University of California Agriculture and Natural Resources

CALIFORNIA 4-H PROJECT SHEET SERIES
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UC PEER REVIEWED

4-H Computer & Internet Project

In your car, the cell phone in your pocket, devices in your home and workplace—computers surround us! Knowing how to operate a computer and code is quickly becoming a required 21st century skill. A 4-H computer project will help members learn about software and/or hardware topics.

- Learn about computer hardware, including control, memory, input and output devices.
- Explore and learn to navigate an operating system (PC or Mac) and install and use software for specific applications.
- Learn to code and test a simple program.
- Learn about the use of computers in science, engineering, and technology fields.

Starting Out *Beginner*	Learning More *Intermediate*	Exploring Depth *Advanced*
• Learn to navigate and use a computer's graphical interface. • Learn about the types of computers (notebooks, tablets, desktops). • Explore software applications available on your computer. • Install new software. • Learn about hardware; identify the components and how they work. • Install a peripheral device • Explore the history of computers.	• Learn about Internet safety. • Find ways to reduce online bullying. • Upgrade or build your own computer. • Learn about system maintenance (defrag, virus scans). • Experience the troubleshooting process to fix an issue. • Learn a programming language (like C++, Java). • Learn basic programming concepts—if, loop, etc.	• Learn about the social and health impacts of computers and Internet. • Install and administer an open-source operating system (e.g., Linux). • Dig into theories of computation, algorithms and data structures. • Design and build a network to connect multiple devices. • Build your own mini-computer using a microcontroller (like Aurdino or Raspberry Pi).

The activities above are ideas to inspire further project development. This is not a complete list.

4-H THRIVE

Help Youth:

Light Their Spark

A spark is something youth are passionate about; it really fires them up and gives them joy and energy. Help youth find how this project excites them.

Flex Their Brain

The brain grows stronger when we try new things and master new skills. Encourage youth effort and persistence to help them reach higher levels of success.

Reach Their Goals

Help youth use the GPS system to achieve their goals.

Goal Selection: Choose one meaningful, realistic and demanding goal.

Pursue Strategies: Create a step-by-step plan to make daily choices that support your goal.

Shift Gears: Change strategies if you're having difficulties reaching your goal. Seek help from others. What are youth going to do when things get in their way?

Reflect

Ask project members how they can use their passion for this project to be more confident, competent and caring. Discuss ways they can use their skills to make a contribution in the community, improve their character or establish connections.

Expand Your Experiences!

Science, Technology, Engineering, and Mathematics

- Design and code a microcontroller to help in a scientific investigation, for example, to record temperature over a period of time.
- Improve your computational thinking skills by formulating a task that uses a computer to solve, such as representing data through abstraction and automating analysis.

Healthy Living

- Design and code a health app to track physical activity on your cell phone.
- Research and learn about ways computers (and the Internet) have connected people and strengthened relationships; present your findings at your club meeting.

Citizenship

- Lead a beginning computer workshop for people in your community.
- Join or start a movement to get more girls interested in computers and engineering.
- Host a 4-H booth during National Computer Science Education Week.

Leadership

- Serve as a Junior or Teen Leader for the computer project.
- Identify effective ways to facilitate meetings using computers (and the Internet).
- Find an online system to improve communication between your club members and adults.

Connections & Events

Presentation Days – Share what you've learned with others through a presentation.

Field Days – At these events, 4-H members may participate in a variety of contests related to their project area.

Contact your UC Cooperative Extension to determine additional opportunities available, such as a field day.

Curriculum

- **Junk Drawer Robotics, Level 3: Mechatronics** 4-h.org/robotics/
- **Computer Science Unplugged** http://csunplugged.org/
- **Computer Power Unlimited** www.4-h.org/resource-library/curriculum/4-h-computer/

4-H Record Book

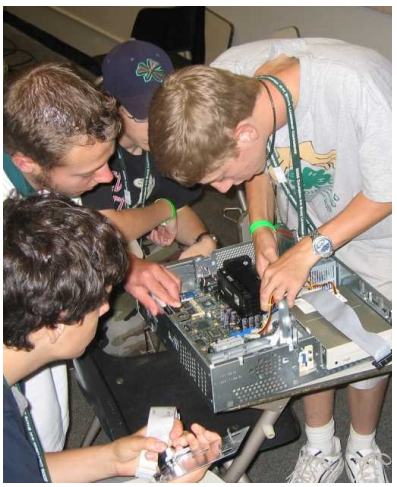
4-H Record Books give members an opportunity to record events and reflect on their experiences. For each project, members document their experiences, learning and development.

4-H Record Books also teach members record management skills and encourage them to set goals and develop a plan to meet those goals.

To access the 4-H Record Book online, visit http://ucanr.edu/orb/

Resources

- National Center for Women and Information Technology https://www.ncwit.org/
- Code.org http://code.org/
- UC Davis C-STEM Center http://c-stem.ucdavis.edu/
- Technovation: Coding for girls ages 10-23 www.technovationchallenge.org/home/
- Computer Science Education Week http://csedweek.org/
- Techbridge: Inspire a girl to change the world http://www.techbridgegirls.org/
- Association of Computing Machinery http://www.acm.org/
- Computational Thinking csta.acm.org/Curriculum/sub/CurrFiles/CompThinkingFlyer.pdf
- Society of Women Engineers swe.org



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