

Science ISU Career Plan - Computer Programmer

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Job Description



What do people in this occupation do on the job? What kind of responsibilities, duties, or activities does a computer programmer have?

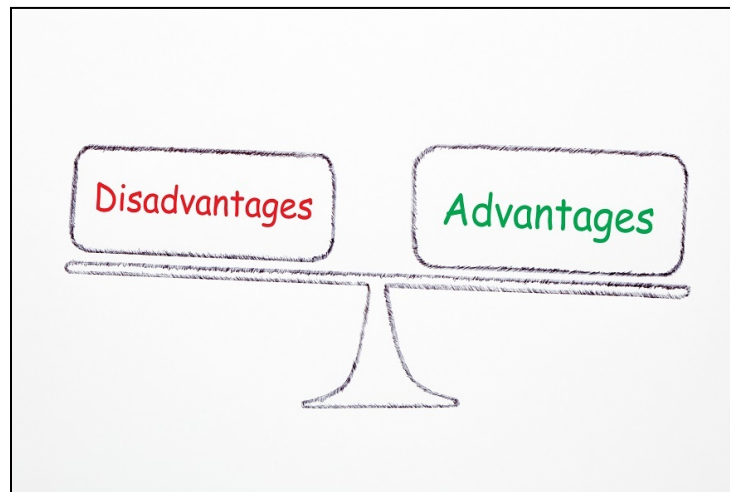
The type of things that a **computer programmer** does on the **job** is to **take ideas**, **created** by **software developers** and **engineers** and **turn** them into a **set of instructions** on the **computer**. **These instructions** can create a **variety** of things such as **social media platforms**, **word processing programs**, **browsers**, pretty much anything that we used daily **on a computer**. The **responsibilities** that a **computer programmer** has is to both **code** and **test programming software** for both **apps** and **programs**, **create** new **applications**, **fix bugs** that exist **inside** the **code**, collaborate with product, design, and marketing teams to achieve the desired action, and **resolve user-related problems**.

What are the working conditions of a computer programmer? How long do they work for a week? What kind of risk do they face?



The workplace that a computer programmer face can be anywhere. A computer programmer can work home if they wanted to. However, most computer programmers work in clean office buildings 40 hours a week which is supported by the company they work at. Computer programmers sometimes work overtime to complete deadlines or technical issues. Because computer programmers sit down, facing a computer all day long, they might face susceptible eye strain, back problems, or hand/wrist problems like carpal tunnel.

What are the advantages of going into computer programming? What are the disadvantages?



There are many advantages to having a career in computer programming. They have the potential to let you earn great earnings, the demand for programming is really strong, having the ability to code allows you to have a new perspective in problem-solving cases, and learning to code allows you to have a flexible career and a variety of open doors. Computer programming has a large number of advantages however there is also a substantial amount of disadvantages. Going into computer programming has a higher chance of having health risk and IT stress,

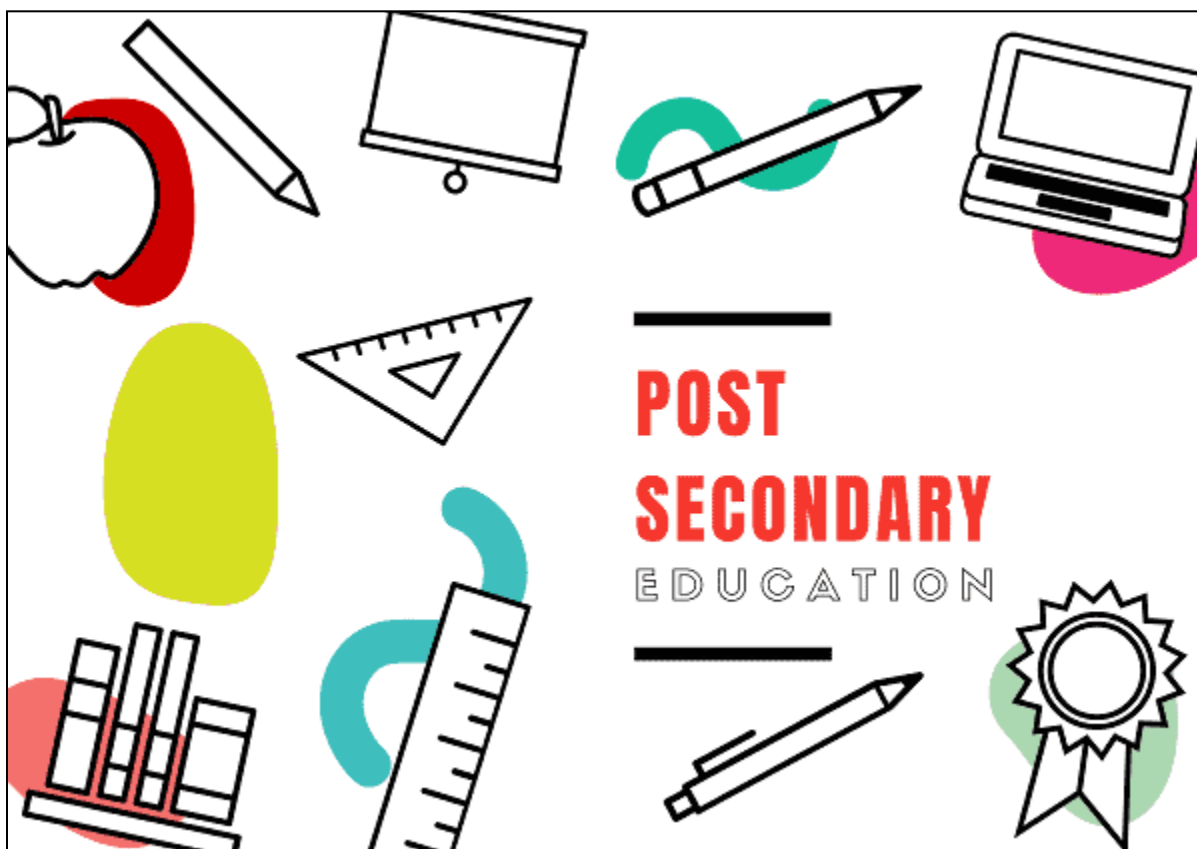
computer programmers also **work long hours** especially during the **deadlines** where overtime mostly occurs, **technologies always change** so people who hate change are not likely to like this job, and lastly, there is a concern of salary and job outlook as **companies** in need of **programmers** **can now find them anywhere in the world** which also allows them to hire people for **lower wages**.

What are 3 qualities that suit computer programmers and explain why?



The **3 qualities** that suit computer programmers are having **patience**, a **knack for problem-solving**, and a **passion for computers**. **Patience** is needed in a programmer. The reason why a computer programmer must have patience is that programming **shows lines and rows of code**. **Someone** who **easily gets irritated** is not suited for a job in programming. **Debugging** takes **a lot of time and effort** and you will **meet a lot of dead ends** along the way, that's why having patience is key to being a programmer. Having a **knack for problem-solving** is very crucial to a programmer. A programmer **writes and creates software** to make things **easy** for **people** that use their **applications** daily. **Programming** is basically like **problem-solving** and sometimes you have to go **deep inside** the **code** to find out the **problem**. It's like doing a **riddle**, like if this way doesn't work let's try this way next. If you enjoy these types of things, I recommend programming to you. Lastly, having a **passion for computers** is probably the first thing that all programmers were. The reason being is that they love using the computer. **Programming** is for **people who love using a computer** and pretty much **do everything with a computer**. Without the passion of liking a computer then programming will most likely be boring for you.

Education



What education is needed to enter a career of being a computer programmer?

The **education** needed to enter a **career** in **computer programming** is by going to either **college** or **university** and receiving a **bachelor's degree** in computer programming.

What is the exact name of the program that would be taken in post-secondary?

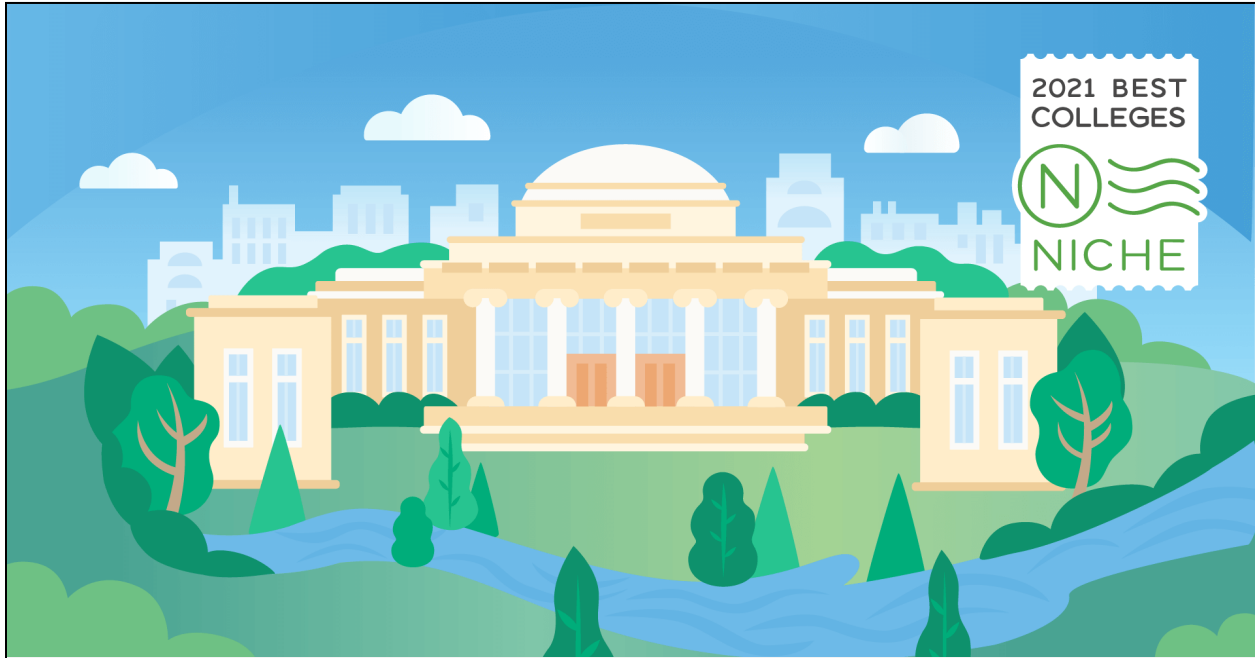
The **name** of the exact program that would be taken in **post-secondary education** in **Computer Programming**. You'll be able to apply for courses for computer programming at the link below, in the reference sheet called Computer - Programmer / Analyst.

(<https://www.ontariocolleges.ca/en/programs/computers-and-telecommunications/computer-programmer-analyst>)

How many years does it take to become a computer programmer?

It **takes** approximately **4 years** to become a computer programmer however there can be many **factors** that **can extend** this **time-line**. **Students** in computer programming **may** take **majors-related courses** during the **freshmen** or **sophomore** year but usually, the **majority** of students **take computer programming** during the **junior** and **senior years**.

What 3 colleges or universities have computer programming courses?



The colleges or universities that have courses for computer programming in Ontario is Sault College, Canadore College, and Sheridan College. The address of Sault College is 443 Northern Ave E, Sault Ste. Marie, ON P6B 4J3. The address for Canadore College is 100 College Dr, North Bay, ON P1B 8K9. Lastly, the address for Sheridan College is 1430 Trafalgar Rd, Oakville, ON L6H 2L1.

Describe the course overview of one of these colleges. Describe show the courses you would have to take, the average expected to apply, the high school credits you need, and the cost per year.

The computer programming diploma shows that you have the necessary programming skills to design, develop, and implement computer systems. One of these colleges, Sault college emphasizes that by showing and allowing students to learn the skills and responsibilities needed from a computer programmer. Sault college also tries to create an environment similarly close to those in the working industries. The program at Sault College allows you to develop or learn new skills in a variety of programming languages such as C++, Python, C# .NET, Java, and scripting languages, such as JavaScript.

The courses of this program will be separated into 4 semesters for 2 years. The first semester has Communications I, Introduction to Programming, Computing Environments and Tooling, Introduction to Web Development, Computer Mathematics, and lastly Technology in Society. Semester 2 will include Business Applications I, Programming Concepts I, Hardware, OS, and Networks, Databases I, and Systems Analysis and Design. Semester 3 will have Web

Development II, Programming Concepts II, Programming Paradigms, Databases II, Project Management, Global Citizenship. Lastly in your final **fourth semester**, you will receive Business Communication, Advanced Web Applications, Full-Stack Application Development, Computer Security, Privacy, and Ethics, Mobile Applications, and finally Student Selected General Education.

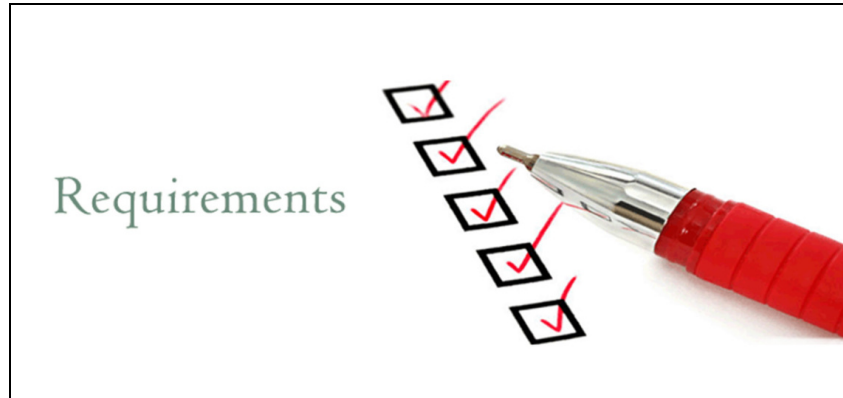
The chart below shows the **fee** and **cost** of going to **Sault College**.

Domestic		International	
Tuition	Ancillary	Tuition	Ancillary
N/A	N/A	\$15,747.80	\$1,010.00

What are the training opportunities/ requirements for a computer programmer?



The **training opportunities/requirements** needed for a person in the occupation of **computer programming** is at least a **bachelor's degree** in **computer science, mathematics, or information systems**. Sometimes having **four or more years** of **direct work experience** can be a replacement for a **bachelor's degree**. However, **some** jobs require **master's degrees**.

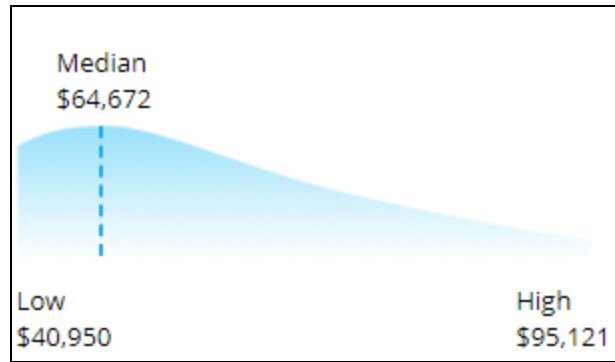


Financial Information



What is the average salary/wage for a computer programmer? What is the maximum wage for a computer programmer?

The **average salary** for a computer programmer is approximately around **\$64,672 per year**. An **entry-level programmer** working for a new company usually earns around **\$40,950 per year** while an **experienced programmer** can earn at least **\$95,121 per year**.



Are computer programmers typically entitled to benefits through their employer? What benefits would be offered? How long is a typical paid leave for?



The **benefits** in which a computer programmer **receives** typically **vary** depending on their **employer**. However, the **average benefits** a computer programmer usually **receives** are **paid vacations, sick leaves, and insurance plans**. Some companies even **offer profit sharing and pension plans**. Typical **paid leave** for computer programmers usually **varies** among **companies**. Some companies usually leave it unlimited. However, most programmers usually take approximately **2-3 weeks** for their paid leave. Mostly, paid leaves usually depend on the employer.

What are the job opportunities here in Canada for computer programmers? Is this occupation in high demand? Is this a very competitive career to get hired into?

The **job opportunities** that a computer programmer has in Canada are **very good**. There is a **high demand** for **people in this occupation** and the field in this occupation **isn't very competitive**.

Location	Job prospects
Alberta	☆☆☆ Fair
British Columbia	☆☆☆ Good
Manitoba	☆☆☆ Fair
New Brunswick	☆☆☆ Good
Newfoundland and Labrador	☆☆☆ Good
Northwest Territories	☆☆☆ Undetermined
Nova Scotia	☆☆☆ Good
Nunavut	☆☆☆ Undetermined
Ontario	☆☆☆ Good
Prince Edward Island	☆☆☆ Good
Quebec	☆☆☆ Good
Saskatchewan	☆☆☆ Fair
Yukon Territory	☆☆☆ Undetermined

Connection To Science

Explain, in detail, how someone in computer programming would use science to do their job.

Computer programming **relates** a lot to **science**. Marcelo De Oliveira Rosa Prates has commented saying,

“Some branches of computer programming fit a great number of the necessary criteria for being considered a science.

A notable example is the experimental analysis of algorithms, which invokes statistical tests and, for sufficiently complex problems, is subject to hypotheses and, most importantly, falsifiability.”
(Marcelo De Oliveira Rosa Prates, 2018)

Computer programming **uses** a lot of **analysis**. Programmers would **always hypothesis** on **problems-related** to their **code** and they would **always take steps** to **fix** these **problems**. **Science** also **hypothesis** on various problems and also **takes a step** into **fixing** these **problems**.

Are there any safety concerns/precautions for this career? Explain in detail.



There are **no safety concerns/precaution** when going into computer programming. Most of the time, there are **no life-threatening situations** that you'll be in if they decide to go on this career, and even if there is, you'll probably notice before it even happens. **Most** of the **problems** are usually **eye strain, back pain, or wrist problems** when going into this career.

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