



**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

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# 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