

# CVCC

## Programming & Software Development

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### Do you want a great career?

Northeast Ohio's IT industry needs workers to fill its growing IT sector and to replace retiring talent in existing positions. Cleveland was ranked 12<sup>th</sup> for technical job growth by ZipRecruiter in 2017.

<https://www.cbsnews.com/media/americas-top-10-tech-cities-arent-on-the-coasts/>

According to U.S. News & World Report 2022 ranking of the 100 best jobs:

**#1: Information Security Analyst**, Median Salary: \$103,590

**#5: Software Developer**, Median Salary: \$110,140

**#6: Data Scientist**, Median Salary: \$98,230

**#13: IT Manager**, Median Salary: \$151,150

**#27: Computer Systems Analyst**, Median Salary: \$93,730

**#32: Web Developer**, Median Salary: \$77,200

**#38: Database Administrator**, Median Salary: \$98,860

**#48: Computer Network Architect**, Median Salary: \$116,780

**#52: Computer Systems Admin.**, Median Salary: \$84,810

**#68: Computer Support Specialist.**, Median Salary: \$52,690

Computing jobs are the #1 source of new wages in the US

500,000  
current openings

These jobs are in every industry and every state, and they're projected to grow at twice the rate of all other jobs.



The "STEM" problem is in computer science

58%

of all new jobs in STEM are in computing

8%

of STEM graduates are in Computer Science

Source: <http://code.org/promote>

### What is Programming?

<https://www.computerscience.org/>

<https://www.khanacademy.org/computing>

<http://code.org/>

<http://www.codecademy.com/>

# What will you learn?

<http://education.ohio.gov/Topics/Career-Tech/Information-Technology-Career-Field>

## Year One

### Programming

- Basics of building simple interactive applications.
- Basic units of logic: sequence, selection, and loop.
- To apply algorithmic solutions to problem-domain scenarios.



### Object-Oriented Programming

- To represent programming concepts as “objects” that have data fields and associated procedures known as methods.
- To implement classes using static and instance methods, inheritance, polymorphism, exception handling, and object serialization.

### Systems Analysis and Design

- Theory and practice of the system development life cycle, including software testing and the analysis and design phases.
- To use appropriate programming languages and software patterns to improve software development.
- A variety of commercial and open source programs, applications, and tools will be used.



### Information Technology Basics

- Basic computer concepts and essential skills necessary for work and communication in today's society.
- Safety, security, and ethical issues in computing and social networking.
- Input/output systems, computer hardware and operating systems, and office applications.

## Year Two



### Database Applications Development

- Strategies to manipulate data, present database systems theory, and develop database applications.
- To import and export data, manipulate table properties, make advanced queries, and run basic **SQL** forms and reports.
- To develop macros for automating database tasks and building menu-driven applications.
- Knowledge and skills of data modeling, diagramming, query writing, and design theory will be developed.



### Web Design

- Dynamics of the Web environment while pursuing an in-depth study of Hypertext Markup Language (**HTML**), Cascading Style Sheets (**CSS**), and **JavaScript**.
- Web based protocols such as FTP, TCP/IP, and HTTP.
- To create websites with tag text elements, special characters, lines, graphics, hypertext links, and graphical tables.



### Visual Programming

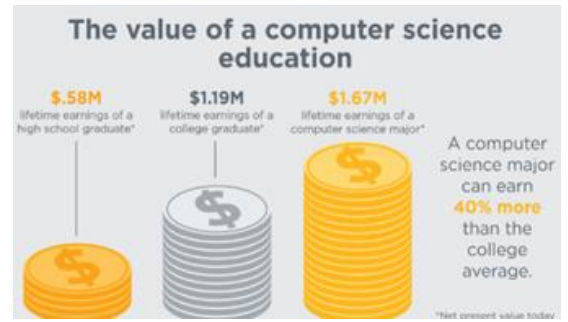
- To create event-driven programs using object-oriented programming techniques for use in standalone applications.
- To map out, design, and test computer applications.

## Do you want a jump start on college?

Students with good grades earn college credit from  
Tri-C and other Ohio colleges!

Qualifying students may take the AP Computer Science A exam!  
Industry certifications may also lead to college credits!

<http://code.org/promote>



## How can you get more involved?



**BUSINESS  
PROFESSIONALS  
of AMERICA**



Be part of the leading Career and Technical Student Organization, BPA, and attend regional, state and national conferences! <http://www.bpa.org>



Compete in other programming competitions and fun events, such as Baldwin Wallace University's programming competition, Hyland's Hackathon, RITE's Passport to IT Careers, Tech Corps' camps, Hyland's camps, and many more!



Take advantage of career opportunities, such as job shadowing, industry interviews and early-placement internships!



## Required Supplies

1. Notebook paper
2. Pencils
3. Pens
4. Headphones
5. CVCC agenda book
6. Flash Drive
7. Class Fee \$15 per year (lowest cost program)

## Expectations of PSD Students

1. Work hard (effort!!) and complete all work (even if it becomes homework)
  - a. This class is not easy! You will need to think!
  - b. You must be a good reader, good note taker, and good problem solver.
  - c. You must pay attention every day.
  - d. You must learn to motivate yourself!
  - e. And you must like a challenge!
2. Be involved!
  - a. Business Professionals of America
  - b. Compete in programming and IT competitions
  - c. Early Placement, Job Shadowing, Industry Interviews, and Internships
3. Treat CVCC like your place of employment
  - a. Be here every day and be on time
  - b. Wear your uniform
    - i. Dress-up days
  - c. Have a good attitude!
4. Be honest!
  - a. Have integrity
  - b. An honest 'D' is better than a stolen 'A'
  - c. Repercussions of cheating

# Key Skills Programmers Should Develop

## 1. The ability to learn concepts and apply them to other problems

### 2. Basic mathematical skills

In programming, basic math is unavoidable. You need to make sure you have a basic understanding algebra and arithmetic.

For example: What are the missing numbers?

$$83 - 17 = 56 + ?$$

$$45/9 = 12 - ?$$

### 3. A passion for problem solving

Most of the time, as a programmer, you will be writing a program to solve a particular problem. If you don't enjoy solving problems, you won't enjoy being a programmer. This could be a problem for you!

For example: What is the missing number?

$$1 \quad 4 \quad 9 \quad ? \quad 25$$

### 4. Good communication skills

There is a stereotype of a developer who sits in the corner on their own, not talking to anyone and just writing code. Some people are like this, but they do still have to communicate. If you don't like talking much face to face, become good at written communication to make up for it.

### 5. Good writing skills

Whether you are writing code or documentation, you need to be able to write in a way that gets your message across clearly. The ability to explain something complicated to someone non-technical will definitely help you and your colleagues in your career.

### 6. Confidence around a computer

This may seem obvious, but if you are thinking about becoming a developer, you will need to be confident with a computer. If you are too timid or afraid you might break something, it will hold you back.

### 7. Resourcefulness

There is an art to searching for answers on the internet and it is a vital skill for any programmer.

### 8. An inquisitive mind

This will help you go far as a programmer. Find out how something is done and try to find ways to do it better. If you have an idea that you think will improve things, go away and investigate it.



- 2 Suppose that for a particular flight Business is full and the Business passengers pay \$200 per seat. All but four available Economy seats are filled with paying passengers. Economy passengers pay \$100 per seat.

How much will the total fares from the flight be?

- A \$6500
- B \$6700
- C \$6900
- D \$7100

- 3 In Economy, the armrests between adjacent seats can be raised out of the way, except for the seats with extra legroom.

When a flight is not full, people sometimes like to raise armrests and stretch across three seats to sleep.

At most, how many passengers could sleep in this way in Economy in an A-13?

- A 5
- B 7
- C 15
- D 21

- 4 Suppose a light lunch is to be served on an A-13 flight. Two flight attendants each serve lunch at the rate of one meal per one and half minutes. All Business seats are full, and all but seven Economy seats have passengers.

Of the following, what is the minimum time required to serve all the passengers?

- A 26 minutes
- B 35 minutes
- C 39 minutes
- D 41 minutes



**getThere**  
In Northeast Ohio!

# WANTED: Qualified, Skilled Workers

Do any of these traits describe you?



**Problem Solving Pro!**  
**Analytical/Abstract Thinker**

**Love Strategy Games**

**Leader**

**Intrinsically Motivated**

**Planner**

**Visionary**

**Practical**

**Enjoy Making Things**

**Goal-Oriented**

**Focused**

**Innovative**

**Ambitious**

**Team Player**

**People Person**

**Effective Communicator**

**Love Technology**



Then **Information Technology** could be the  
perfect career for you!

(Aptitude answers: 1.D 2.B 3.A 4.C)

# Sign-Up Today!

<http://www.cvccworks.edu/HighSchoolEnrollment.aspx>