanced degrees. They also have significant experience in the IT field.

Getting Started

Any career in information technology requires basic computer skills and competencies. In addition to taking IT courses, you can get a part-time job or an internship or even volunteer your computer skills to build experience. Many IT companies offer internship programs, and many non-IT companies need help with their computers. Learning a programming language or another skill on your own is also a very good use of your time. For example, you can go to the Oracle Corporation website at <http://docs.oracle.com/javase/tutorial/java/index.html> and take a free tutorial on Java programming or JavaScript. If you don’t have access to a computer, ask your teacher to help you find places that have public access to computers.

To really succeed in IT, a bachelor’s degree is becoming a minimum expectation, and in many cases an advanced degree is necessary to reach the top jobs. A bachelor’s degree in computer science or a similar field will require strong math skills. Strong math and science grades in high school, not to mention good grades in your NAF academy classes, will help you get into a good college program, which in turn can help you get the right internship or entry-level job to start you off in the information technology industry.

Microsoft and other companies offer **certification** and advanced training on their products. A Microsoft certified technician, for example, may earn a certificate for advanced training and troubleshooting of Windows 2012 server software. A company that hires you may send you to certification schools to get specific training on the tools that it uses. See <http://www.microsoft.com/learning/en-us/certification-overview.aspx> for more information about Microsoft certifications.

Student Resource 14.2

Wish List: Interesting Jobs

Student Name: Date:

Directions: Using Student Resource 14.1, Reading: IT Employment Overview, write down at least three jobs that you read about that you might want to do. Then write down why the job interests you, and include at least two or three examples of skills, knowledge, and personal characteristics a person needs to have in order to succeed in that job.

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| --- | --- | --- |
| Job Title | Why It Interests Me | Skills, Knowledge, or Personal Characteristics Needed |
| Movie producer | I’d like to work with actors and actresses and manage shooting schedules. | * Have extensive professional training in movie production * Experience working with actors |
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Student Resource 14.3

Reading: Sample Entry-Level Resumes

Diego E. Martinez

72 Maple St.

Houston, Texas 77001

281-555-0098

d.e.martinez@gmail.com

Education

Houston City High School Houston, Texas

* Currently at the end of 9th grade
* 3.0 GPA

Microsoft Office Word Certification, May 2016

Paid Work Experience

**Camp Counselor**

**Little Learners Camp** June 2015 to August 2015 Houston, Texas

* Taught art, music, and physical activity programs to 10-year-old day campers

Volunteer Work Experience

**Houston Homeless Shelter** September 2015 to present Houston, Texas

* Maintain database that contains contact information of volunteers who are available to help with shelter activities
* Wrote a how-to guide for other people who use the database

Extracurricular Activities

* Community Service Club September 2015 to present Houston, Texas

Skills and Knowledge

* Design and develop database applications using Microsoft Access
* Proficient with Microsoft Office Word, Excel, PowerPoint, Windows 8
* Communications: Excellent writing abilities; trained in active listening

Maya Jackson

723 Main St., Ventura, CA

(805) 555-2233

Maya.Jackson89@gmail.com

Education

King High School, Ventura, CA

* Currently in 10th grade; 3.05 GPA
* Member of National Academy Foundation's Academy of Hospitality and Tourism
* Coursework includes Principles of Information Technology, Event Planning, and Hospitality Marketing

Volunteer Work Experience

**Ventura County Library** July 2015 to present

* Assist in shelving books
* Help clients use online resources

Athletic and Academic Activities

* Co-Captain, King High Girls’ Soccer Team
* Member, Ventura Teen Long-Distance Running Club
* Co-Chair, King High Debate Club

Awards and Honors

* High School Girls’ Soccer Championship for Ventura County, 2015
* Honorary Mention in Southern California High School Science Fair, 2015

Information Technology Achievements

* Designed a website for the King High Debate Club
* Proficient with Microsoft Office, Photoshop, Mac and PC platforms

Qualities

* Driven, ambitious, and energetic

Jillian Rose Hoff

96 #3 Sunny Way, Miami, Florida 33114

(305) 555-9990

Jillian\_Hoff@yahoo.com

Education

Valley High School, Miami, Florida

* 4.0 GPA
* Coursework includes AP Computer Programming

Volunteer Work Experience

**Miami Children’s Hospital** September 2015 to present

* Assist elementary school children who are patients with online learning program
* Set up computer game stations in the hospital

Activities

* President, Valley High Robotics Club
* Member, Florida Students’ Computer Gaming Association
* Treasurer, Valley High Mandarin Language Club
* Member, Valley High Girls’ Water Polo Team

Awards

* Valley High Excellence in Science Award, 2016
* Second Place in the Florida Teen Robotics Competition, 2015
* Regional Water Polo Player of the Month, October 2014

Computer and Language Skills

* MS Office (Word, Excel, PowerPoint, Outlook); Windows 8, Windows 10
* Programming languages: Python, Java, .NET, HTML
* Proficient in web design
* Conversational Mandarin

Student Resource 14.4

Writing Guide: Resume

Student Name: Date:

Directions: Now that you’ve analyzed sample resumes, it’s time to write your own resume. You can update your resume each semester during high school and use it when you apply for any volunteer positions, when you apply for an internship, and when you apply for a job. You will want to include all of your relevant skills and experience. Follow the steps below to create your resume—and read through all of the steps before you get started. As you work, you may wish to reference the sample resumes in Student Resource 14.3 for ideas. Make sure that your resume meets or exceeds the assessment criteria provided at the end of this assignment sheet.

Step 1: Set Up Your Document

An easy way to create a resume with good formatting is to use a Microsoft Word template that is designed for a resume. Your teacher will give you instructions about where to find the template when you open Word on your computer. It’s important to save your resume on a flash drive or a CD that you keep in your possession. You will continue to add information to your resume each semester as you gain more experience and skills.

Step 2: Organize the Content of Your Resume

Your resume should include these sections:

* **Contact Information**

Your name, mailing address, email address, and phone number should be listed at the top of the page. Use an appropriate email address—something businesslike and easy to understand, not [cooldude09@yahoo.com](mailto:cooldude09@yahoo.com).

* **Objective**

If you have specific career interests or skills you want to develop, you can start your resume with an objective, but this is not mandatory. Your objective should give potential employers information about the type of work you want. Setting an objective can also help you focus on the best information to include in your resume.

* **Education**

Give the name and location of your high school, what grade you are in, your GPA, and relevant coursework, or courses that match your future goals. In this section, include membership in your National Academy Foundation academy as well as your specific coursework.

* **Experience**

List your work experience. Begin with any paid relevant work experience you have, and then list your volunteer work experience. List your work experience in chronological order, from most recent to least recent.

List the name of the employer, the city and state in which the employment occurred, your title while employed (if you had one), and the dates of employment in a month and year format.

Under each job, use one or two bullets to describe your accomplishments during the job. Begin each bullet with an action-oriented word. For example, instead of “Was asked to enter clients’ contact information in an Excel spreadsheet,” use “Entered client data in Excel spreadsheets.”

* **Activities, Honors, Skills, Achievements, and Qualities**

Following your work experience, include additional information that makes you a good candidate for a job or an internship. Consider the following:

* + List community service, extracurricular, athletic, or academic activities that say something relevant about you. For example, if you were on the football team, you are showing that you are willing to work hard, put in the practice, and be part of a team; most jobs would require these qualities in an employee.
  + List honors or awards you have received.
  + List special skills that you have, such as speaking another language or being proficient in computer programs, like Microsoft Excel or PowerPoint.
  + List specific information technology achievements that show your commitment to a career in IT, such as your work on your culminating project.
  + List personal qualities that make you stand out, such as being energetic, ambitious, or compassionate.

Step 3: Format Your Resume

* Keep the length to one page. Two- and three-page resumes are standard for experienced job seekers, but high school student resumes should be short.
* Make the resume easy to read and visually appealing. Use a resume template, and keep to the standard fonts, colors, and font sizes. Always use bullet points to highlight your accomplishments.
* If you are printing your resume, use standard 8.5″ x 11″ white paper.
* If you are submitting your resume electronically, save your Word file as a PDF. This ensures that the formatting doesn’t look different on someone else’s computer.

Step 4: Focus on Clarity, Detail, and Language

* Be sure that the information you include is relevant to the internship or job for which you are applying. For example, if you are applying for an internship with a web designer, include experience that you’ve had writing your own blog or taking photographs.
* Be specific as you describe your responsibilities and accomplishments. For example, instead of writing “Helped friends with computer issues,” write, “Assisted friends and family setting up home networks and connecting to wireless printers.”
* Use action words to describe your accomplishments. (Consult the list of action words in this assignment sheet.) For example, instead of saying “Did user surveys for nonprofit organization,” say “Assisted humanitarian organization by recording client survey data in an online database.” The word *did* doesn’t say much about you as a candidate, but the action word *assisted* shows that you are helpful, responsible, and able to follow directions. Action words say more about your abilities.
* It is standard on resumes *not* to use complete sentences to describe your accomplishments. So, instead of using “I created a program,” use “Created a program.”
* Write out numbers from one through nine; use numerals for 10 and up.
* Informal abbreviations, such as *AKA*, are inappropriate on a resume. However, it is acceptable to use abbreviations commonly used in the IT field. For example, instead of writing out “information technology,” it is acceptable to say “IT.”

Step 5: Review Your Resume

* Check, and then double-check, the spelling and grammar on your resume. When you submit your resume to a potential employer, it should be squeaky clean. A small oversight, such as a missed period or a misspelled word, will stand out to an employer. Employers may see these errors as an indication that the candidate does not pay attention to detail.
* Ask someone you trust to proofread your resume. Ideally, the person will have some experience creating resumes and can not only check for spelling and grammar errors but also offer suggestions about how you present your accomplishments. You may wish to show the person this assignment sheet to use as a guide to make sure that you’ve covered all of the important topics.

Resume Action Words

Use this list of action words to help you describe your accomplishments. It’s important to be specific in your descriptions. For example, when describing your culminating project work, instead of writing “Made a presentation about a dream technology system,” you might write “Led a team that handpicked the best components, and presented our design to a professional audience.”

accomplished

encouraged

offered

rewarded

achieved

facilitated

organized

saved

aided

figured

overhauled

selected

analyzed

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oversaw

served

assisted

formed

participated

shaped

built

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carried out

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solved

challenged

guided

planned

spoke

chaired

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prepared

strengthened

communicated

identified

presented

studied

completed

illustrated

produced

summarized

conducted

improved

promoted

supported

constructed

inspired

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reported

viewed

displayed

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represented

visited

distributed

met

resolved

won

documented

modeled

responded

worked

drafted

narrated

revised

wrote

Make sure your resume meets or exceeds the following assessment criteria:

* The resume includes relevant experiences and education. It communicates why you are a great candidate for a volunteer position, internship, or job in the IT field.
* All information on the resume is accurate and complete. The email address is appropriate.
* Appropriate action words are used to describe accomplishments.
* The Word template is used to design the resume effectively on one page. Sections are easy for the reader to identify, and all information is easy to follow.
* The completed resume is neat and uses proper spelling and grammar.