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7-1 Information Technology Survey

Information technology can be grouped into four major fields. Computer science, Information systems, Information technology and engineering. All disciplines are important and must communicate in order to continue the advancement of the entire field. In this survey I will be exploring each one and going over some career paths with-in them. I will also be briefly covering programing and scripting and the uses of it within the mentioned fields. Lastly, I will choose three specific careers and examine them in detail. The first field I will be exploring is computer science.

Computer science can be defined as “the Study of the principles and use of computers”. (Oxford, 2022). Obviously, this is an infinitely broad definition. Computer science is one of the more mathematical oriented subsets. It focuses on theory, project management, writing, design and the HCI component. Computer scientists work with software and deal with complex algorithms. They also study the performance of hardware and software. Most individuals in computer science become programmers or software developers, but there are many more career paths. Some of them include QA/ Test engineer, UX researcher, Product Manager, Data Scientist, Web Developer and Database Administrator. Tools related to the field include compilers, interpreters, assemblers and debuggers.

Information Systems is also a relatively broad field. Davenport.edu states “A computer information systems degree applies practical knowledge and methods to a broad base of computer information technologies to meet the digital information needs of organizations”. Information systems professionals mostly focus on business related integration. Computer science and Information systems share some overlapping career paths. For example, Software development, Database Administrator and Web Developer. Some common career paths are Computer Support Specialist, Computer Systems Analyst and Business Analyst. The tools used are similar to the ones used in the Computer Science field, but you may end up specializing in ERP programs such as SAP or Sage due to the business aspect of this profession.

Engineers within the IT field mainly focus on software development, hardware or network engineering. Engineers are more closely related to Computer Scientist due to programing and scripting being a major component of the educational path. Engineers can be responsible for designing and installing hardware configurations, maintaining network security, training staff and much more. Some of the more common jobs would be IT engineer, Network engineer and Software Engineer. Some tools you will use as an engineer are related to both Computer Science and Information Systems, however in Engineering you may focus more on hardware components.

Information Technology is another very broad field. IT mainly focuses on how computing can be used to improve business, research or communications. There is also an emphasis on HCI, like Computer Science. While studying IT you will be exposed to some aspects of all the fields mentioned, and all of these overlap in some way. Common careers within IT are IT project Manager, Software Developer, Business Systems Analyst and Technical Architect. Because IT is so broad, it’s hard to define what tools would be required. However, one could assume all the tools mentioned previously could be utilized.

Programming and Scripting are different in a couple of different ways. A program is a set of instructions for communicating with computers. Programs are generally complied and run .exe files. Examples of Programing languages include Python, C, C++ and Java. Scripting is a programing language that dictates the behavior of a program. Most scripting languages are interpreted, and they operate within a program. Some examples of scripting languages are JavaScript, Perl, and PHP. Programing would be used within IT to create a program or multiple programs which can be used to create software. As an example, an OS is software consisting of many programs. Scripting would more than likely be used to enhance some programs. As an example, a web developer would most likely use Java Script to create interactive components of a website.

Personally, my interests align with the cyber security field. In my opinion, this is most aligned with computer science because of the focus on research and testing. An entry level position would be an information security analyst. Some responsibilities include monitoring networks, finding vulnerabilities in networks, proposing security practices and educating employees. CompTIA security+, Cloud, and network would be recommended. Having experience in COBIT, NIST, OWASP, CIS, MITRE ATT&CK would also be helpful. Job posting listed below

<https://www.indeed.com/viewjob?jk=98b636d37edb60ae&tk=1gjnoltju2f38002&from=serp&vjs=3>

A mid-level position would be a penetration tester. As a pen tester, your role is to attempt to infiltrate a network and then provide a report, then you must provide security recommendations to improve it. You may also respond to attacks or assist in the handling of it. Also, an understanding of programing and scripting is required. Some certifications include CEH, CompTIA PenTest+ and GPEN. Tools required would be Nmap, Nessus, Metasploit, BurpSuite, Nilto and Tcpdump. Job posting listed below

<https://www.indeed.com/viewjob?jk=34be20814ffd2704&tk=1gjnpntuiii0o800&from=serp&vjs=3>

Finally, a Chief Information Security Officer or CISO would be my goal. As a CISO your roles are to hire and maintain a security team to protect a network or company. This position requires mastery of all the mentioned skills and the ability to manage large projects and a large team. Certifications are not relevant for this position. It focuses on work experience and management skills. I would imagine references from previous employers are crucial. One could assume after the 15 years of experience required, you should have every certification related to the field. Job posting listed below.

<https://www.indeed.com/viewjob?jk=e19f9e96ed706a4d&tk=1gjnq4a1nirmt801&from=serp&vjs=3>