



**COLORADO STATE UNIVERSITY  
EXTENSION**



## Computer Science

**Level 1: Fundamentals** is designed for members 8-18 years old.

Discovering Computer Science & Programming Through Scratch Level 1

**Inspiring youth to:**

- Interact with a series of tutorials and challenges within the Scratch environment
- Introduce the five fundamental principles of computer science concepts: sequence, iteration, conditionals, variables, and modularization
- Learn beginner programming skills using Scratch
- If you exhibit a program, include 8 different commands including looping and getting input from the keyboard and mouse.

**Level 2: Explorations & Level 3** is designed for members 11-18 years old.

**Inspiring youth to:**

- Gain knowledge on application design, operation, development, writing code and much more

Discovering Computer Science Level 2

**Inspiring youth to:**

- Learn more about generalizations and modularity
- Introduce clones and lists in Scratch
- Exhibit a modified program using Scratch by comparing the programs or creating an animated storybook or a video game

Discovering Computer Science Level 3

**Inspiring youth to:**

- Learn about recursive programming
- use recursion to help solve problems
- Learn how to draw intricate fractals through recursive programming
- Exhibit an original program using a higher level programming language such as Python, Javascript, C++, etc.

**Computer Science & Coding** is designed for members 11-18 years old.

**Inspiring youth to:**

- Build upon coding skills learned in earlier units through using Scratch or Python
- Advance web development skills
- Explore careers in Computer Science

# Computer Science

## Tips:

- Members may stay in a unit for more than one year. The exhibit must be different each year.
- Youth are allowed to enter a display board, program, or stand-alone exhibit, but not all.
- Display items must be self-contained and capable of being judged “as is”. Example: sample printouts of code developed, or multimedia projects created or Web pages/sites developed.
- Enter your project in the county fair.
- Share information learned in talks and displays.



## Judging Criteria:

- Completeness of project and e-record
- E-record includes demonstrations, talks, story, and pictures, with at least one action shot of you doing something with your project
- Neatness and legibility
- How you completed your activities and quality of exhibit

## Resources:

- Exhibit & Judging Requirements

- Record Books

- Manual Information

Located at: [Colorado4h.org](http://Colorado4h.org)

Note: Manuals are available from [Purdue University](http://Purdue University)



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# Computer Careers



Information System Manager/Director  
Oversee the information technology department of organizations



Research  
Conduct tests or experiments to see how to improve existing technologies as well as opportunities for new software to be created



Software Development  
Develop software for a wide variety of industries



Data Analysis  
Translate large amounts of data into usable reports for the organization to make management type decisions



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## Degrees/Certifications:

Computer Information Systems  
Computer Science  
Network Administration  
Database Management  
Software Development/Engineering  
Computer Language Coding/Programing  
Business or Marketing  
Math or Science  
Electrical Engineering



Information Security  
Plan and carryout security measures to protect an organization's data



Computer Programming/Coding  
Write code for different programs that allows software to function properly



Web Developer  
Create content for websites as well as create websites to fit the different needs of clients



Network Administrator  
Daily maintenance of the network and ensuring proper communication with the database