

Coding for Good 1: Coding Basics

Complete the five steps to earn your Coding for Good 1 Badge.

1. **Create algorithms for a computer that follow a sequence:** In order for a computer to complete a task it requires step-by-step instructions. This sequence of steps is called an algorithm. If the steps are confusing or out of order, the computer won't be able to do its job.

Compare the two recipes below. Which recipe is easier to follow? Why do you think that is? What makes the other recipe hard to follow?

Recipe 1 Instructions:

Preheat oven to 350 degrees.

Cream together the butter, white sugar, and brown sugar until smooth. Beat in the eggs one at a time, then stir the vanilla. Dissolve baking soda in hot water. Add to batter along with salt. Stir in flour, chocolate chips, and nuts. Drop by large spoonfuls onto ungreased pans.

Bake for about 10 minutes.

Recipe 2 Instructions:

Cream together the butter, white sugar, and brown sugar until smooth.

Bake for about 10 minutes maybe.

Beat in the eggs one at a time, dissolve baking soda.

Add to batter along with salt. Stir in flour, chocolate chips, and nuts.

Preheat oven to 355 degrees.

2. **Use loops to improve your algorithm:** Loops are a way of telling the computer to repeat a certain function within an algorithm. Challenge yourself to create your own interactive game where there is a repetitive feature.

For example: In the game Simon Says, Simon might say:

First: "Simon says clap your hands 3 times"

Next: "Simon says jump up and down"

Lastly: "Simon says repeat step 1"

- 3. Keep your code interesting with conditionals:** To make your game even more challenging, you will want to add conditionals. Conditionals only run under certain circumstances and you have to tell the computer what those circumstances are.

For example: If it is snowing outside, I will need to dress _____ or else I will be _____.

Think about the many answers that could fit in these spaces. How would a computer know which answers were right? Think about what conditionals do to help you find the answer.

- 4. Create your own set of commands that use conditionals:** Using your knowledge of conditionals, create some conditions for your game.

For example: If a player earns a score of 25 points, they get to move 3 spaces.

Make sure your conditionals are clear and that all players understand how they work!

- 5. Learn about women in computer science:** Explore the life of Katherine [Johnson](#), a famous mathematician/scientist and one of the very first women to work for NASA!