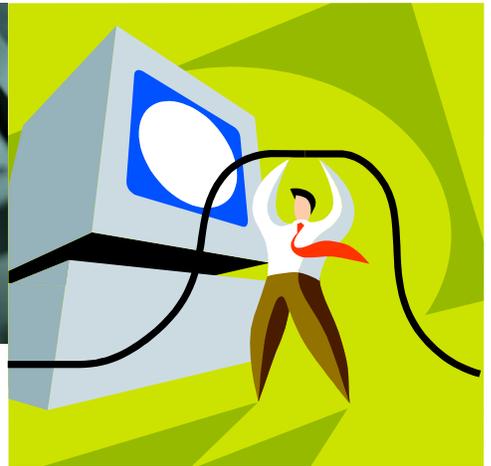


Computer Programmer: My Career After High School

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Culminating Activity
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This assignment is a description of my projected career after the completion of Secondary School.

Culminating Activity
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Job Description

By the age of 34, I hope to be well established in the field of software engineering. Individuals who are able to write elegant and effective computer programs are increasingly necessary in our era of rapid technological advancement. Software design is the interpretation of software based needs as well as the design and implementation of programs which satisfy those needs. As a Software Engineer or Programmer, these tasks would be the core duties of my work.

There are considered to be two major categories of Software Programmers. These are Applications and Systems Programmers. While Applications Programmers write programs which accomplish specific tasks, Systems Programmers work with the entire architecture of a computer system to make sure all operations will run smoothly in conjunction with each other. Although I am considering becoming either of these types of programmers, I feel somewhat inclined to become a systems programmer. This is not only due to the fact Systems Programmers are usually paid more, but also I would prefer to metaphorically conduct the system's software into harmonization rather than compose the applications themselves. Whether I will be an Applications or Systems Programmer, I wholly enjoy the prospect of needing to work with both computers and people.

Although programmers must be very familiar with numerous programming languages as well as the process of software design, there are also other personal qualities which they should possess. I am fond of the fact Computer Programmers are expected to be very logical thinkers while at the same time very flexible in order to write creative programs for problems. The combination of the duties and necessary skills in this field of work is what draws me to the occupation of Computer Programmer.

Education and Training

After the completion of Secondary School, I plan to attend university where I will major in Computer Science or Software Engineering as well as minor in Business. I plan to take courses with work placement programs. During the final year of High School, I will apply for both the University of Toronto and University of Waterloo. I have selected the University of Toronto due to its positive academic reputation as well as its close proximity, which would allow me to forgo the need to find a residence as I could remain with my parents for the time. Similarly, I chose the University of Waterloo for its highly developed Mathematics and Computers Department. Also, although not as local as the University of Toronto, the University of Waterloo is still reasonably near Toronto, permitting me to visit family during special occasions without too much trouble.

Before I even apply for these universities, however, I need to ensure I have completed the appropriate Secondary School courses for my desired education path. Not only do these courses include the obvious Computer Science courses, but also senior Mathematics, Sciences, and possibly Business courses. In the eleventh grade, I plan to take the Functions course offered by the Mathematics department along with the Physics and Chemistry courses done by the Science department. On top of this, I will also take the Computer Science, Entrepreneurship, Marketing, and Financial Accounting courses which will prepare me for a future of software engineering that may be spent working for a business. All of these courses will permit me to advance to the twelfth grade levels in these subjects.

Initially, I plan to take Computer Science or Software Engineering courses at the undergraduate level. These courses would earn me either a Bachelor of Software

Engineering, Bachelors in Computer Science and Mathematics, or a Bachelor of Science. This process generally requires four years of study in a university. Upon receiving my Bachelor's Degree, possibly even immediately after, I would work to acquire a Master's Degree in the same area of study. This would require anywhere from one to three more years of university. Later in life, I may also eventually strive for a Doctorate in order to advance in my career. Doctoral degrees usually require from four to six years of work to receive. It should be noted, however, my selected schools offer Doctoral programs for Computer Science and not Software Engineering. If I am accepted into one of my desired universities and follow the path previously outlined, I can expect to be in university a total of no less than nine years.

Other than computer-related courses, I would also take Business courses. This is due to the fact that it is very important for people in the field of software development, the area I wish to go into, to be educated in other subjects as clients prefer programmers who are more familiar with their needs.

In spite of already being difficult enough to independently support oneself, university tuition is quite expensive. Taking the full five to seven years necessary to acquire a Master's Degree from Software Engineering would have a total cost in excess of \$50,000. This is as the first year costs \$10,220 with Co-op and the tuition for Computer-based courses is known to increase exponentially afterwards. Also, the Master's program would surely be much more expensive. By comparison, a Master's degree in Computer Science with Co-op would most likely cost over \$40,000 with first-year tuition being approximately \$7000. Although these costs may be challenging to meet, the money earned from taking courses with Co-op should help offset them.

Cooperative education will not only allow me to earn money while I learn, but also give me valuable work experience which may prove to be very important later in life.

In closing, I hope to be able to attain my goals in education. This is as education is immensely important in the advancement of a person's career. With my continued education I hope to become very well established in my future occupation.

Special Skills Needed

Several personal qualities are essential for Computer Programmers and Software Developers. These include a logical and creative mind as well as the ability to focus on a task for hours at an end. When interpreting the needs of a client, a programmer would have to possess strong communication skills as well. These skills are part of a person and can not be learned easily. I believe I am able to think quite logically in addition to having a flexible mind with which to create innovative programs. This can be seen with my high grades in my Computer Science course. Also, I believe I am well along in the way of being able to focus for an extended period of time which can be proven with my capability to complete assignments well before their due dates. Finally, although I am proficient in the writing of formal reports, I become somewhat nervous when presenting to people I do not know. As I progress in Secondary School I hope to improve my verbal communication skills.

Past these personal qualities, a programmer must also be very familiar with the process of software design. This process can be broken into its basic components of analysis, design, implementation, and testing. In the analysis phase, a programmer may have to meet with his or her clients in order to interpret their needs. It is here where good communication skills are crucial. The design stage involves planning out the program

before writing the code into the computer. Implementation is the actual programming of the software. After this has been completed, the programmer would then test the program to ensure it is able to complete its function. If the program passes testing, it may then be ready to be released. If the program fails testing, it goes through a process called “debugging” where the programmer attempts to correct any problems in it and then test it again. This cycle would repeat itself until the program finally meets its expectations.

Other than a sharp mind and good computer skills, programmers are often also skillful in another field of work. This is as clients will opt for a programmer who is knowledgeable on their respective areas of work. An excellent example of this would be a client who requires software for a database. If the programmer has a certification or experience with business administration and data mining, he or she would have a greater chance of being hired. This is the reason I plan to take business courses in High School and university to become more educated about the world of business.

Community Involvement and Cooperative Education

To receive their Ontario Secondary School Diplomas, High School students must complete a minimum of forty community service hours. To date, I have accumulated six hours. These were from assisting Mme. Bomms, the head of our French department, with the year-end recycling bin collection. Essentially, this involved gathering every blue recycling box in the school, emptying their contents, power washing them, and finally placing them into storage.

I plan to acquire my remaining thirty-four hours of community service during the coming summer. This is as I would not have school-related commitments to worry about,

thus freeing up my schedule and allowing me to focus more of my time on my community service requirement. I would prefer doing volunteer work which involves the heavy use of both my communication and listening skills. This is because of the need for a programmer to effectively discuss the requirements and specifications of programs with clients. On the Volunteer Opportunities board in our school, Earl Haig, I have noticed a request for volunteers to help in BuskerFest, a festival to raise money and awareness on epilepsy, in positions such as surveyors. These positions interest me as they entail the utilization of the previously stated all-important communication skills.

In university, I plan to take courses using cooperative education. Cooperative education possesses several advantages over a conventional education. This includes the accumulation of work experience, which employers look for, as well as the possibility to network. It will also not only give me a taste of what it is to be a Computer Programmer, but also permit me to earn money as I learn. Although taking a course through cooperative education is more expensive than without, this much needed cash flow would help to counterbalance the tuition costs as well as support myself after leaving Secondary School.

In spite of the appeal of postsecondary cooperative education, I do not believe I will take cooperative education at the High School level. This is due to the fact my projected timetable for the coming years is already full with other, more essential, courses such as Computer Science.

In closing, I hope my future volunteer and educational choices regarding the previously stated subjects will assist me in my goals in life, especially in becoming a Computer Programmer.

Earnings and Working Conditions

According to the Career Cruising website, the average annual earnings of an entry-level programmer are between \$35,000 and \$45,000. In spite of this I chose to use the estimate by the online salary database, PayScale, of greater than \$70,000. This was as PayScale contains more recent information and takes into account different factors such as education and location instead of giving a general number as Career Cruising does. When using PayScale to find my salary estimate, I assumed I would be a well-educated programmer fresh out of university with a Bachelor of Computer Science.

From the previous budgeting assignment, in which I created a budget for my projected earnings in the future, I believe I will be able to sustain a comfortable lifestyle. This was assuming I would make approximately \$72,000 a year, around the PayScale estimated average. My projected budget was calculated using an excel spreadsheet which has been included in this assignment.

Other than the salary, it is also important to think of the working conditions I will face in my selected occupation. The Career Cruising website describes the number of work hours in a week to be reasonable at forty to fifty, although programmers often need to work late in order to meet strict deadlines. While I would prefer not to need to do this, I do not have any major objection to working longer hours from time to time, so this would not be a problem. What may be a problem, however, is the negative effects sitting in front of a computer for long periods of time can have. This can put strain on my neck, back as well as eyes not to mention the problems attributed to a lack of physical activity. To help prevent this, Career Cruising suggests taking short, frequent breaks throughout the day. Healthy eating and exercise at home will also help prevent these problems.

Job Satisfaction and Job Stress

It has been said not only should a person consider their pay when selecting an occupation, but also if that person is happy with doing it. In my future occupation as a Computer Programmer, I believe I would feel a sense of accomplishment when I program I helped to write is released to the public. I would feel good in creating something new in order to make people's lives more convenient. Also, the frequent use of creative thinking needed for this job would keep my mind in shape. Studies have shown that regular mental exercise can reduce a person's chance of developing certain mental illnesses such as Alzheimer's disease. In essence, there is nothing which gives me more satisfaction than a strong intellectual workout such as the one I believe this occupation will give me.

In spite the fulfillment this field of work may bring me, like every other occupation, it is not without its stresses. For example, at times in order to meet deadlines, a programmer may be required to work long and irregular hours. As I would be paid on a salary, there is a chance I will not be able to receive overtime for any extra hours I put in to finish a project. Also, continually doing this could lead to a lack of sleep which can cause sluggishness at work, grumpiness, and even some more serious medical conditions. Furthermore, it would be quite frustrating if I am unable to write an effective program to meet a task, especially if it was due to a lack of sleep. I have a tendency to fret excessively over something I do not know, even to the point of not being able to think of anything else until I find a solution. In taking the occupation of Software Programmer, I would have to be ready to meet these challenges and endeavor through.

In conclusion, I will have to accept both the satisfaction and stresses of my future career as a Computer Programmer.

Future Trends or Self-Employment Opportunities

In a few short decades, our society has seen computers evolve from hefty impractical contraptions to an indispensable aspect of our lives. This causes me to wonder what changes the near future has in store for the field of software design. I believe as hardware becomes smaller and more powerful, the software which runs it must also keep pace. A need would be created for educated people who are able to invent more efficient and powerful programs for the new hardware as computers continue to become a more intricate component of our lives. I believe this trend would create more employment opportunities in both the hardware and software sectors of the computer industry, the latter of which I wish to join. Also, during the Career Fair, the Chief Information Officer present stated people with years of experience in the Information Technology department of a company, which can include Software Developers, can become a CIO. He then stated the CIO of a company often advances to become the Chief Executive Officer. This offers me a good pathway for career advancement. Another option would be to work for a large company, such as Microsoft, which specializes in software. With years of experience as well as a Ph.D., I could eventually become a Senior Programmer. Senior Programmers are tasked with more important jobs such as identifying customer needs and coordinating other programmers in the company. A well-established Senior Programmer can receive a salary upwards of \$100,000 per annum.

Although a large portion of programmers are employees of companies, Software Developers can also be self-employed as private consultants or freelance programmers. In spite of the risk involved in running a business, a success self-employed programmer has the potential to make more than those in the employment of someone else.

Related Jobs

Some occupations which I would be able to transfer into with my training as a Computer Programmer include a Computer Trainer, a Database Developer, and a Computer Network Specialist. As the name would suggest, a Computer Trainer helps instruct people to use computer technology properly. This can range from the efficient retrieval of research material to effectively using applications to troubleshooting problems. A Database Developer creates complex databases to facilitate the effective storage and recovery of information. A Computer Network Specialist works to ensure different sections of a company are able to communicate information properly via network of computers. This can include the creation of both a company Intranet as well as an Extranet for outside users. The pay of these occupations can vary widely depending on whom they work for, if they are self-employed, and their level of education. In general, however, they make roughly around the amount of income as a Computer Programmer. A senior level position in these occupations can even have the potential to make more than a programmer.

The entry level positions of these three occupations require at least a Bachelor Degree in Computer Science and some experience in a computer-related field, which is also what is expected from a Software Programmer. Due to this, it would be possible for me to transfer into these occupations without too much trouble. These occupations also require approximately the same level of analytic and communication skills as a Programmer. To become a Computer Trainer, however, I would have to work on my public speaking skills as it may be necessary for the Trainer to present in front of a large group of people. In closing, if I am unhappy as a programmer, I may consider these jobs.

Personal Reflection

Having completed research on my desired occupation as a Computer Programmer, I remain convinced this career path is right for me. I am interested in this occupation as it requires me to think logically and creatively on varying tasks. I also believe I would enjoy the occupation's blend of lone computer work and human interaction. In spite of the attributes which attract me to this field of work, I would prefer to not put as much strain on my eyes, back, and neck as people who sit in front of a computer for long periods of time do. Hopefully, by taking frequent breaks and stretching, I will be able to avoid this.

What drew me to the field of software design is the fact that I like to regularly use logical thinking to solve diverse challenges. I also enjoy their type of work as programs do exactly what I tell them to do using purely logical instructions, virtually taking guesswork out of the equation. These are the reasons I enjoy working with computers and want to make it my future occupation.

One thing which surprised me during my research was the fact that Programmers do not only work alone with computers. I realized there is much more teamwork and communication involved in being in the field of software development. Different programmers in a team would be responsible for specific modules or parts of a program and keep it organized in a way so other programmers would be able to understand them.

This occupation requires people to be logical and creative problem solvers who are able to communicate effectively. I believe I fit most of these requirements, although I do believe I should work on my public speaking skills. In spite of my belief of my suitability for this occupation, however, only in the future can I truly be sure of it.

Careers Course Reflection

I believe I have gained a great deal from my time in the Career Studies course. I certainly see my future from a different perspective. I have begun to realize the importance of properly planning ahead. With the knowledge I have acquired from this course, I am now better prepared for my future career.

There are several notable experiences I had in the Career Studies course. For example, the Job-Posting Response Assignment taught me how to effectively search for a job and write a proper resume for it. This will be extremely useful in the future when I am searching for a job and will increase my chances of getting hired. Other than that assignment, the Career Cruising Online Portfolio was also useful as it was a convenient research source as well as a good way of getting my goals and plans in order. Finally, the Budget Report Assignment was an enormous eye-opener for me. I had never before given so much thought towards planning out how I would sustain the lifestyle I hope to have. The research I did for the Budgeting Assignment has given me a new appreciation of the difficulty of sustaining oneself independently. I hope the activities I have done in the Career Studies course will set me on the right track to living a comfortable career as a Computer Programmer.

In closing, I have greatly enjoyed the Career Studies course and believe I have gotten much out of it. I have obtained insight into the requirements which must be fulfilled to reach my goal of becoming a successful Software Programmer. Thanks to the Careers course, I have a clear idea of what I will do with the rest of my life and how I will accomplish it. For that, I am truly grateful for everything which the Career Studies Course has provided me.

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