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**What is Computer Engineering?**

 Who loves technology? Without technology many of us don’t know where we would be today. Technology has been an innovating every day for many years and it doesn’t occur by itself but because of computer engineers constantly coming up with ideas to improve technology every day. Computer Engineers design both hardware and software of different computers such as mini, micro, super, and mainframe computers. This essay will be about what a computer engineer does, what you have to do to in order to become a computer engineer, and a computer engineer’s average salary.

 A computer engineer does many things such as design the hardware and software of different computers such as mini, micro, super, and mainframe computers. Computer Engineers also does programming into computers. Programming is the action or process of writing computer programs. This quote explains what computer engineers do with hardware and software. “Computer engineers work with hardware and software, ensuring that the two are seamlessly integrated and functioning properly” (Green Peace, 2014). To elaborate on the quote, designing hardware and software of a computer is a difficult and long process. When a computer engineer designs hardware, it takes months of preparation because a plan is needed in order to build the hardware. A computer engineer draws up the idea of the hardware and then gets the materials required to make the hardware. Drawing up the idea and building a sophisticated piece of hardware may take months of work. Examples of hardware are CD/DVD drives and hard drives. A computer engineer can also design software, and software is the programs that are in your computer such as Microsoft Word or Excel. Designing software is similar to the same process of designing hardware. Planning and building is what is done for both hardware and software.

 There are many different kinds of computers such as mini, micro, super, and mainframe computers that computer engineers work with. Each computer has its own capabilities and functions for what it is meant to do. The definition of a microcomputer is defined as, “A microcomputer is a computer that can perform all of its input, process, output, and storage activities by itself” (Alamo, 2008). Examples of microcomputers are your phones and laptops. The definition of a minicomputer is defined as, “A minicomputer is often used in situations where a microcomputer is not powerful enough but a mainframe is too expensive” (Alamo, 2008). Examples of minicomputers are about the same as a microcomputer. The definition of a mainframe is defined as, “A mainframe is a large, expensive, but powerful computer that can handle hundreds or thousands of input/output operations” (Alamo, 2008). An example of a mainframe is a computer that looks like a refrigerator. Mainframes are really only used in corporate industries and government agencies. The definition of a supercomputer is defined as “A supercomputer is the fastest, most powerful, and most expensive computer used for applications that require complex and sophisticated mathematical calculations” (Alamo, 2008). The supercomputer is a larger version of the mainframe. As you can see, these are the vast majority of computers engineers work with.

Computer Engineers lastly program computers. An example of programming is given in this quote “With strong knowledge of programming languages, processes and procedures, programmers write and debug the source code of computer programs” (Green Peace, 2014). To elaborate on the quote, programming isn’t easy because it takes a lot of time and patience to work with. Computer Engineers must type up codes and commands in order for the computer to act the way the engineer desires it to work, but programming is very detailed and clear-cut. Programming is case-sensitive, requires a specific amount of indentation on every line of code, and requires the understanding of conditional statements. As you can see, computer engineers do many things such as the design of hardware and software of different computers, and programming.

 In order to become a computer engineer, there are four steps to be done. The four steps are stated in this quote, “1 EARN AN ASSOCIATE’S DEGREE (OPTIONAL: TWO YEARS) 2 EARN A BACHELOR’S DEGREE (FOUR YEARS W/O ASSOCIATE’S DEGREE) 3 ADVANCED STUDY (OPTIONAL, BUT SOMETIMES REQUIRED FOR HARDWARE ENGINEERS) 4 SPECIALIZE AND GET CERTIFIED” (Green Peace, 2014). It is required that you obtain an associate’s degree, and then a bachelor’s degree in computer engineering. You should also know what courses you will be taking in order to obtain the degree, “To become a computer engineer, an interest in math, science, physics and, of course, computers are imperative. It’s also necessary to be a strong communicator” (Green Peace, 2014). If you are interested in any or all of the three subjects, computer engineering may be a strong suit for you. You would also have to take major courses such as stated in this quote “Microcomputer Systems Technology, Electrical Networks, Analog and Digital Electronics” (NYCCT, 14’-15’). The third step is optional for advanced study to obtain a master’s degree or Ph.D. in the field; it is up to you if you want to learn more. The last step is to take the (PE) Professional Engineering Exam or be certified in either hardware or software systems. In order to become a computer engineer, you can follow the four steps but it will take much dedication and hard work to become a computer engineer.

 A computer engineer’s average is “The average salary of a computer engineer in USA is $89,000 per year (2013), which is 97% higher than the average U.S. salary” (Unknown, 2014). Yes, a six figure salary is possible in the career of a computer engineer. This plays a major role in why most individuals want to become a computer engineer, however there are five factors that contribute to how much one can make in a year. The five factors are location, experience, performance, education, and employer. Location plays a role in how much you can make because it depends on the companies within the area that need computer engineers. Experience is another factor because the more experience you have, the easier the job will be for you so it affects your salary. Performance is another factor because if you work quickly and efficiently, it will affect your salary. Education is another factor because you have more knowledge in the field which means you can get solve problems and obtain solutions easily which affects your salary. Your employer is another factor that affects your salary because there are many companies such as Apple, IBM, Microsoft, Intel, and more that are willing to pay higher salaries for experienced computer engineers. Another quote that supports how much computer engineers get paid is that “A latest research found that new college graduates can earn an average salary range of $56,000 to $71,000 per year” (Unknown, 2014). As you can see, students coming right out of college can easily start making $56,000 to $71,000 starting.

 In this essay, you can see what a computer engineer does, what you have to do to become a computer engineer and a computer engineer’s average salary. Computer engineering is a great field to get into because the job growth opportunity is increasing rapidly because technology is developing rapidly and changing, so computer engineers are in demand to keep up with technology. If you are fascinated in computers and wonder how they work, computer engineering is the field for you.

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