



MAZE: DEBUGGING DIRECTIONS

COMPUTATIONAL THINKING: DEBUGGING

Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.

OBJECTIVE OF THIS INVESTIGATION:

After incorrectly sequencing a set of arrows to lead to a treasure, children will find the error in the adult's code.

VOCABULARY:

- turn
- left/right
- programmer
- robot
- code
- sequence
- error
- debug
- straight

MATERIALS:

- Painters tape to make grid and sequence strip on the ground
- Pieces of printer paper with one large arrow per paper printed or drawn on
- One piece of paper with a "treasure" on it. (This could be a sticker or drawing. Something that can't be seen through the paper.)

PROGRESSION STEPS (COMPUTATIONAL THINKING: DEBUGGING):

Visit [STEMIE Learning Trajectories](#) for details

- Guided Error Recognizer
- Error Identifier
- Early Debugger

THIS INVESTIGATION:

- Prior to the activity, set up a 2x3 grid with painter's tape on the floor as well as a sequence strip to place arrows beside the maze. Designate a starting point. (Note: Ensure that the strip is beside the maze so that the orientation of the arrows corresponds to the direction in which the children will move.)
- Designate one child as the robot and one child as the programmer helper. (The programmer helper will debug the sequence)

"The programmer helps create the directions."

"The robot follows the directions exactly."

- Have the robot hide.
- Have the programmer helper hide the treasure.
- Adult will sequence the arrows in the arrow strip incorrectly. (Start by making only one mistake in the sequence.)

ADAPTATIONS:

See [A Guide to Adaptations](#) for general ideas and strategies

Materials:

- Ensure grid is large enough for children to fit their bodies in each square, including if children use adaptive mobility devices such as wheelchairs.
- If possible, add Velcro and complete activity on the carpet so arrows and paper don't move.





MAZE: DEBUGGING DIRECTIONS

COMPUTATIONAL THINKING: DEBUGGING

Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.

THIS INVESTIGATION (CONTINUED):

- If programmer helper notices an error in the adult's sequence as the adult is sequencing, **(Debugging: Error Identifier)** ask them to fix it by reorganizing the steps in the sequence. **(Debugging: Early Debugger)**
- If programmer helper does not notice an error, ask robot to return and follow the sequence of arrows.
Can the programmer helper find the error after the robot fails to find the treasure? **(Debugging: Guided Error Recognizer)**
- If programmer helper still does not see the error after the robot completes the sequence, show the treasure and act as the robot. Adult can now go through the sequence the programmer developed and when getting to the error, move the incorrect way. Prompt the student to determine if the incorrect step got you closer or further to your goal.

ADAPTATIONS (CONTINUED)

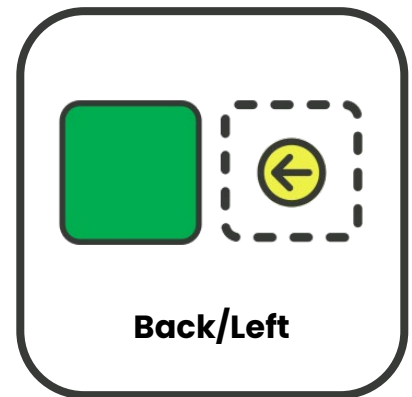
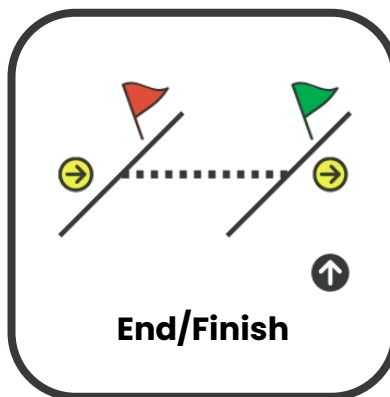
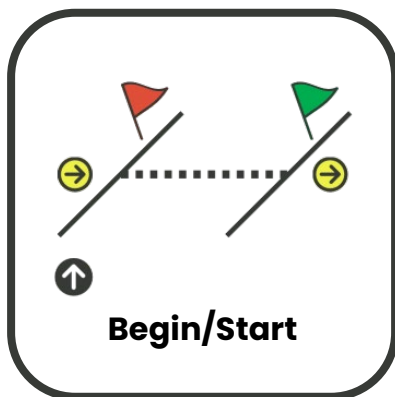
Instruction:

- If children still struggle after providing support, bring attention to the error and work with children to fix the error. E.g., **"Hmm, that's not right. The treasure is over there. We're going the wrong direction. Which way should we move to get closer to the treasure."** Allow children to point with their finger and model adjusting the arrow.
- Remind children that mistakes are part of learning to program and that together we can figure it out!

HOW TO CONTINUE THIS INVESTIGATION:

- Repeat with longer more challenging sequences.
- Add more errors to the sequence

SUPPORT MATERIALS:





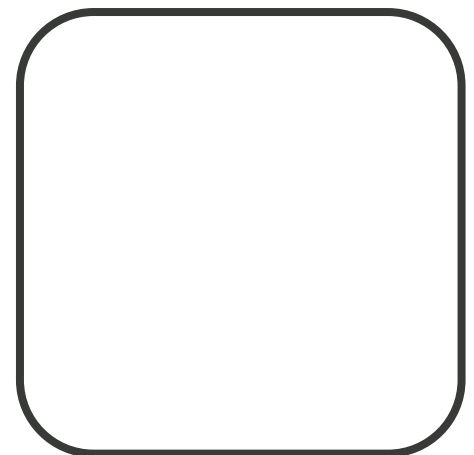
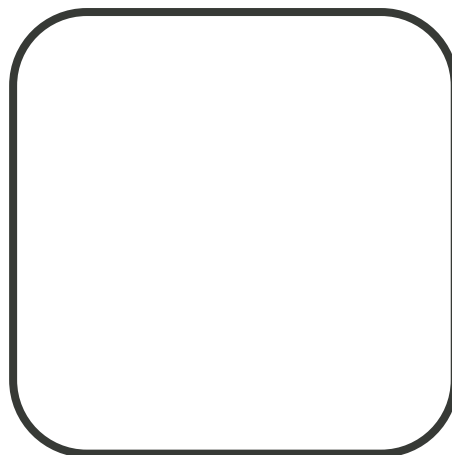
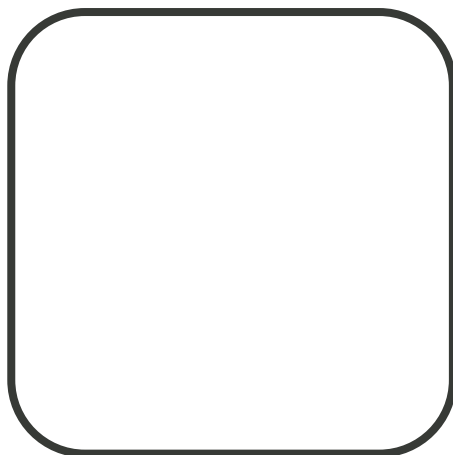
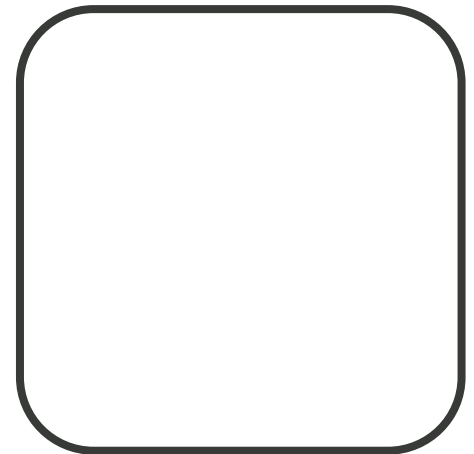
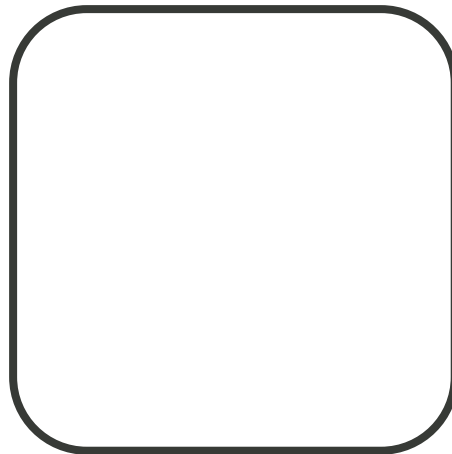
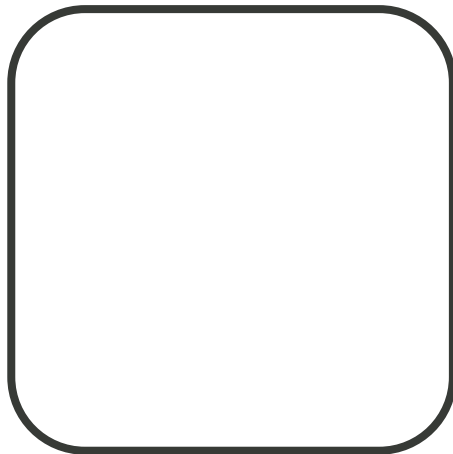
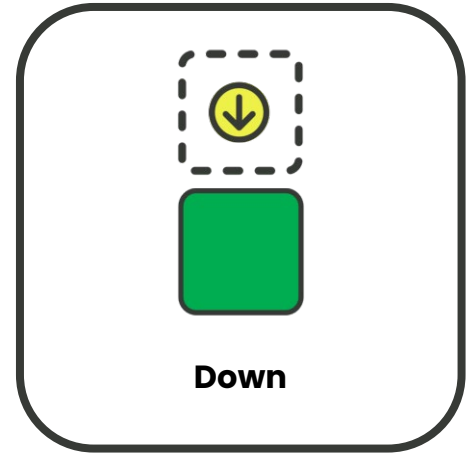
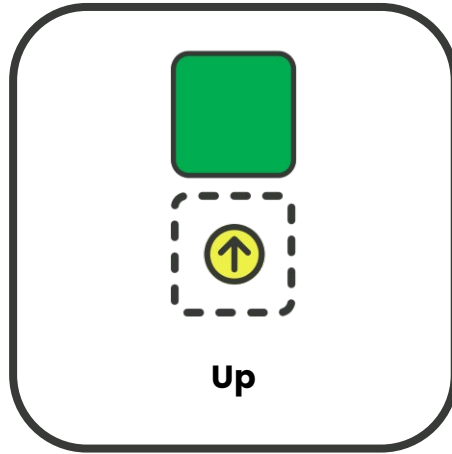
MAZE: DEBUGGING DIRECTIONS

COMPUTATIONAL THINKING: DEBUGGING

Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.

SUPPORT MATERIALS:

Use the blank ones to make your own!





MAZE: DEBUGGING DIRECTIONS

COMPUTATIONAL THINKING: DEBUGGING

Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.

SUPPORT MATERIALS:

