BE A STEM GIANT

A STEM Alliance Program

TECHNOLOGY & MATH: ROBOTIC PSEUDOCODING

DESCRIPTION:

Robots follow directions that people give them. They need detailed, step-by-step instructions to complete a task. Pseudocoding is a set of detailed notes that the programmer can use to create the instructions, which can then be transcribed into computer code.

MATERIALS:

- Paper
- Pencils or crayons
- Two people to partner up: one will role play the "Coder" and the other will role play the "Robot"
- Various toys (stuffed animals, dolls, action figures, toy cars, etc.)

The STEM Alliance is dedicated to growing the next generation of STEM GIANTS.

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www.theSTEMalliance.org

THE STEM ALLIANCE

Creating a network of STEM learning opportunities!

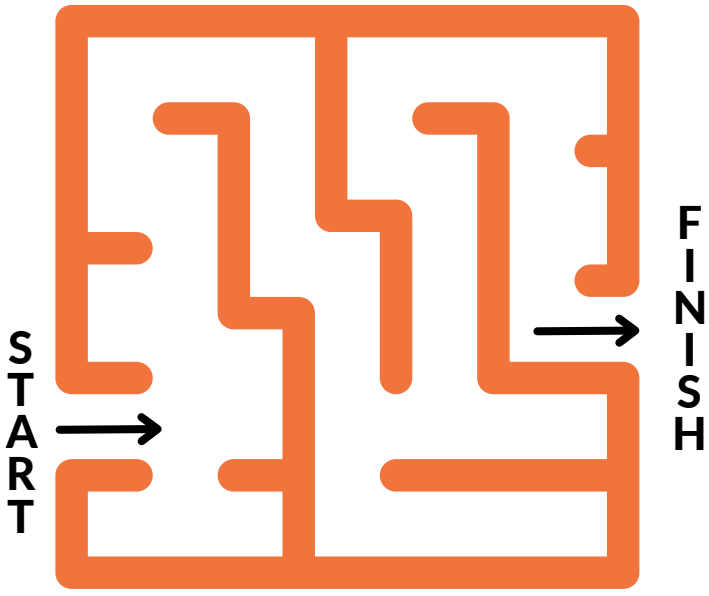
DIRECTIONS FOR PSEUDOCODING:

NOTE: You can create your own version of the commands or use our example below.

1. Agree with your partner to create physical commands for movement such as:
   - Tap back to start moving
   - Tap head to stop moving
   - Tap their left shoulder means move left
   - Tap right shoulder means move right
   - Drawing a circle on the back means turn around 90°
2. With your partner, decide on a task for your toy such as moving a doll from one corner of the room to another.
3. Make a small obstacle course with toys so the "Robot" can take orders from the "Coder" to move the doll around the objects. You can also create a maze like the one below.
4. Write down the commands in the order that's needed to perform each task.
5. To test your code, the "Coder" taps on the "Robot" to signal each step-by-step action.
6. **EXTRA MATH STEP:** Once you've tested your path, change the commands to binary code using 0 and 1. Here's an example:
   a. Moving forward is 00001
   b. Turning Left is 00010
   c. Stop is 00000

0101
1001
0110

Putting the code together will give you a language that computers will understand. Here's what BINARY CODE looks like.



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CODE.ORG