



Brownie Coding Basics

Pillar: STEM

Outcomes: Challenge Seeking and Strong Sense of Self

When you've earned this badge, you'll know how people create code that tells computers what to do and you'll learn about important female computer scientists and how to use computers to solve problems and help people.

Brownies will earn their badge by:

1. Create algorithms that follow a sequence
 - a. An **algorithm** is a detailed, step-by-step process followed in order to complete a specific task or to solve a specific problem. Click on the following link to watch a video explaining algorithms: https://www.youtube.com/watch?v=Da5TOXCwL5g&feature=emb_logo
 - b. Create a dance routine/algorithm for a dance and write down the routine step-by-step so you can follow it. Have fun with it and pair it with a song, then perform the routine for members of your household.
2. Use loops to improve your algorithm
 - a. When you repeat the same action over and over again, that's called a **loop**. Programmers use loops to tell computers to repeat steps of their programs. Loops make code shorter, easier to write, and easier for a computer to understand. Click on the following link to watch a video explaining loops: <https://www.flocabulary.com/unit/coding-for-loops/>
 - b. Using your written routine from Step 1, review the steps and simplify the sequence. For example, if you wrote "Jump up. Jump up again. Jump up again." then change it to "Jump up three times!"
 - c. Another way to create a loop is to repeat a section of the dance. Instead of rewriting the steps, you can just write "repeat this part __ # of times."
3. Use events to make things happen
 - a. Programmers use **events** in their algorithms to make something happen. For example, a video game character might open a door, then jump to a new level. Opening the door is the event that makes the character jump.
 - b. Play "Red light, Green light" with members of your household.
 - c. Now create your own version of the game and teach everyone in the household the new signals! For example, snapping your fingers means take a step forward or saying "Girl Scouts Rock" means take a step backwards. Each time you signal the players to do something, that is an event that makes them complete the action required by the signal.
4. Learn about women in computer science
 - a. Grace Hopper was an American computer scientist and United State Navy Admiral. Click on the following link to learn about her <https://www.womenshistory.org/education-resources/biographies/grace-hopper>. Discuss her pioneering work on computer technology and how she made history in the US Navy.
 - b. Computers are always evolving and there are so many variations! Click on the following link to learn about the evolution of computers: <https://www.livescience.com/20718-computer-history.html>
5. Create your own set of commands that use events
 - a. When writing code, actions that cause something else to happen are referred to as **events**. Events allow users to have options when using a computer program.



- b. Draw a remote control with 5 buttons of different shapes and colors. Each button is an event that when pressed, will cause whoever you are pointing it at to complete an activity. For example, the green square button could make somebody say hi, or the blue circle button makes somebody clap their hands.
- c. With members of your household, play with your remote control and take turns completing the actions caused by pressing a button.

When you're finished: Congratulations, you have earned your badge! You can purchase by emailing shopdept@gksmo.org or at <https://www.girlscoutshop.com/BROWNIE-CODING-BASICS-BADGE>

No shipping charges apply at this time.

