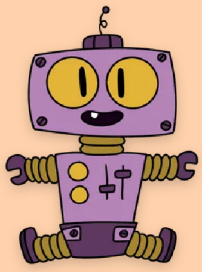
SCIENCE · CODING UNPLUGGED · GRADES 1–3

Code the Robot

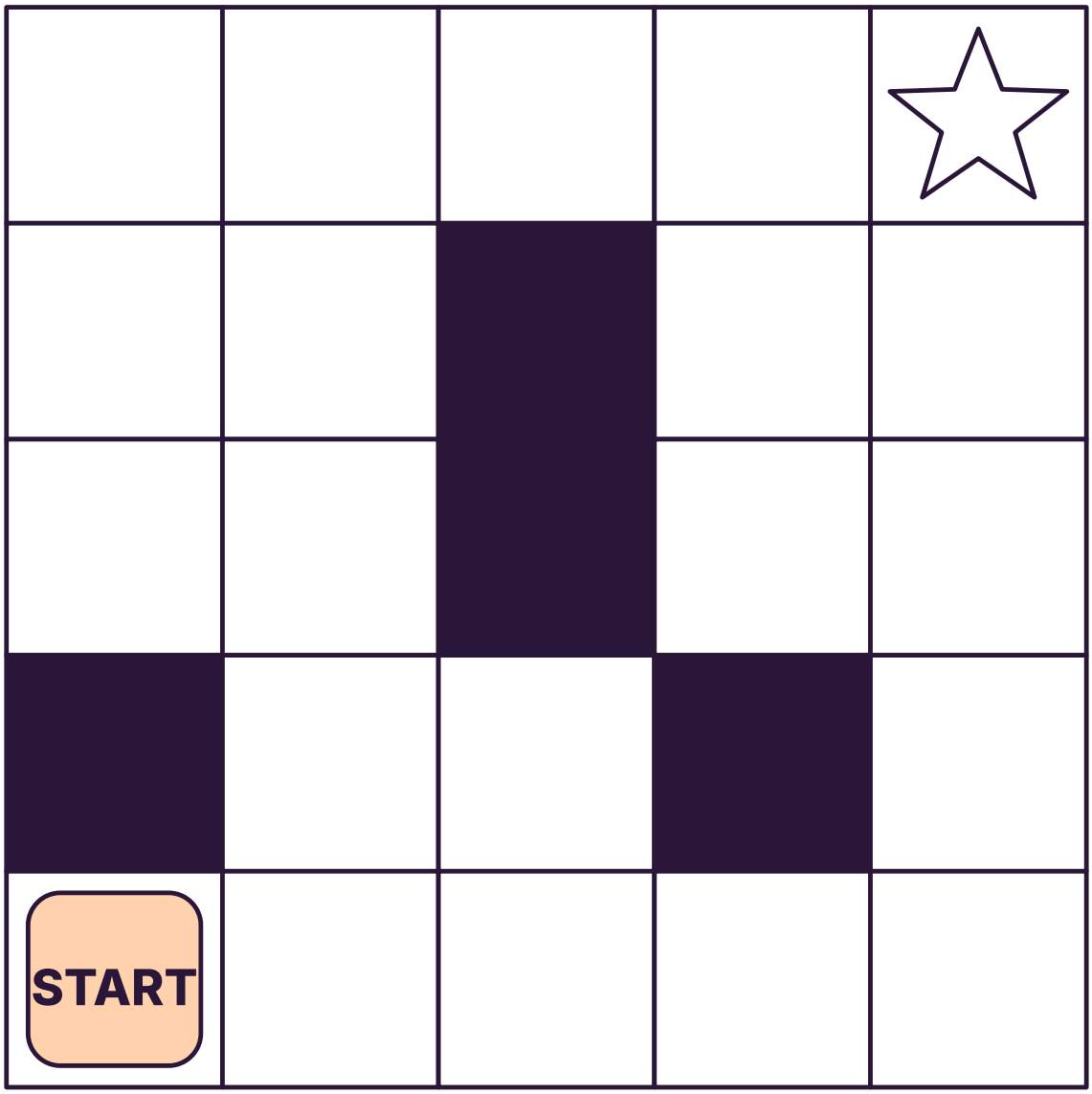
Write the arrows that move the robot from start to the star on a grid.



Name: _____ **Date:** _____

Computers follow code one step at a time. Each arrow moves the robot **one square**: ↑ up, ↓ down, ← left, → right.

Write the arrows that take the robot from START to the star. Do not go through the dark squares.



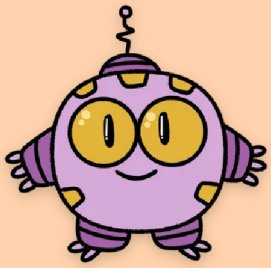
1	2	3	4	5	6	7	8

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SCIENCE · CODING UNPLUGGED · GRADES 2–4

Robot Maze

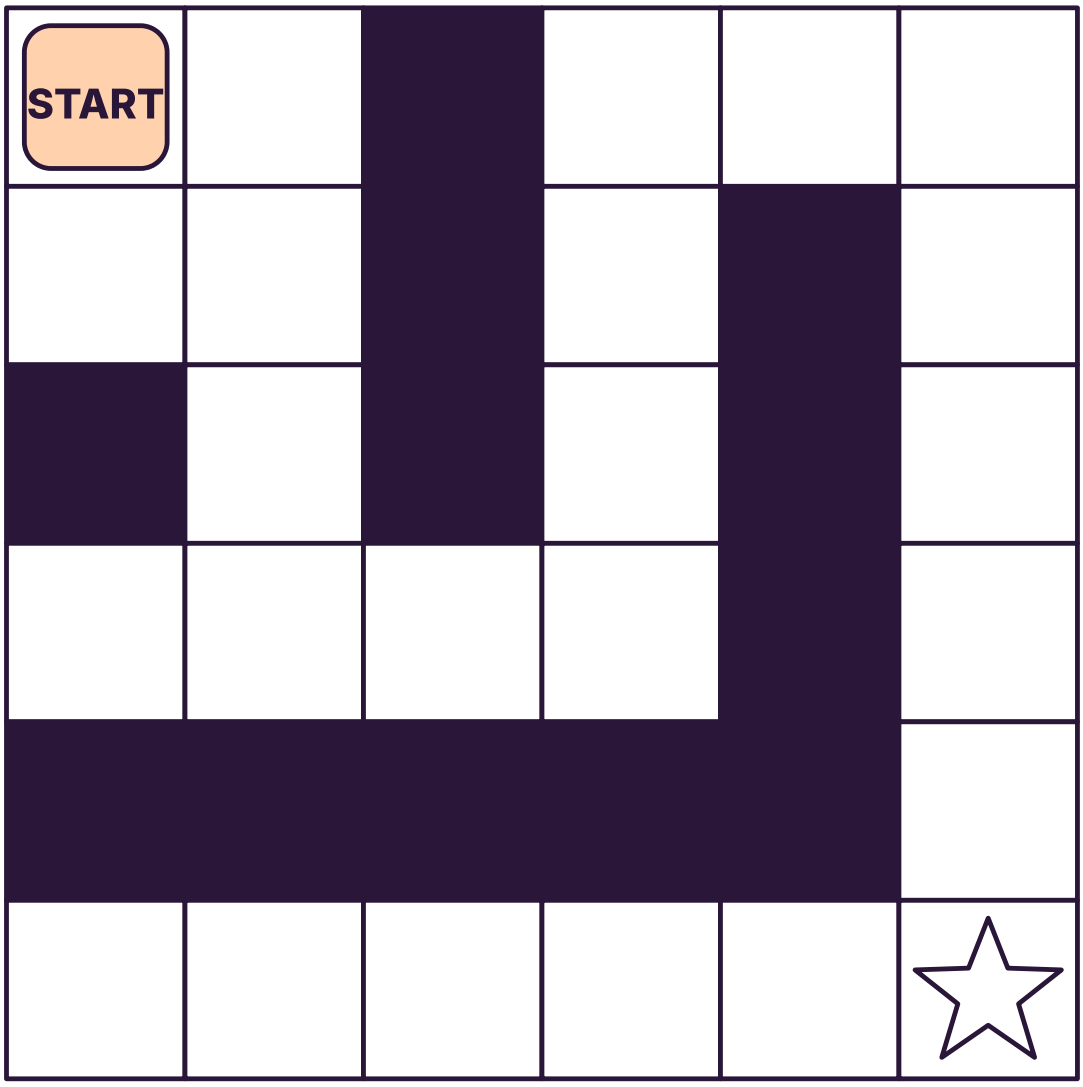
Write the code that takes the robot around the walls of a maze to the star.



Name: _____ **Date:** _____

Each arrow moves the robot **one square**: ↑ up, ↓ down, ← left, → right. The robot cannot go through walls.

Write the code to get the robot through the maze to the star.



1 2 3 4 5 6 7 8 9 10 11 12 13

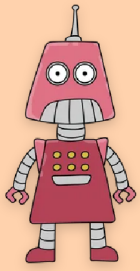
14 15 16

Art © Kevin Coulston

SCIENCE · CODING UNPLUGGED · GRADES K–2

Put the Algorithm in Order

Number the steps of two everyday algorithms, brushing your teeth and planting a seed.



Name: _____ **Date:** _____

An **algorithm** is a list of steps in the right order. A computer needs every step, in order, to do a job.

1. Brushing your teeth: number the steps from 1 to 6.

- ☐ Spit into the sink.
- ☐ Pick up your toothbrush.
- ☐ Put the toothbrush away.
- ☐ Brush the top and bottom teeth.
- ☐ Squeeze toothpaste onto the brush.
- ☐ Rinse the toothbrush.

2. Planting a seed: number the steps from 1 to 4.

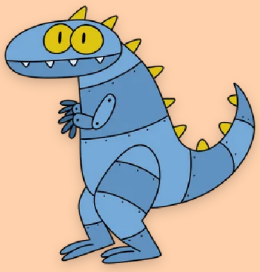
- ☐ Water it.
- ☐ Dig a small hole.
- ☐ Cover the seed with soil.
- ☐ Drop in a seed.

Art © Kevin Coulston

SCIENCE · CODING UNPLUGGED · GRADES 2–5

Find the Bug

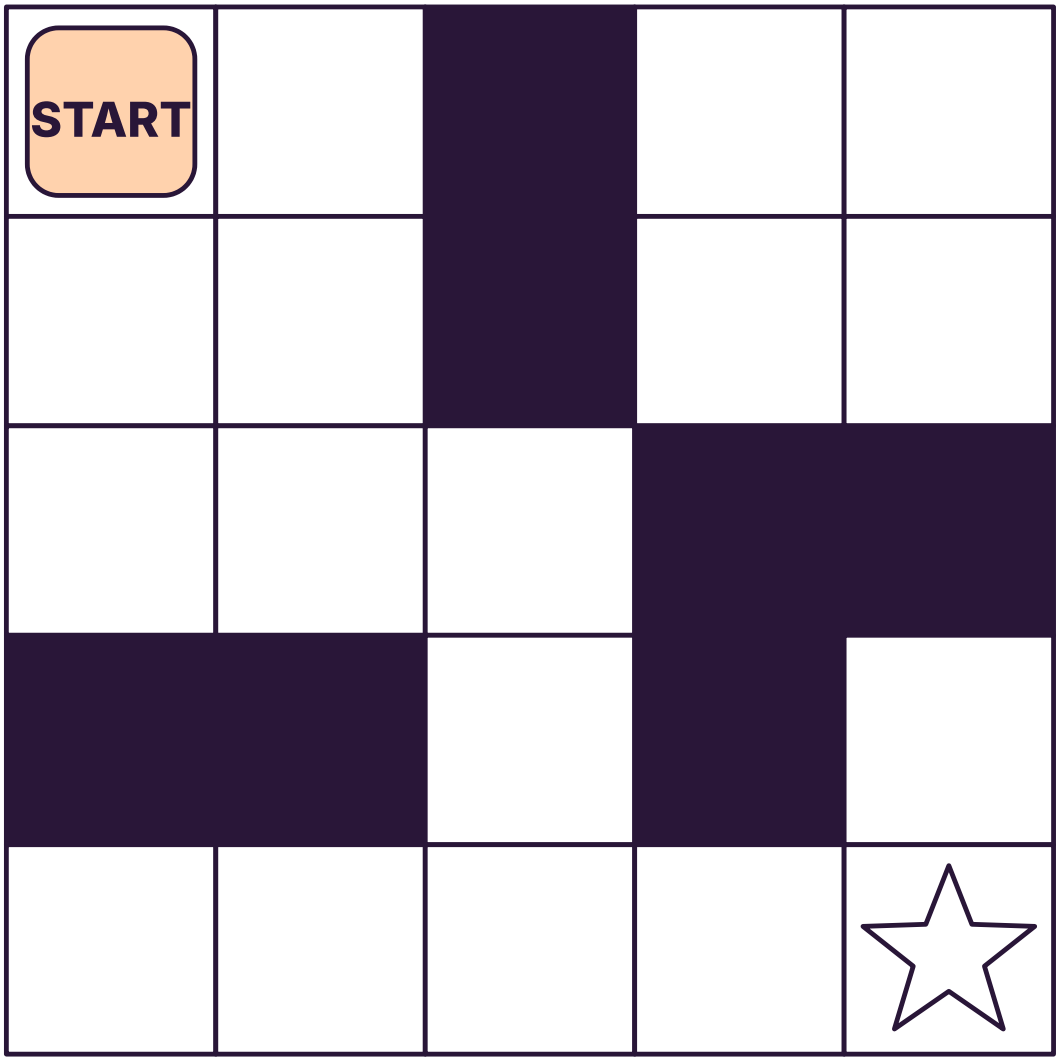
The robot's code has one wrong arrow. Follow it, find the bug and fix it.

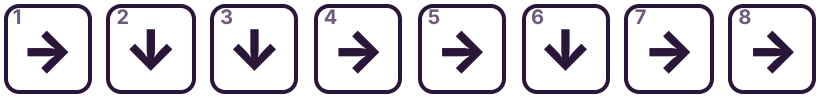


Name: _____ **Date:** _____

A mistake in code is called a **bug**. Fixing it is called **debugging**. Follow this code with your finger. One arrow sends the robot the wrong way.

Follow the code from START. Find the step that goes wrong.





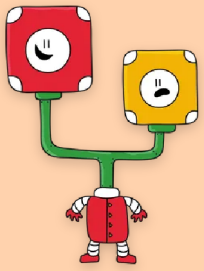
The bug is in step number _____ **The arrow should be** _____

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SCIENCE · CODING UNPLUGGED · GRADES 3–5

Write Your Name in Binary

Use a code of ones and zeros to decode two words and write your own name the way a computer could.



Name: _____ **Date:** _____

Computers store everything as **1s and 0s**, called **binary code**. In this code, every letter is five 1s and 0s.

Word bank

A 00001	B 00010	C 00011	D 00100	E 00101	F 00110
G 00111	H 01000	I 01001	J 01010	K 01011	L 01100
M 01101	N 01110	O 01111	P 10000	Q 10001	R 10010
S 10011	T 10100	U 10101	V 10110	W 10111	X 11000
Y 11001	Z 11010				

1. Decode the words.

00011 00001 10100 _____

00100 01111 00111 _____

2. Write your first name in binary code, one letter on each line.

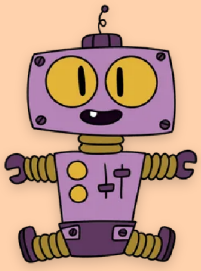
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Art © Kevin Coulston

ANSWER KEY · CODING UNPLUGGED · GRADES 1–3

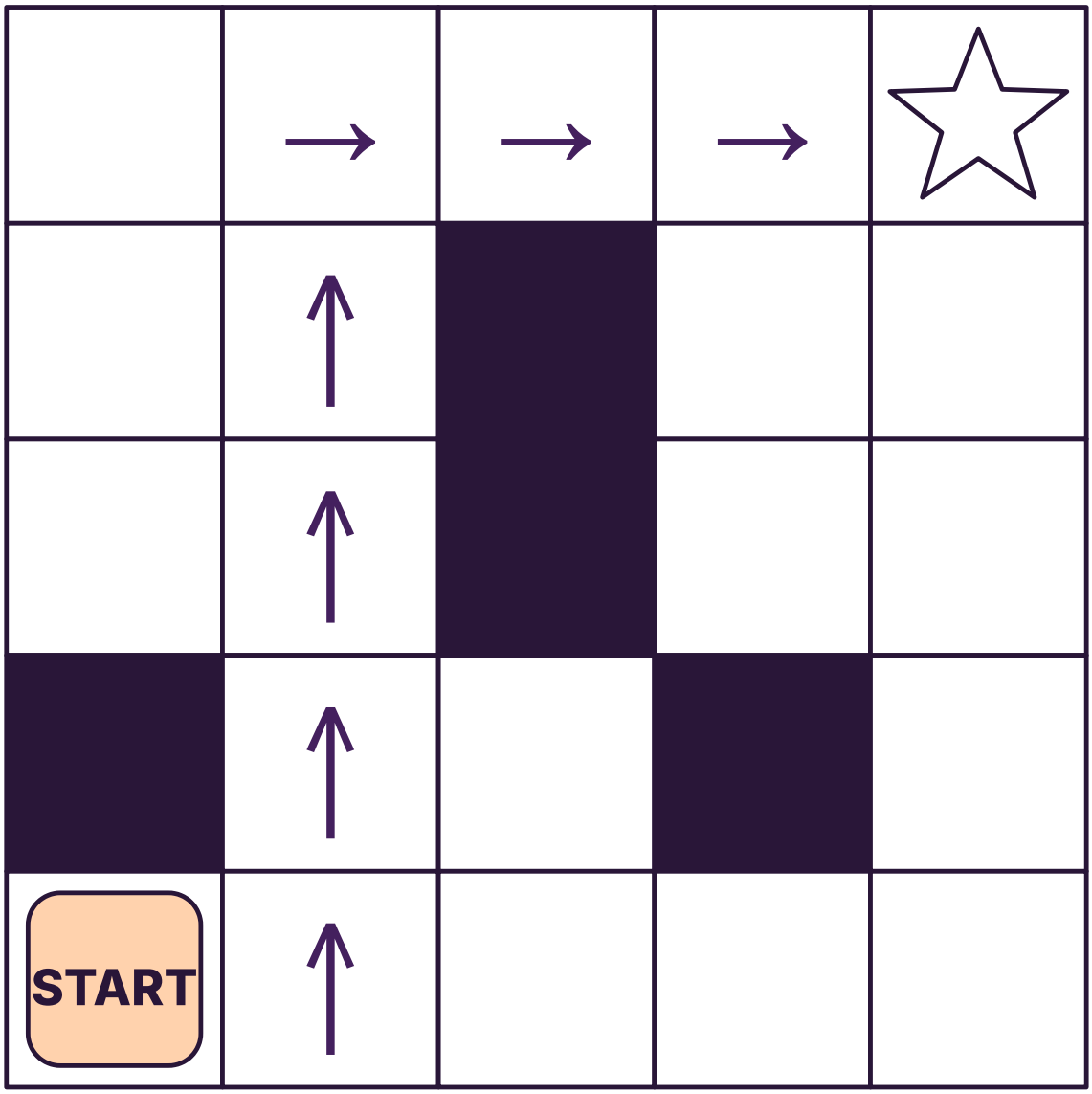
Answer Key: Code the Robot

Answers for grown-ups. Some questions have more than one good answer.



Computers follow code one step at a time. Each arrow moves the robot **one square**: ↑ up, ↓ down, ← left, → right.

Write the arrows that take the robot from START to the star. Do not go through the dark squares.



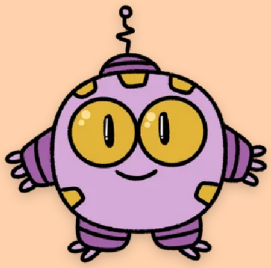
1 → 2 ↑ 3 ↑ 4 ↑ 5 ↑ 6 → 7 → 8 →

Art © Kevin Coulston

ANSWER KEY · CODING UNPLUGGED · GRADES 2–4

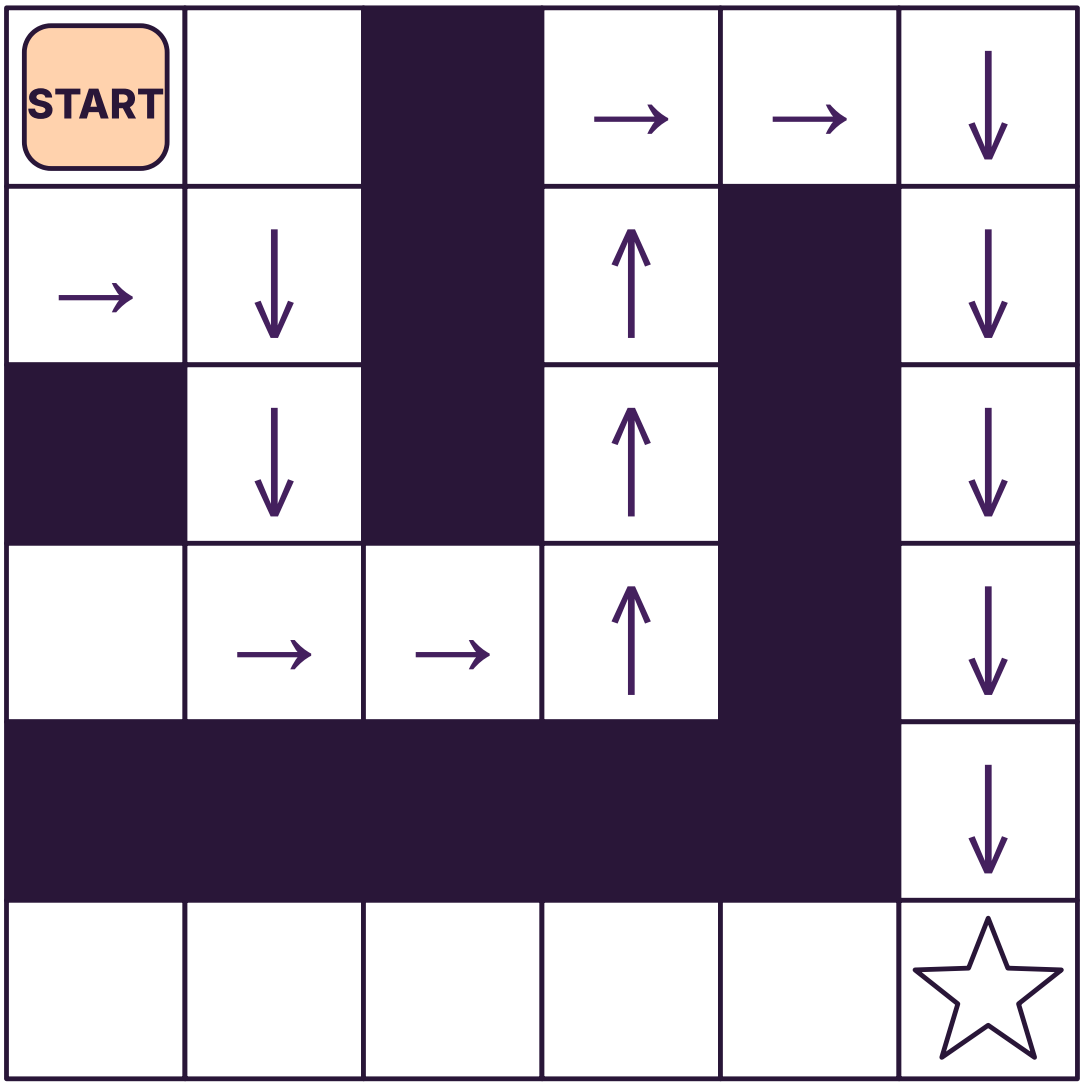
Answer Key: Robot Maze

Answers for grown-ups. Some questions have more than one good answer.



Each arrow moves the robot **one square**: ↑ up, ↓ down, ← left, → right. The robot cannot go through walls.

Write the code to get the robot through the maze to the star.



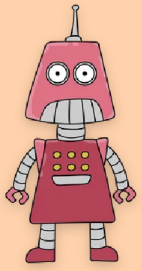
1 ↓ 2 → 3 ↓ 4 ↓ 5 → 6 → 7 ↑ 8 ↑ 9 ↑ 10 → 11 → 12 ↓ 13 ↓ 14 ↓ 15 ↓ 16 ↓

Art © Kevin Coulston

ANSWER KEY · CODING UNPLUGGED · GRADES K–2

Answer Key: Put the Algorithm in Order

Answers for grown-ups. Some questions have more than one good answer.



An **algorithm** is a list of steps in the right order. A computer needs every step, in order, to do a job.

1. Brushing your teeth: number the steps from 1 to 6.

4 Spit into the sink.

1 Pick up your toothbrush.

6 Put the toothbrush away.

3 Brush the top and bottom teeth.

2 Squeeze toothpaste onto the brush.

5 Rinse the toothbrush.

2. Planting a seed: number the steps from 1 to 4.

4 Water it.

1 Dig a small hole.

3 Cover the seed with soil.

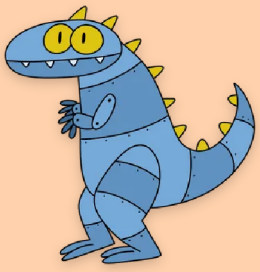
2 Drop in a seed.

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ANSWER KEY · CODING UNPLUGGED · GRADES 2–5

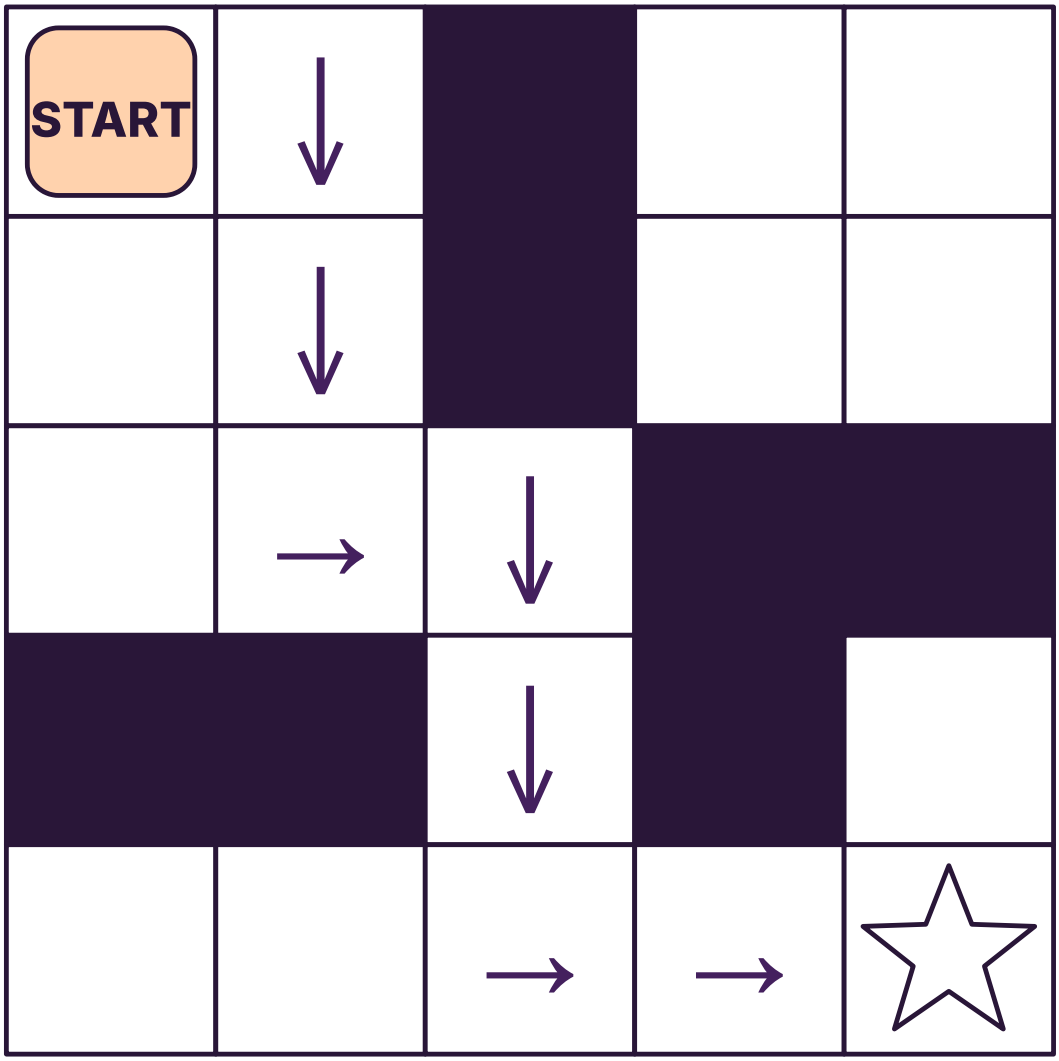
Answer Key: Find the Bug

Answers for grown-ups. Some questions have more than one good answer.



A mistake in code is called a **bug**. Fixing it is called **debugging**. Follow this code with your finger. One arrow sends the robot the wrong way.

Follow the code from START. Find the step that goes wrong.



1 → 2 ↓ 3 ↓ 4 → 5 → 6 ↓ 7 → 8 →

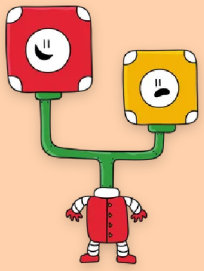
The bug is in step number 5 **The arrow should be** ↓ (down)

Art © Kevin Coulston

ANSWER KEY · CODING UNPLUGGED · GRADES 3–5

Answer Key: Write Your Name in Binary

Answers for grown-ups. Some questions have more than one good answer.



Computers store everything as **1s and 0s**, called **binary code**. In this code, every letter is five 1s and 0s.

Word bank

A 00001	B 00010	C 00011	D 00100	E 00101	F 00110
G 00111	H 01000	I 01001	J 01010	K 01011	L 01100
M 01101	N 01110	O 01111	P 10000	Q 10001	R 10010
S 10011	T 10100	U 10101	V 10110	W 10111	X 11000
Y 11001	Z 11010				

1. Decode the words.

00011 00001 10100 CAT

00100 01111 00111 DOG

2. Write your first name in binary code, one letter on each line.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

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