

CODING WITHOUT COMPUTERS

AN IBM VOLUNTEERS ACTIVITY



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@STEMDEEP

[HTTPS://DEEPSTEM.WORDPRESS.COM](https://deepstem.wordpress.com)

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COOPER SIEGEL COMMUNITY LIBRARY



LET'S GET TO
KNOW EACH
OTHER!

Introductions

- Name
 - Grade
 - School
- 

CODING

What is Coding?

Who has Coded?

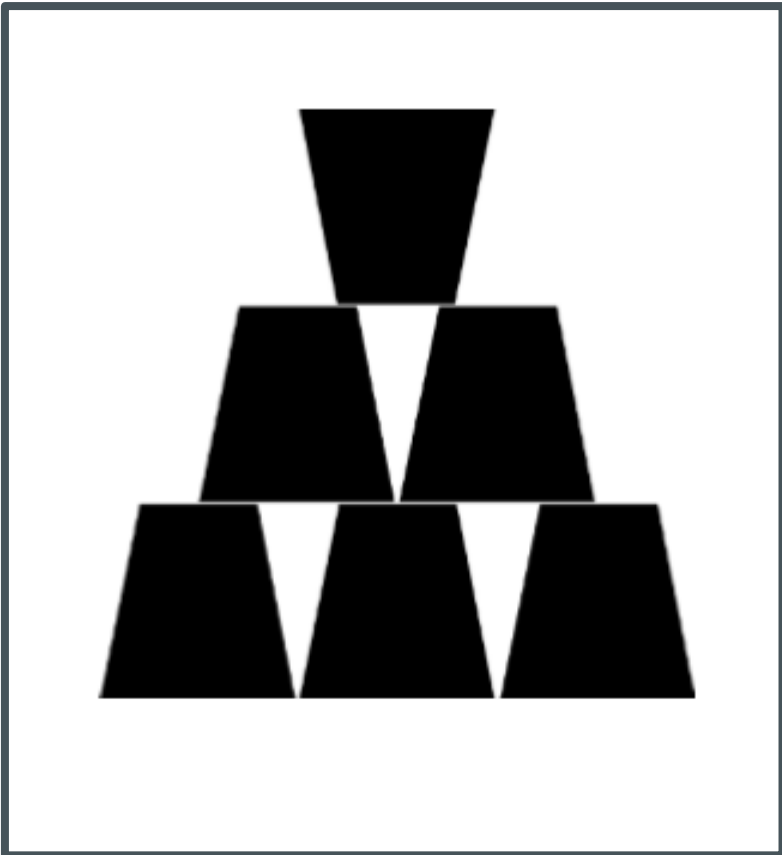
What have you Coded?

What do you need to Code?

WHAT WILL YOU LEARN TODAY?

Using a predefined “robot programming vocabulary”, participants will write a program that a human “robot” will follow to build cup pyramids as efficiently as possible without verbal conversation. Participants learn how computer engineers use the connection between symbols and actions, as well as the valuable skill of debugging code.

GOAL: BUILD A PYRAMID OF CUPS BY STACKING THEM



- Every team has a participant who is a “human robot” friend
- Your robot friend understands only six instructions (code)
- You have to give your robot friend instructions on how to stack them using the code
- You CANNOT talk to your friend

THE INSTRUCTIONS - SYNTAX



— Pick Up Cup



— Put Down Cup



— Move 1/2 Cup Width Right



— Move 1/2 Cup Width Left

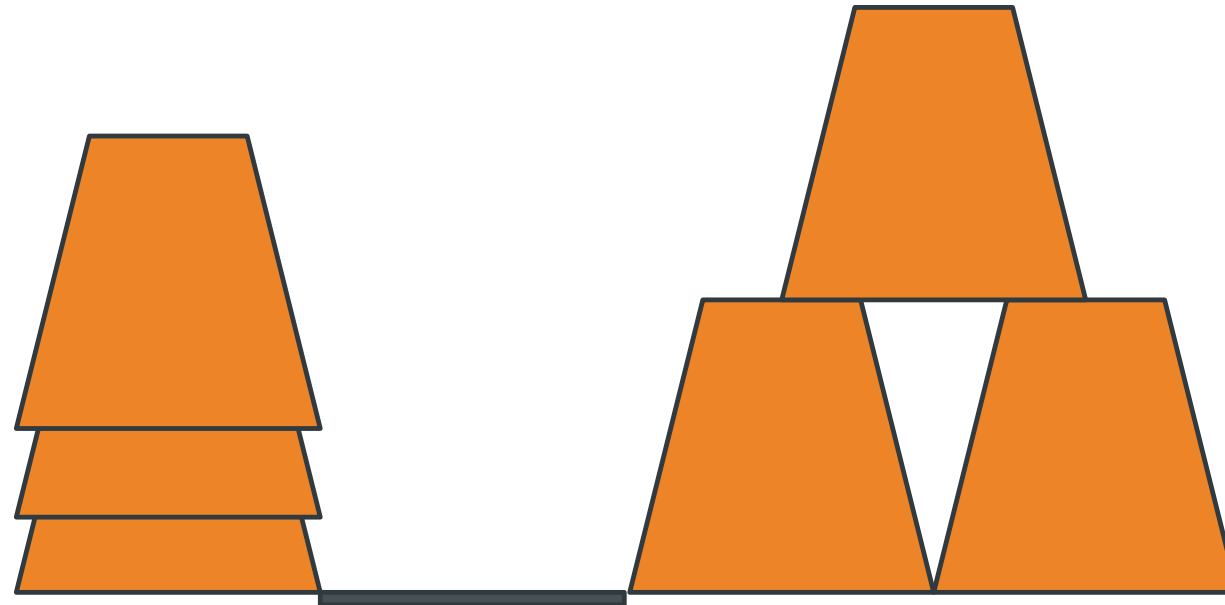


— Rotate Cup 90° Clockwise

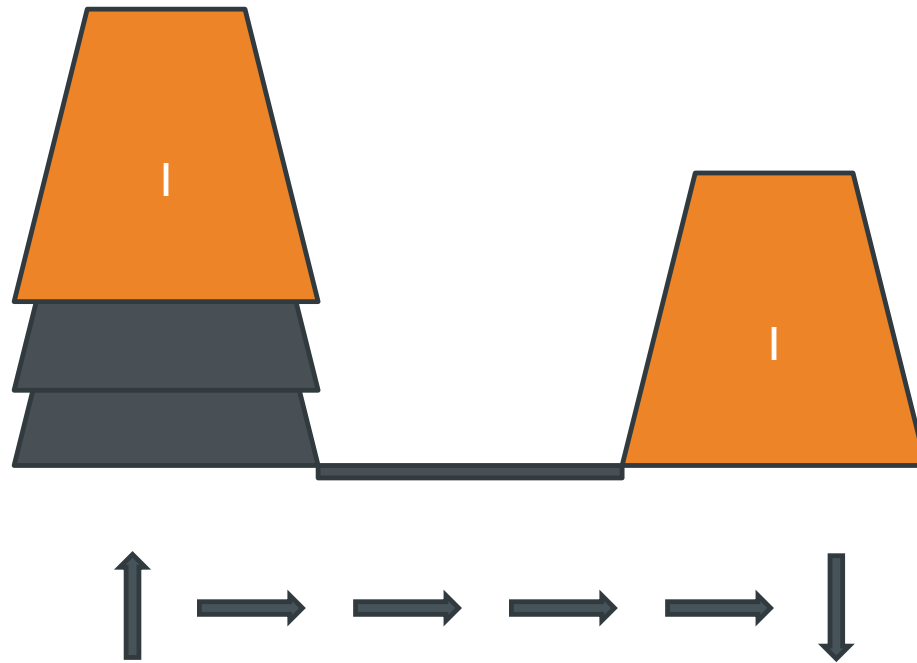


— Rotate Cup 90° Counterclockwise

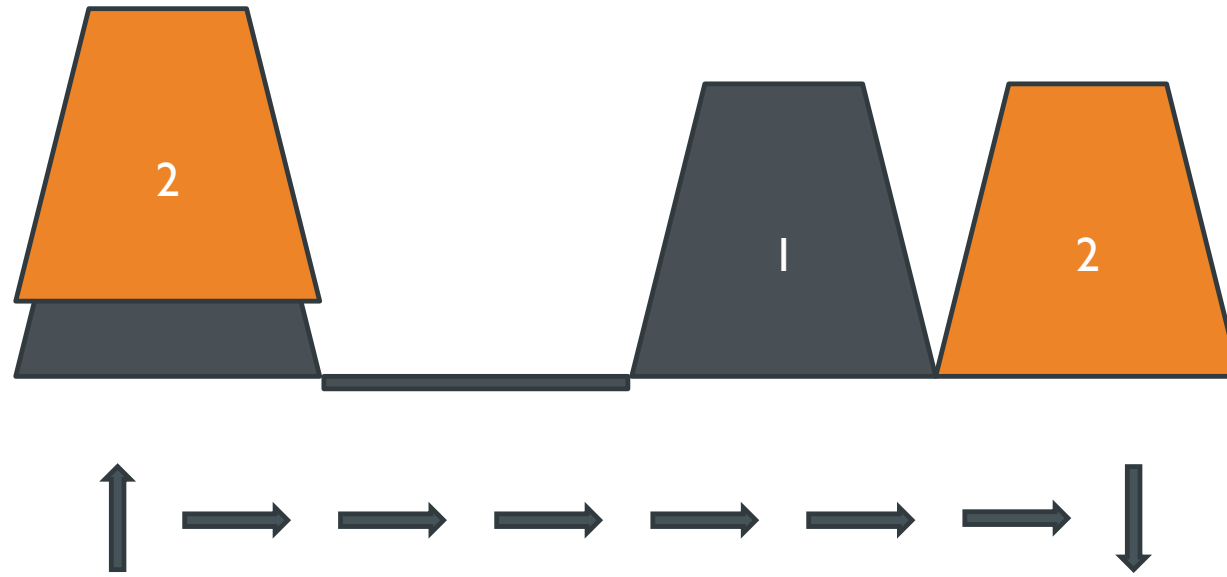
AN EXAMPLE: THREE CUP PYRAMID STACK



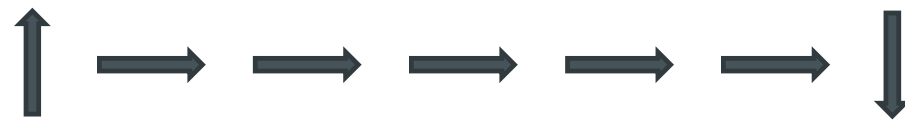
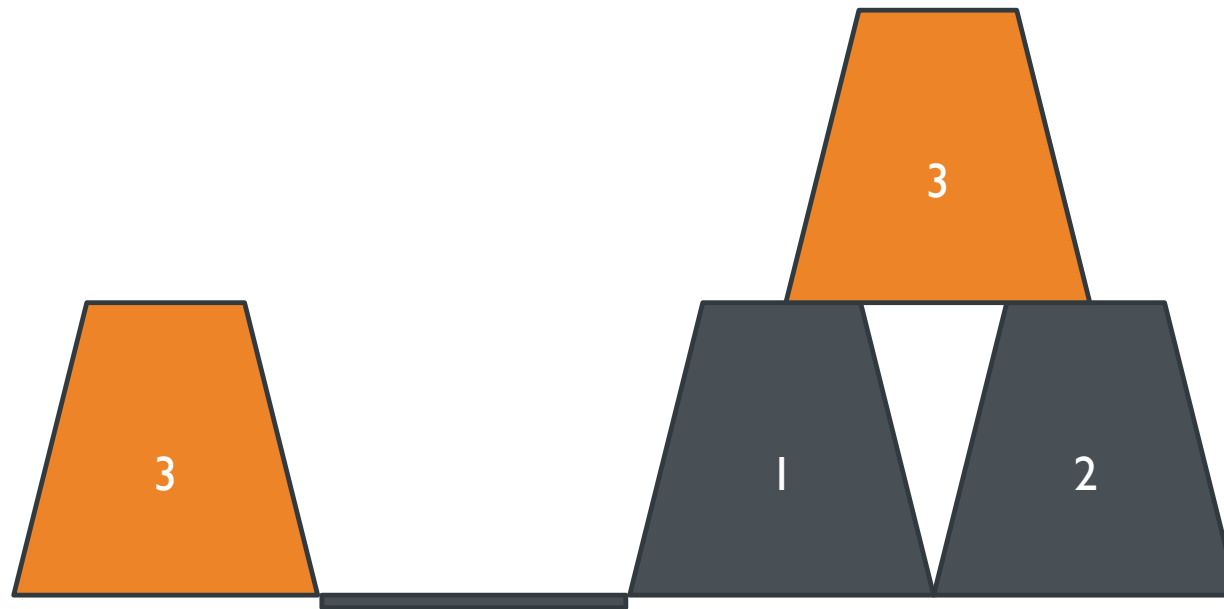
FIRST CUP



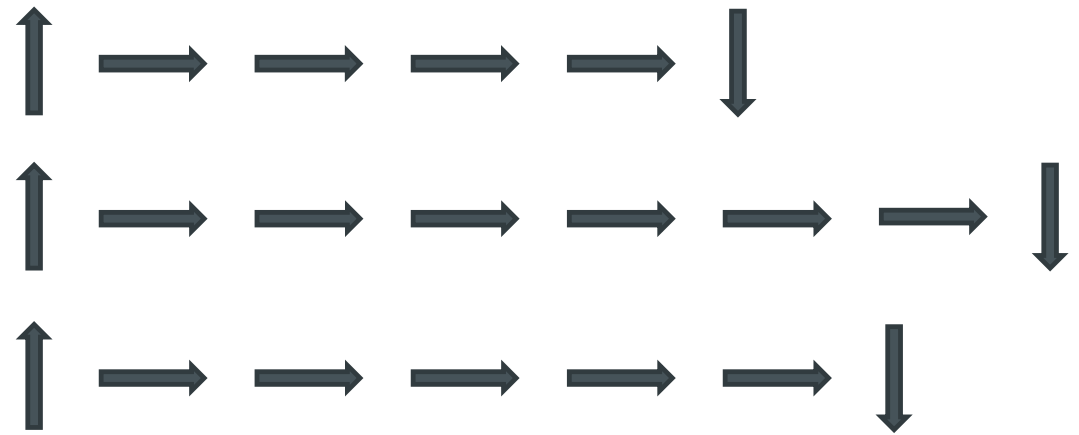
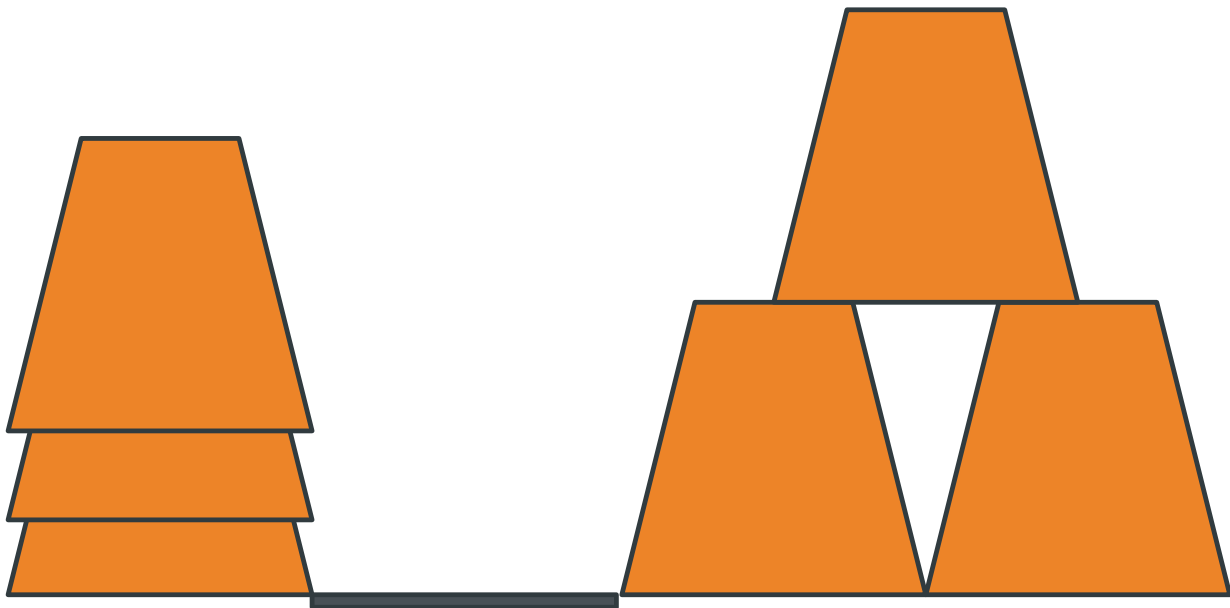
SECOND CUP



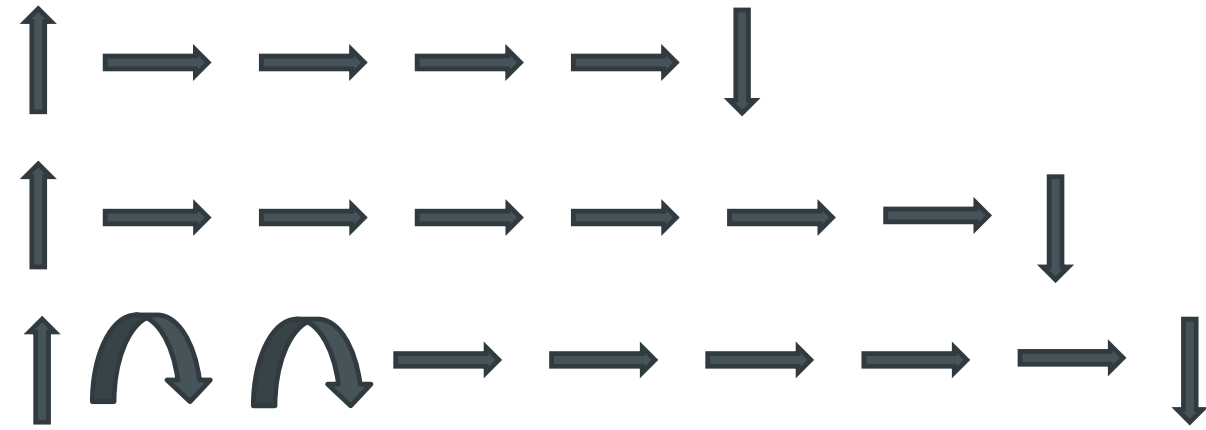
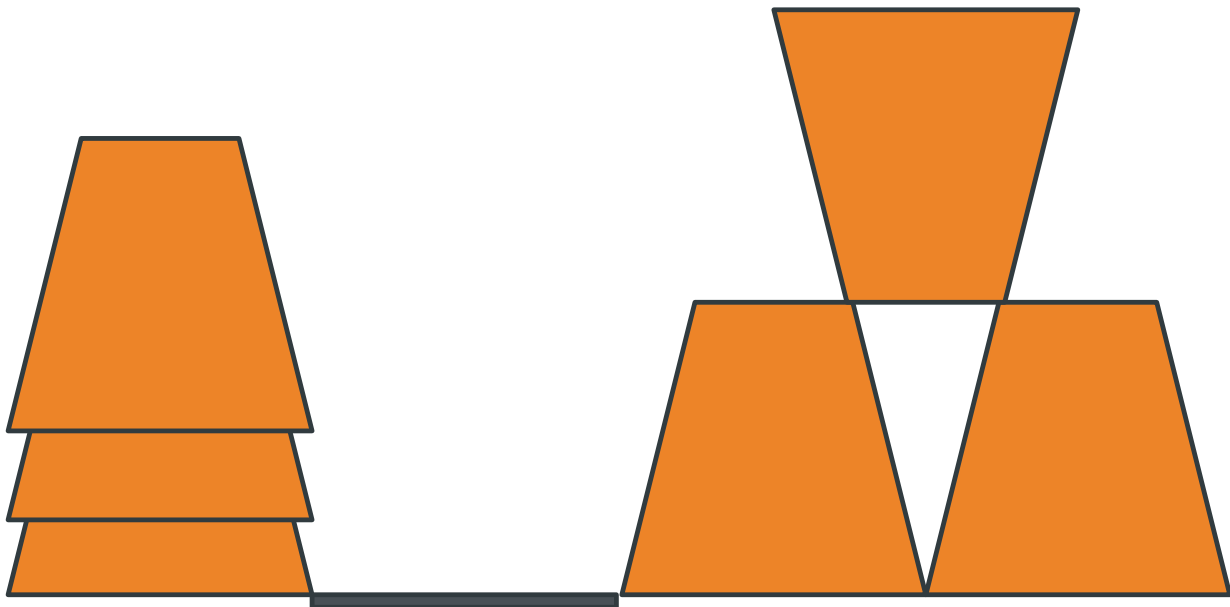
THIRD CUP



CODE FOR HUMAN ROBOT



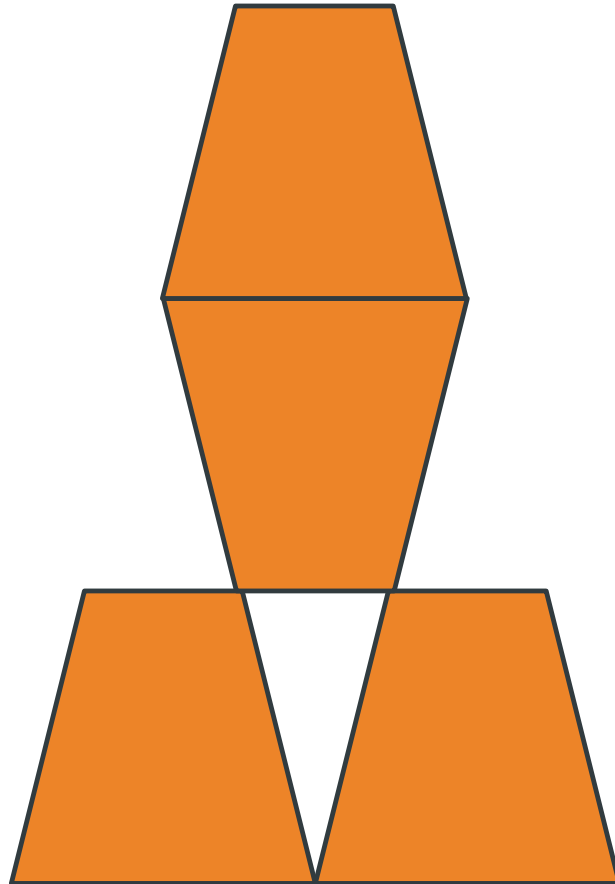
A VARIATION



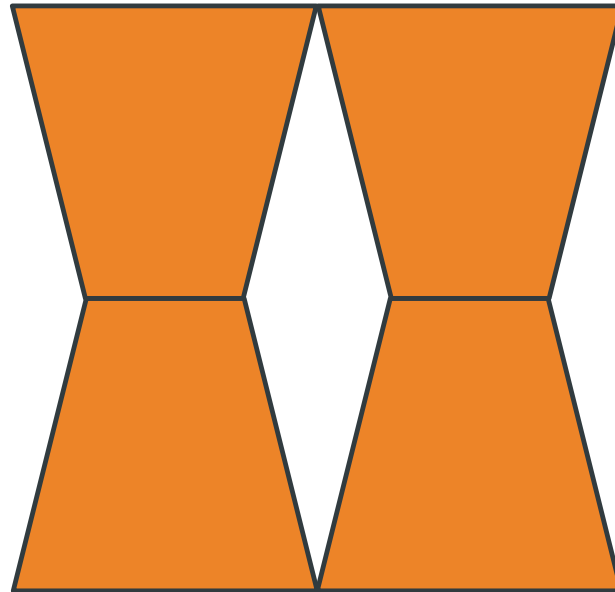
REMEMBER

NO TALKING
TO THE
HUMAN
ROBOT

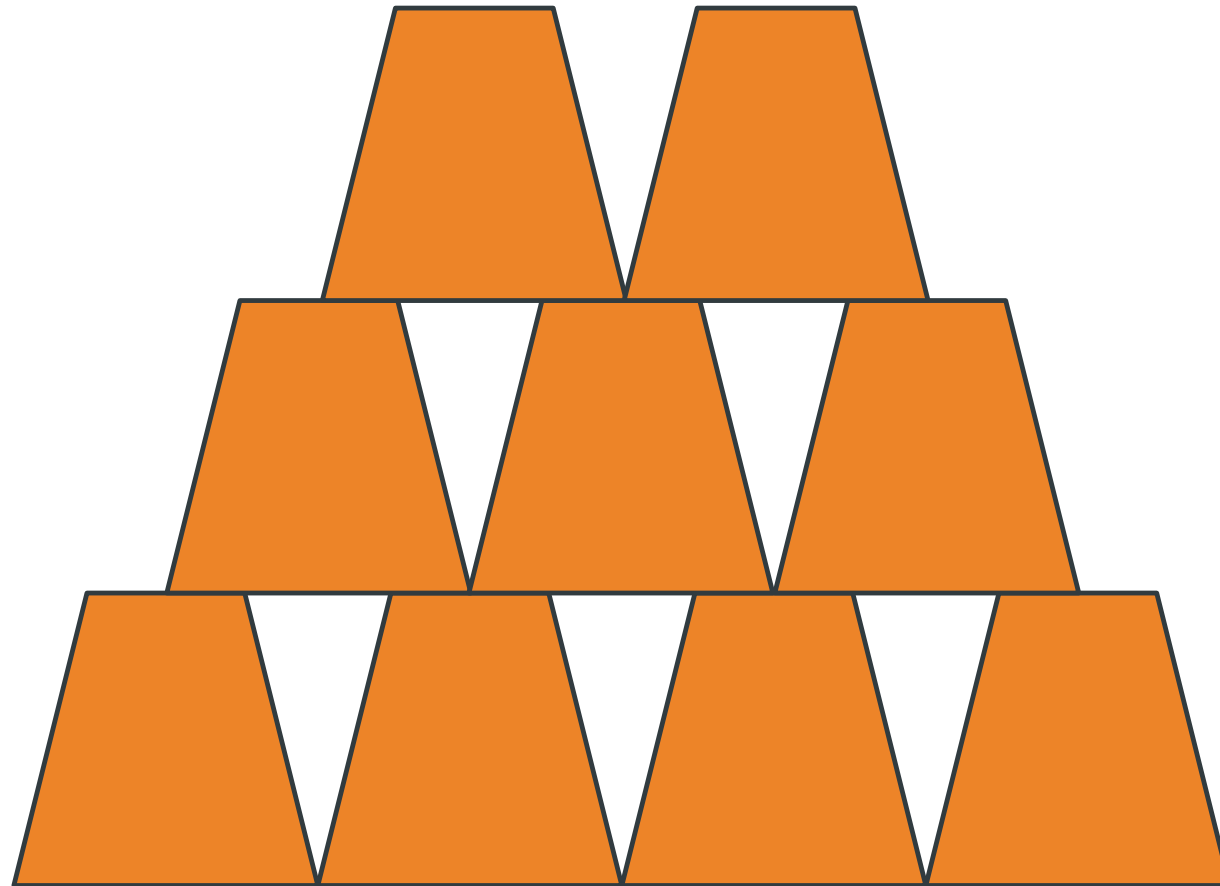
CHALLENGE I



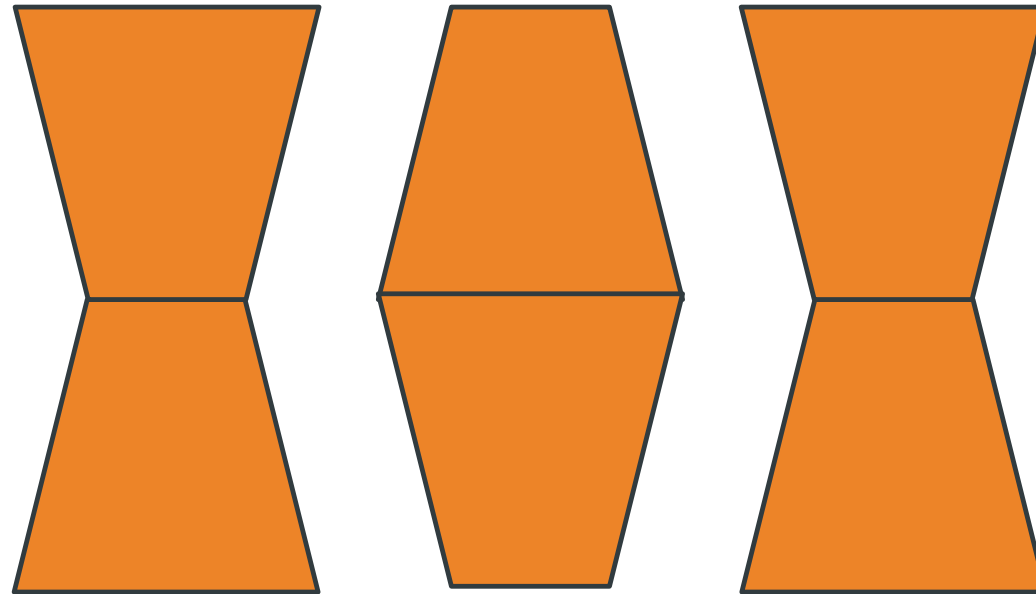
CHALLENGE 2



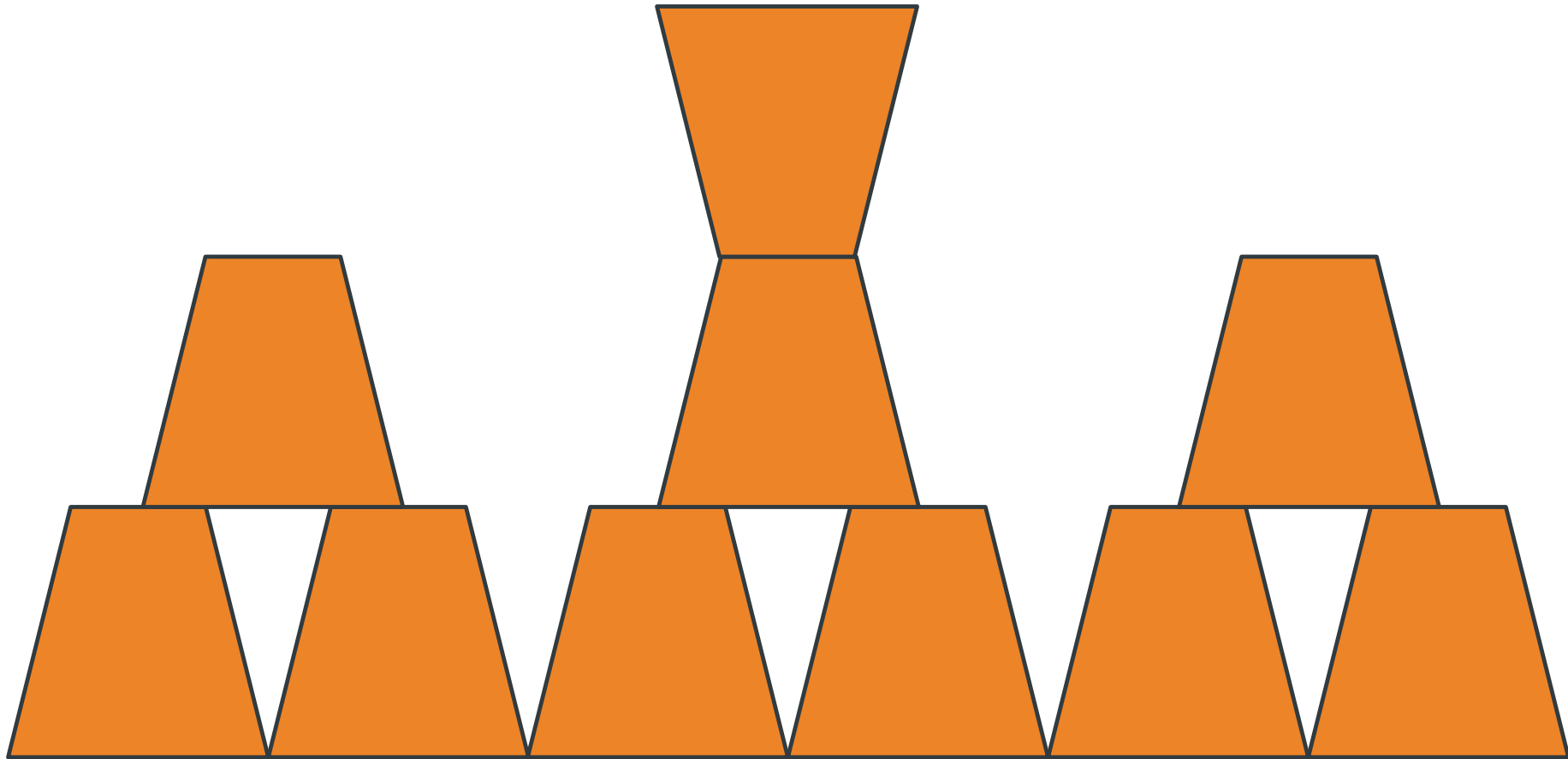
CHALLENGE 3



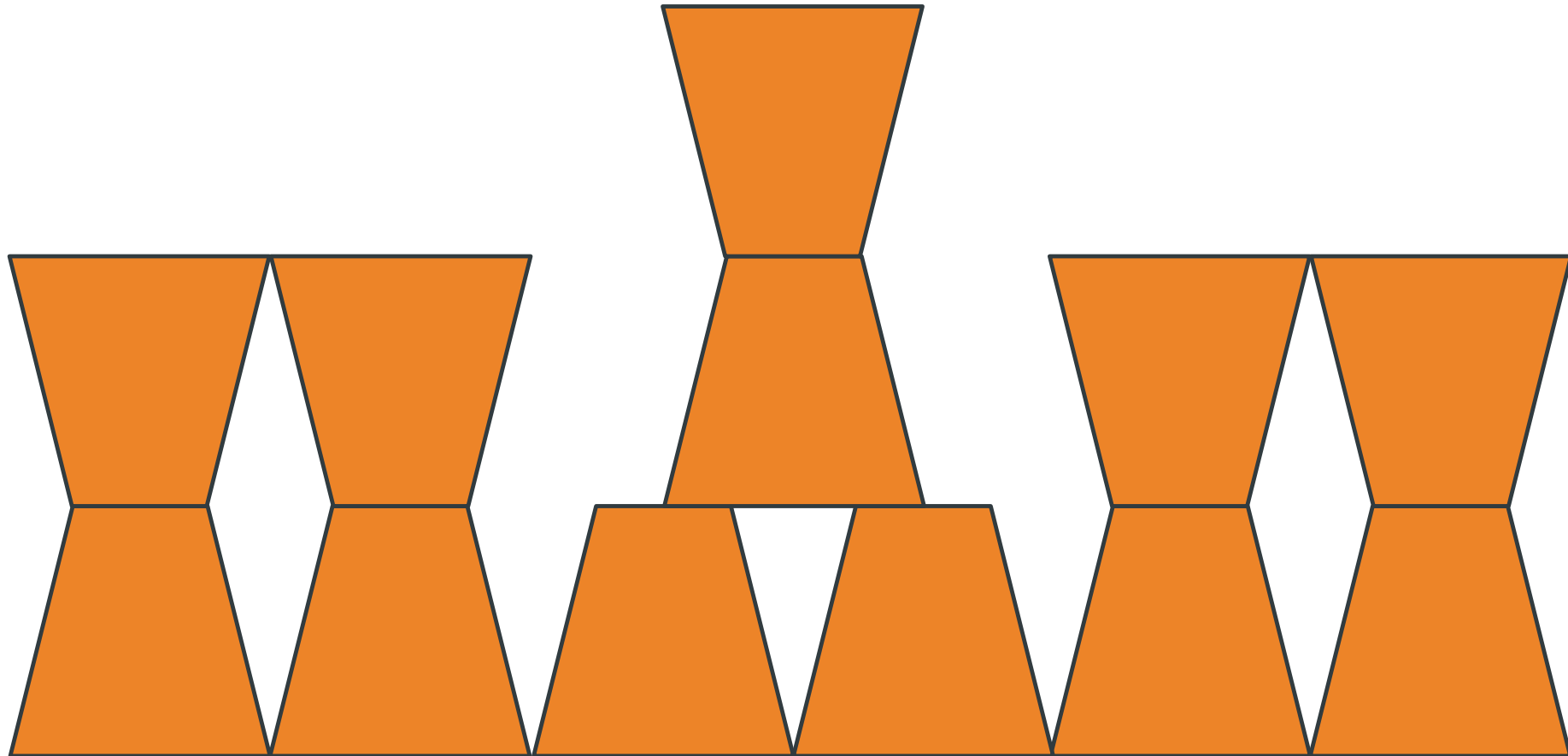
CHALLENGE 4



CHALLENGE 5



CHALLENGE 6



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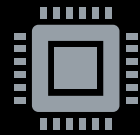
FOOD FOR THOUGHT



How can you eliminate unneeded steps from your program?



How will you debug your program before providing it to your robot?



Why is it critical for a computer program to have absolutely no mistakes?