



Coding: Algorithms

What you'll need:

- Deck of cards
- Paper
- Pencil
- A friend
- A small toy (like a car or figurine)



Here's what to do:

1. Build a path/maze by laying the cards down next to each other on the floor.
2. One person will be the "Programmer" and will write down directions ("commands") to navigate through the maze. These commands are your computer code. The only commands you can use are:
 - Move Forward 1 Card
 - Move Back 1 Card
 - Turn Left
 - Turn Right
3. The other person will be the "Computer" and will follow the code exactly as it is written. The Computer will move the toy through the maze, using each step of the code that the Programmer wrote in the order that it was written.

Now try this!

- If your directions have a mistake (a bug in the code), "debug" the code by changing the appropriate commands.
- Is there another way to write the code that still gets the toy to the end of the maze? Can you write the code using fewer commands?
- Try to make a more complicated path/maze. Create a maze with multiple paths to the end.

The science behind it:

Algorithms are a repeatable series of steps that, when followed, complete a task. Computers use algorithms all the time to solve problems and perform various tasks. The directions you wrote are an algorithm for getting through the maze. There is often more than one way to complete a task, so there can be more than one algorithm for any given task.

Connections to everyday life:

Algorithms are not just for computers! Think about it; you use algorithms every day. For example, you probably use the exact same steps each day when you brush your teeth. That method is an algorithm for brushing teeth--just like a recipe is an algorithm for baking a cake or making soup.

Career Connections

Nearly every job you can think of requires some knowledge of computers. In fact, these jobs are projected to grow at twice the rate of other jobs!