Intro

Hi! This is a two-part questionnaire. The first part has a few questions about your programming experience. The second part has a few programming-related questions in multiple-choice format.

Programming Experience 1

Who is your teacher in the class you are in right now?

On a scale from 1 to 5, how do you estimate your programming experience?

- 1 (Very inexperienced)
- 2
- 3
- 4
- 5 (Very experienced)

How many computer science classes, workshops or tutorials have you taken before, at school, online or elsewhere?

- 0
- 1
- 2
- 3
- 4 or more

Please rate your level of competence with the following programming languages? Select one number for each language/group of languages. Use the following scale:
1. Never programmed in this language.
2. Minimal experience. Wrote one or two small programs, some from scratch.
3. Some experience. Wrote several small programs from scratch.
4. Substantial experience. Wrote several small to medium-sized programs.
5. Extensive experience. Wrote many programs.

	1	2	3	4	5
C++ or Java	○	○	○	○	○
Scratch, Blockly, or other block-based tool	○	○	○	○	○
Python	○	○	○	○	○
Javascript, HTML or other web-based languages	○	○	○	○	○
Other:	○	○	○	○	○

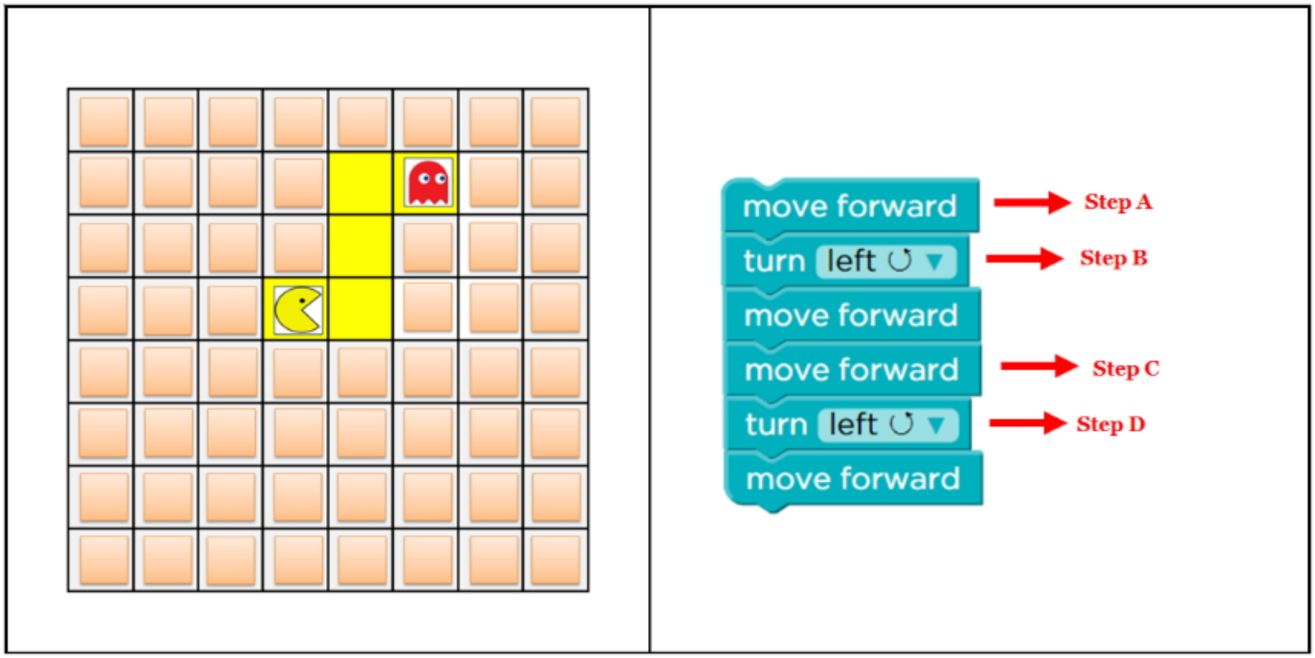
CS Knowledge

Next are a series of questions about programming and computational thinking.

For some of you, the questions will be quite easy, for others they will be harder. That is ok. Try to do your best, but please be honest when you do not know the answers. Do not guess. Do not worry if you don't know the answers, because these questions help us design better learning experiences for students like you.

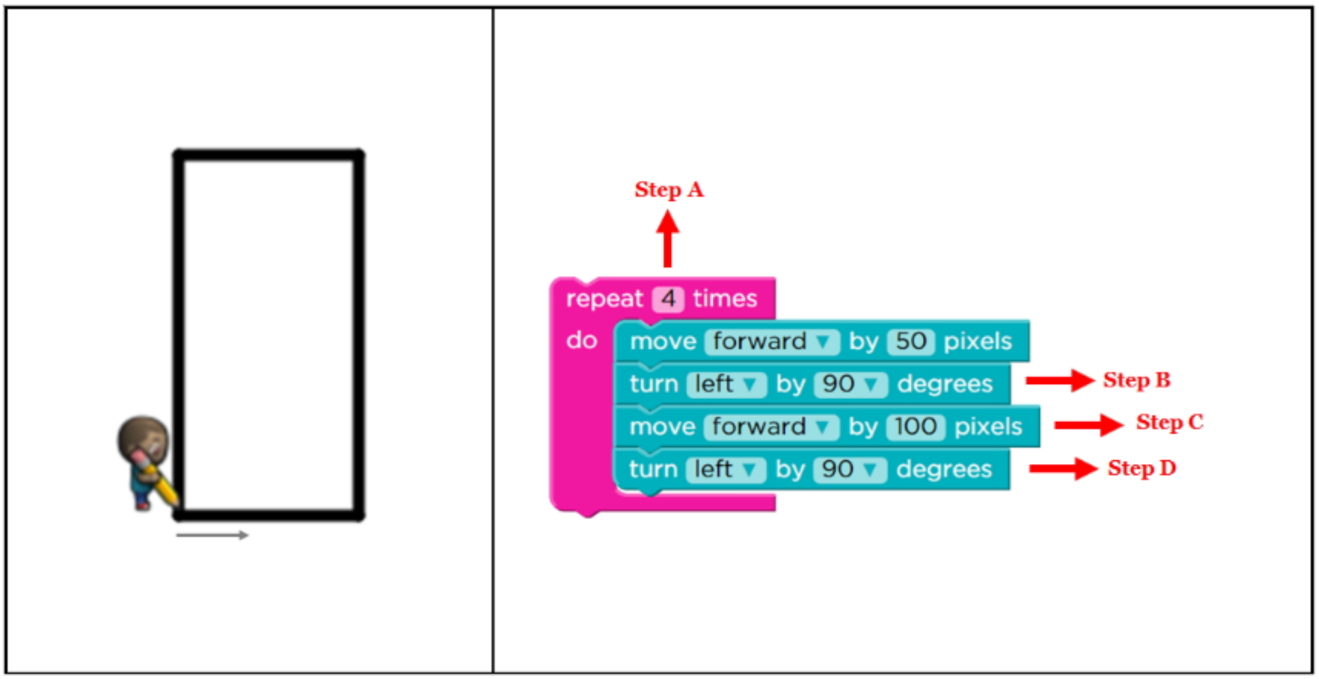
CtT_Bebras

The instructions should take 'Pac-Man' (the yellow creature) to the ghost (in red) by the path that is marked out in yellow. In which step of the instruction is there a mistake?



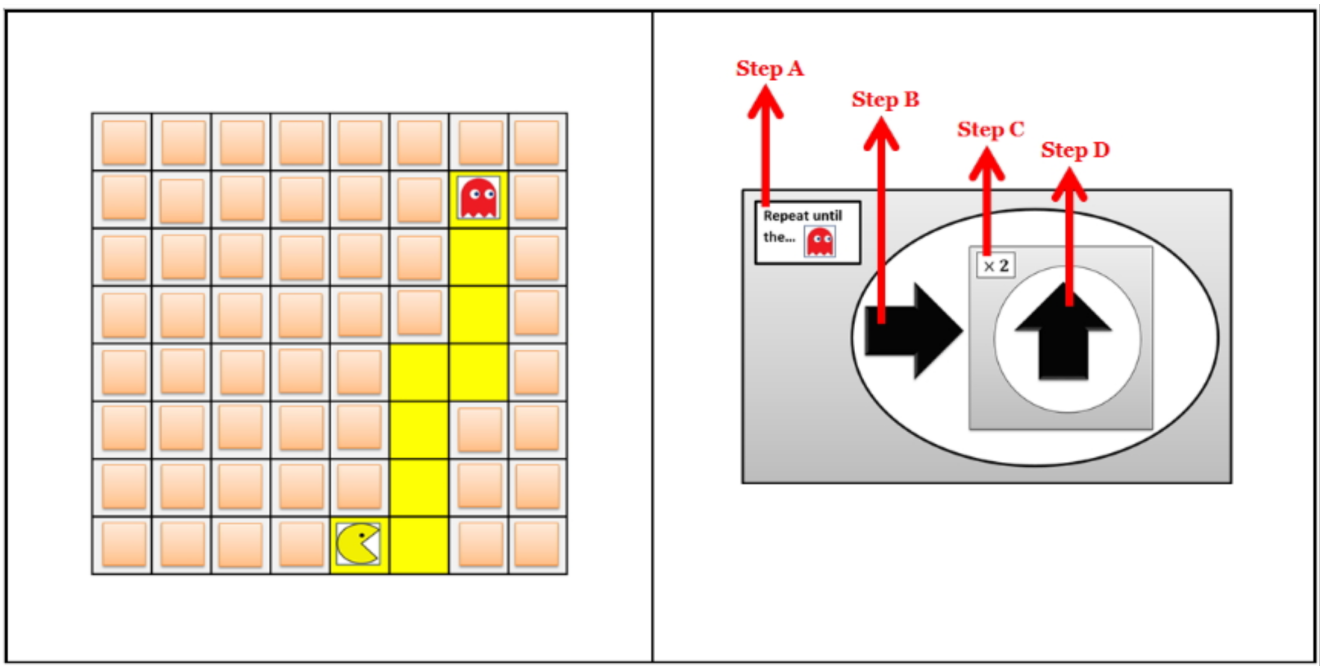
- Step A
- Step B
- Step C
- Step D
- I do not know

The instructions should make the artist draw the following rectangle once (50 pixels wide and 100 pixels high). In which step of the instructions is there a mistake?



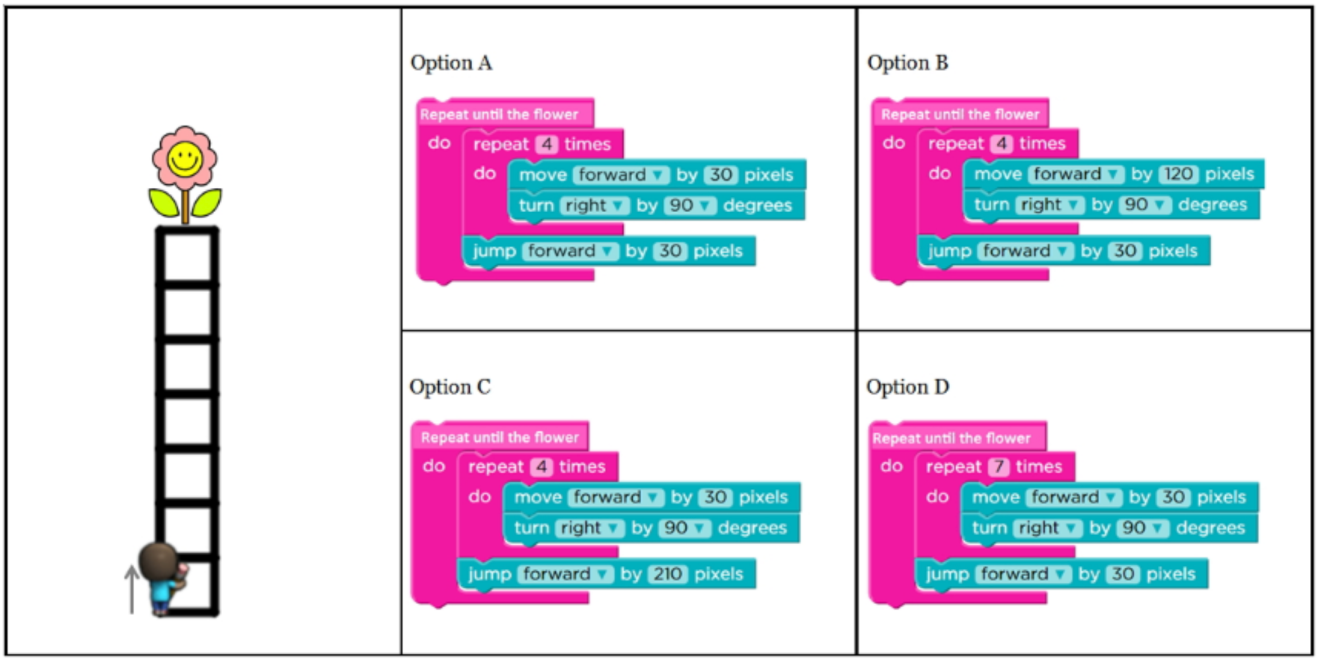
- Step A
- Step B
- Step C
- Step D
- I do not know

The instructions should take 'Pac-Man' (the yellow creature) to the ghost (in red) by the path marked out in yellow. In which step of the instructions is there a **mistake**?



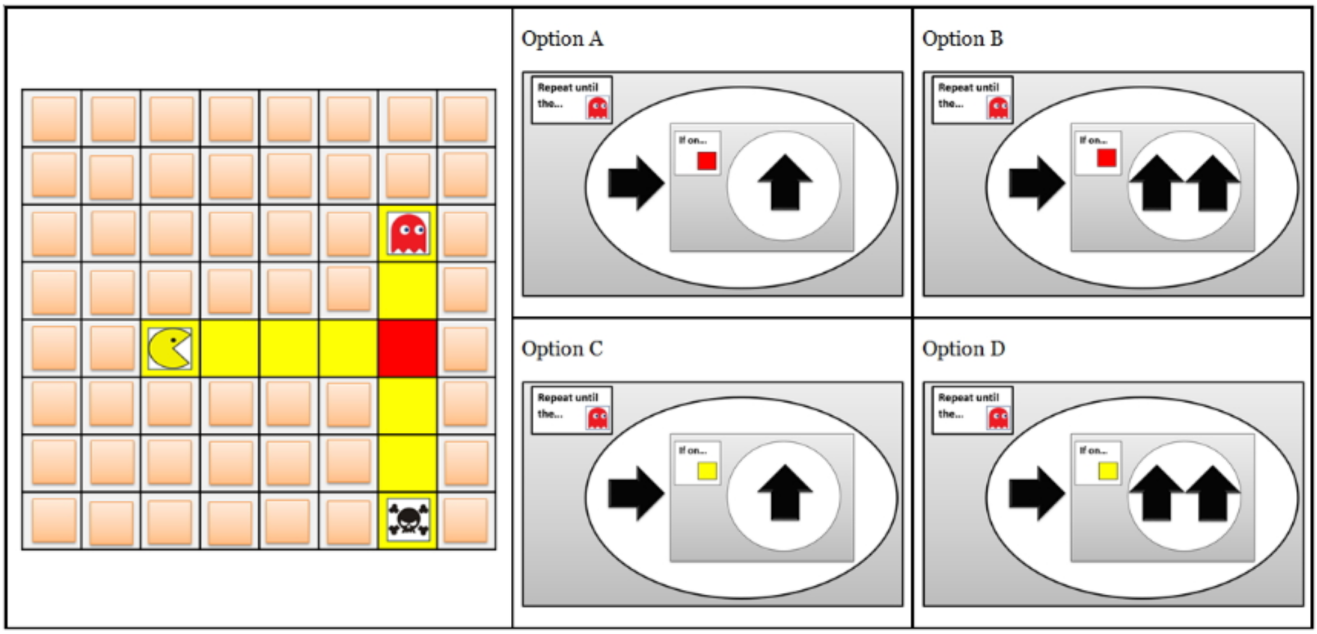
- Step A
- Step B
- Step C
- Step D
- I do not know

Which instructions should the artist follow to draw the ladder that reaches the flower? There are 30 pixels between each rung.



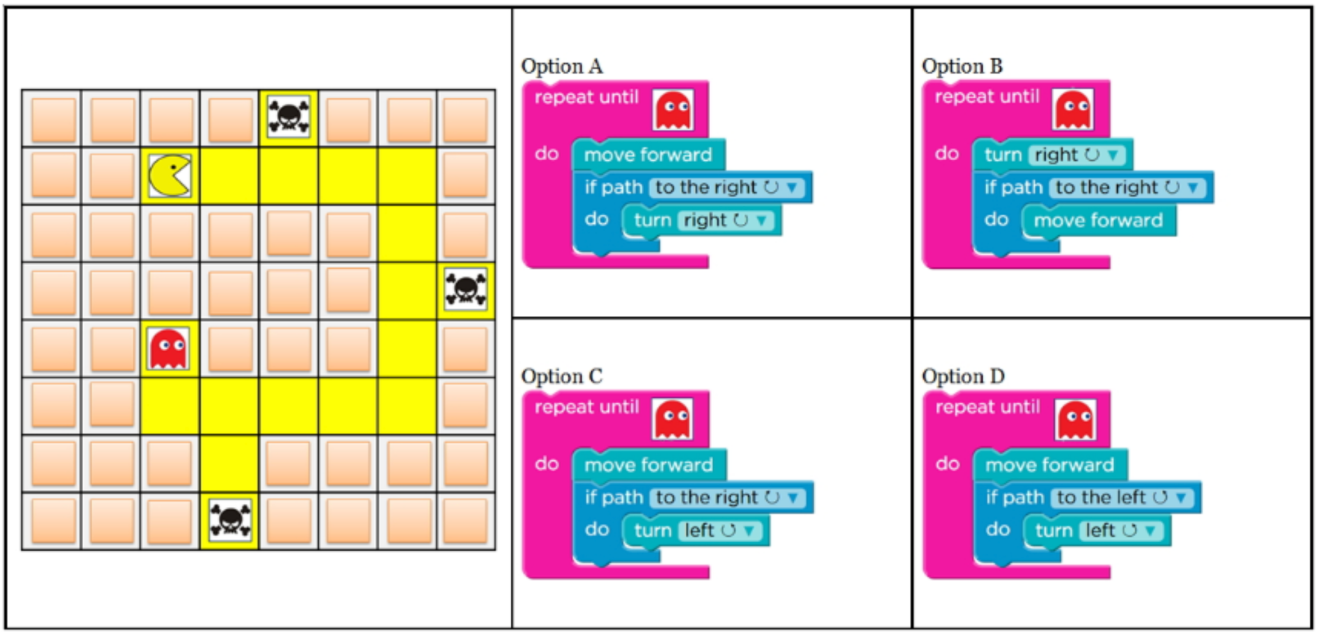
- Option A
- Option B
- Option C
- Option D
- I do not know.

Which instructions take 'Pac-Man' (yellow creature) to the ghost (in red) by the path marked out in yellow?



- Option A
- Option B
- Option C
- Option D
- I do not know.

Which instructions take 'Pac-Man' (yellow creature) to the ghost (in red) by the path marked out in yellow?



- Option A
- Option B
- Option C
- Option D
- I do not know.

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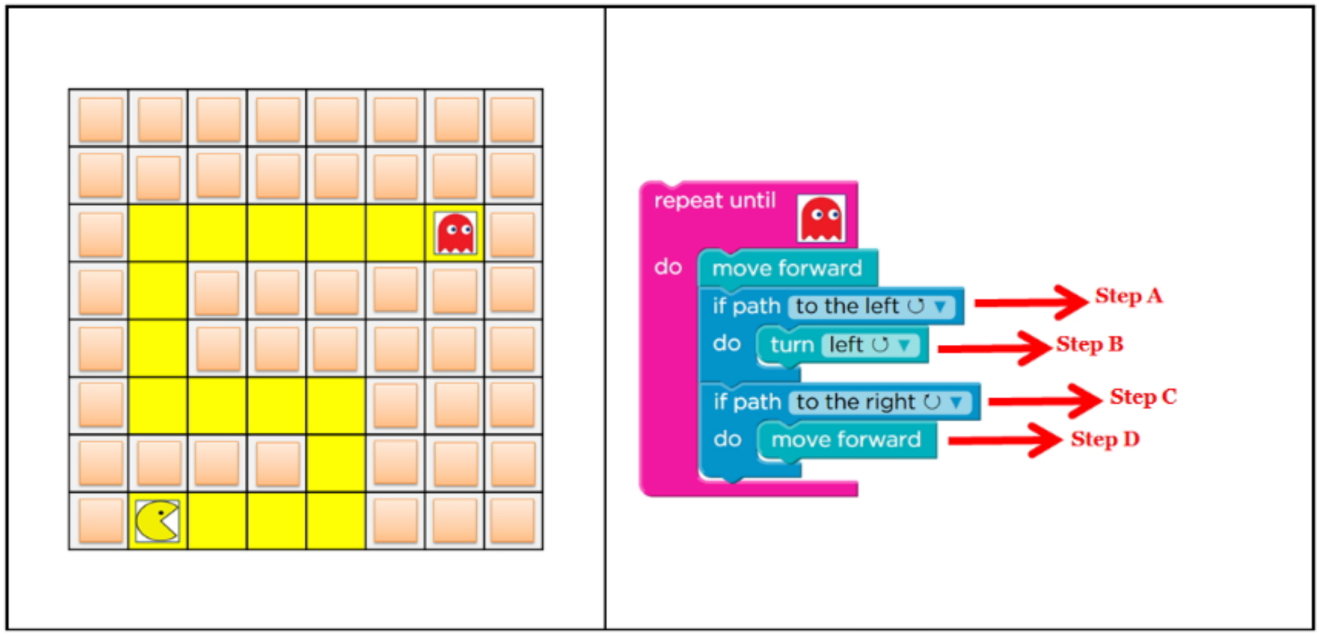
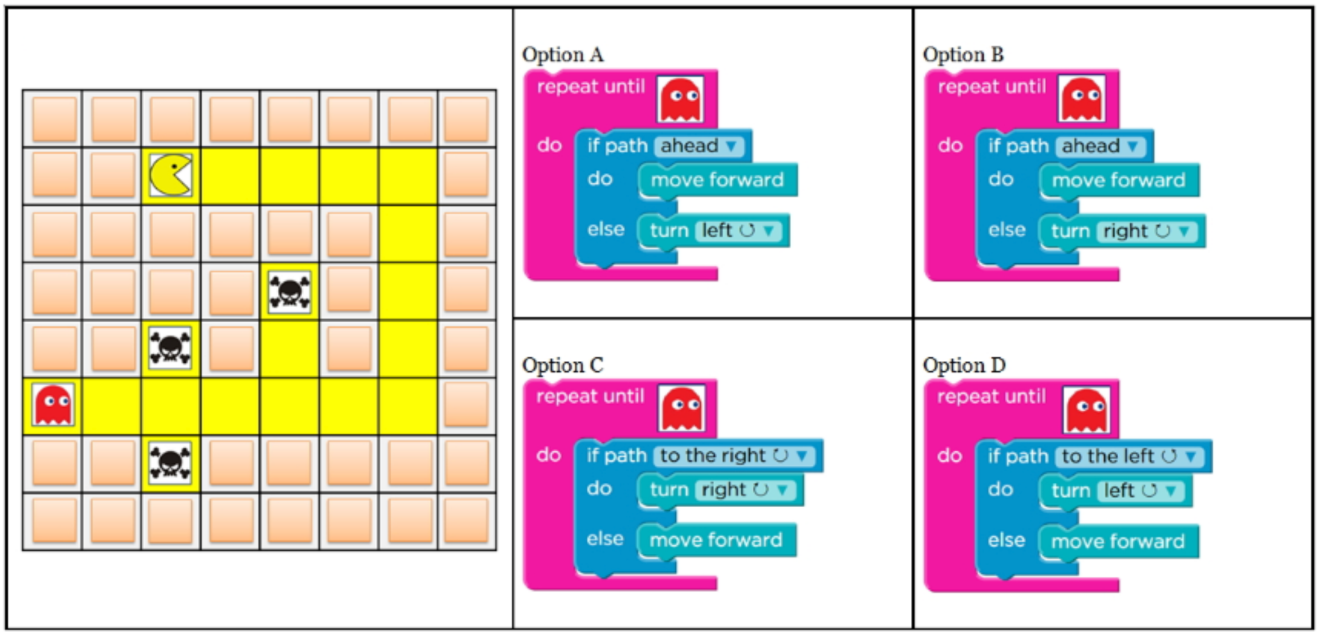


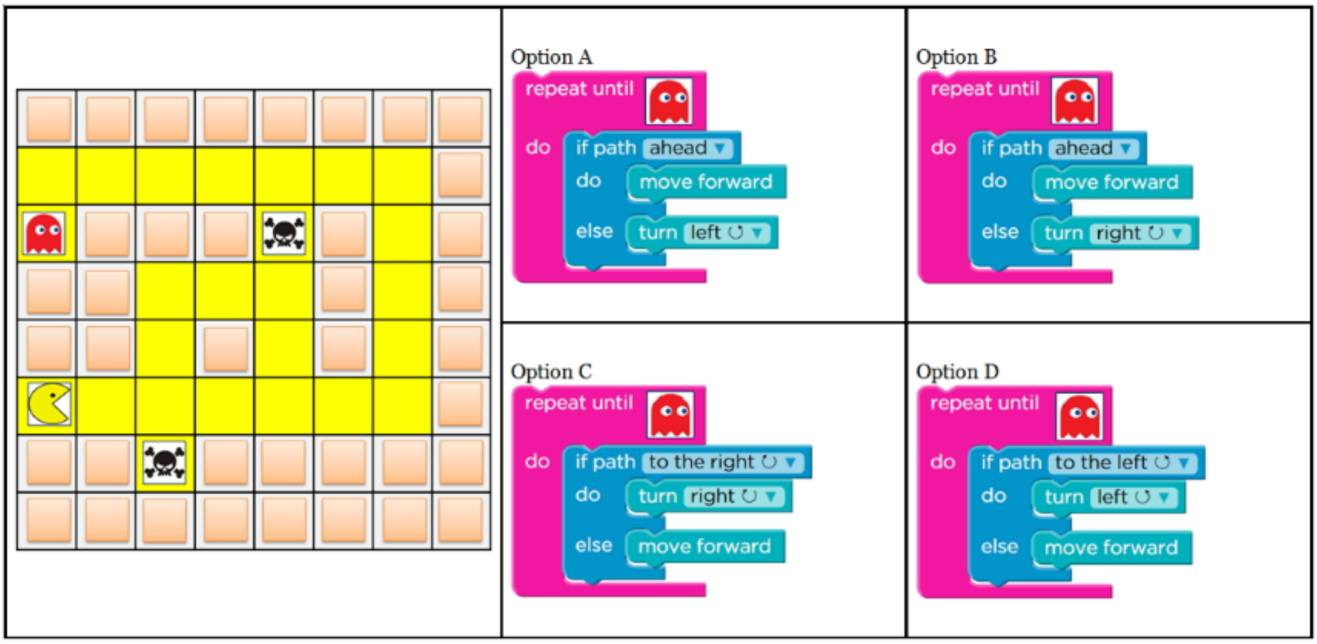
- Step A
- Step B
- Step C
- Step D
- I do not know.

Which instructions take 'Pac-Man' (yellow creature) to the ghost (in red) by the path marked out in yellow?



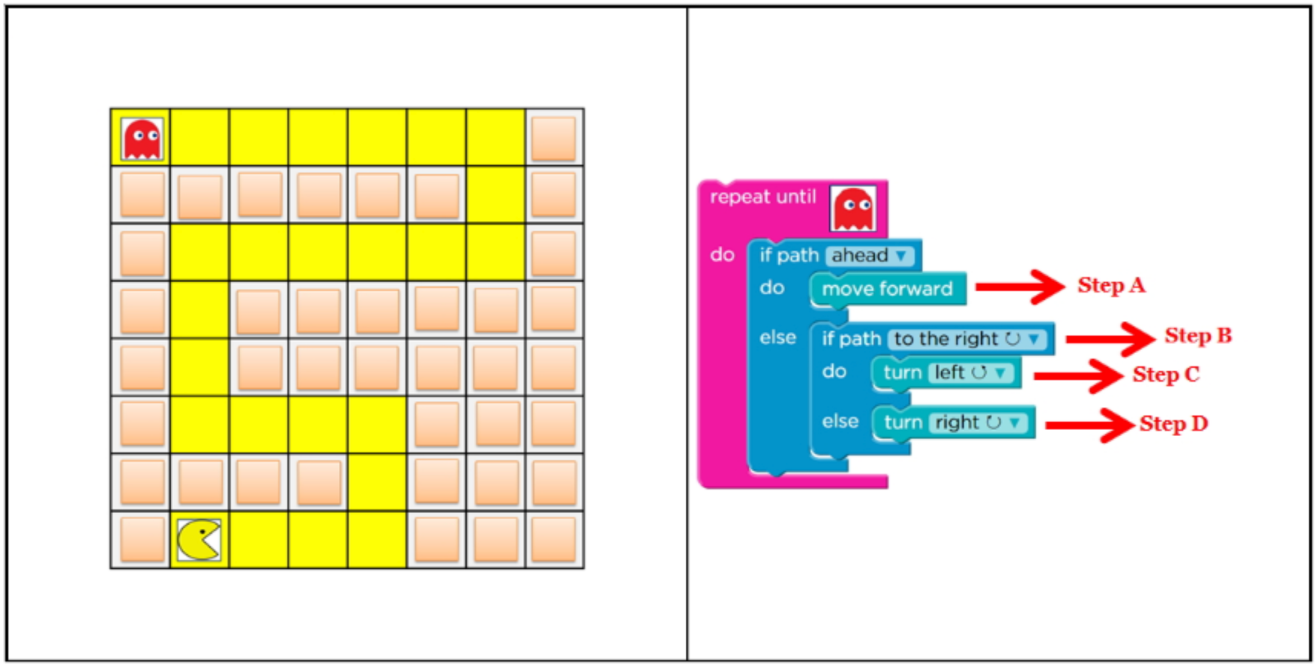
- Option A
- Option B
- Option C
- Option D
- I do not know.

Which instructions take 'Pac-Man' (yellow creature) to the ghost (in red) by the path marked out in yellow?



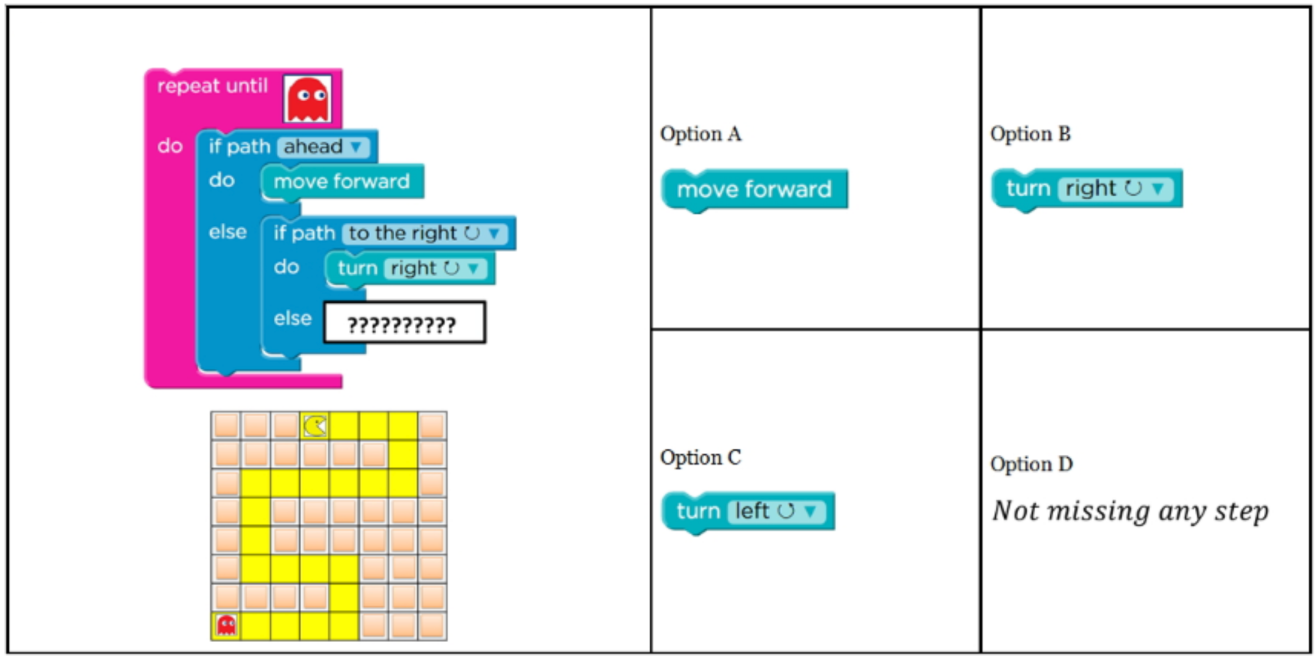
- Option A
- Option B
- Option C
- Option D
- I do not know.

The instructions should take 'Pac-Man' (yellow creature) to the ghost (in red) by the path marked out in yellow. In which step of the instructions is there a mistake?



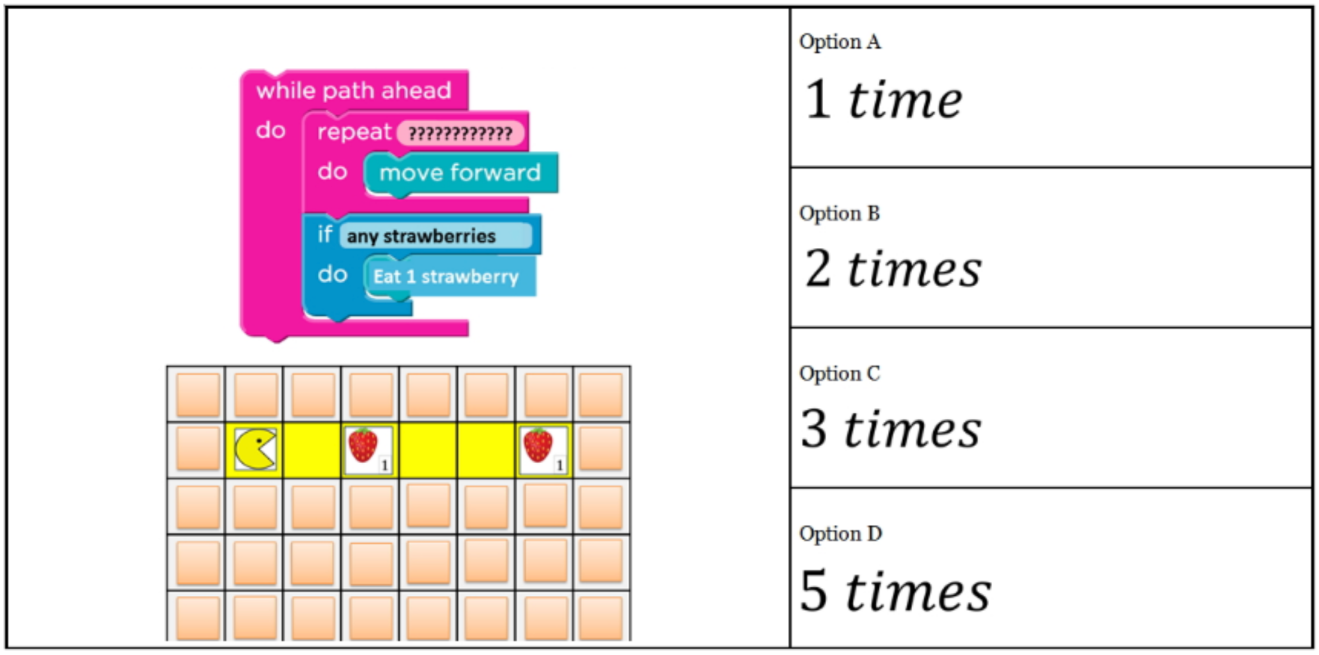
- Step A
- Step B
- Step C
- Step D
- I do not know.

Which step is missing in the instructions ('??????????') below to take 'Pac-Man' (yellow creature) to the ghost (in red) by the path marked out in yellow?



- Option A
- Option B
- Option C
- Option D
- I do not know.

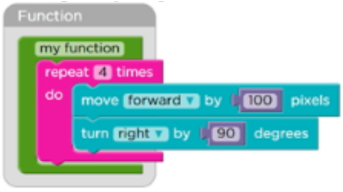
What is missing in the instructions below ('???????????') to take 'Pac-Man' (yellow creature) to the strawberries by the path marked out in yellow and tell 'Pac-Man' to eat all the strawberries shown?

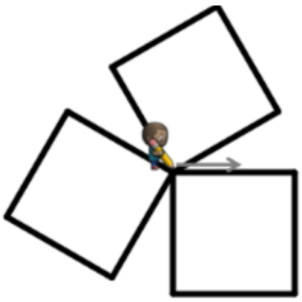


- Option A
- Option B
- Option C
- Option D
- I do not know.

Which instructions should the artist follow to draw the following design on the bottom? Each side of each square measures 100 pixels.

The following set of instructions is called **"my function"**, and draws one square of 100 pixels each side:



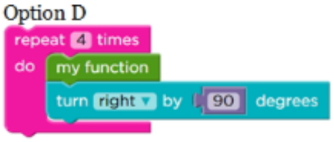


Option A

Option B

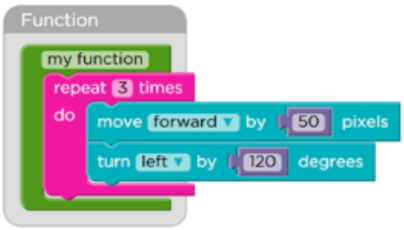
Option C

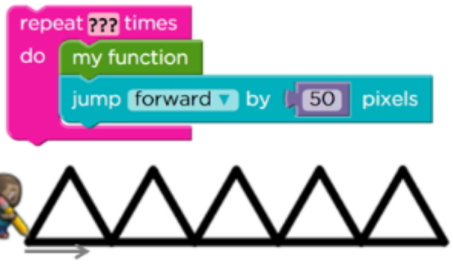
Option D



- Option A
- Option B
- Option C
- Option D
- I do not know.

The instructions below should make the artist draw the following triangular design on the bottom. Each side of each triangle measures 50 pixels. What is missing in the instructions ('???')?

<table>
<tr>
<td rowspan="2">The following set of instructions is called 'my function', and draws one triangle of 50 pixels each side.
 

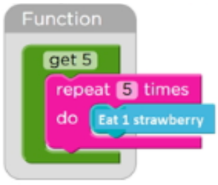


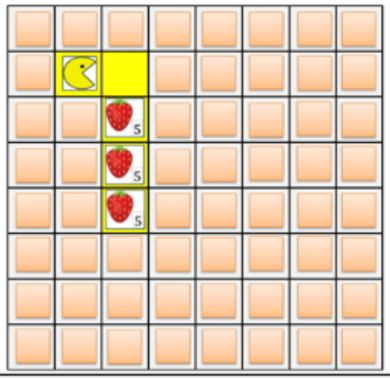
</td>
<td>Option A
15</td>
<td>Option B
5</td>
</tr>
<tr>
<td>Option C
4</td>
<td>Option D
3</td>
</tr>
</table>

- Option A
- Option B
- Option C
- Option D
- I do not know.

Which instructions take 'Pac-Man' (yellow creature) to the strawberries by the path marked out in yellow, and tell 'Pac-Man' to eat all the strawberries shown?

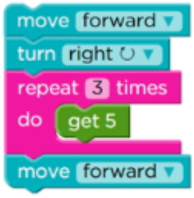
The following set of instructions is called **'get 5'**:





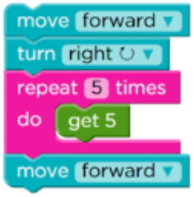
Option A

Option B



Option C

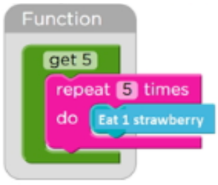
Option D

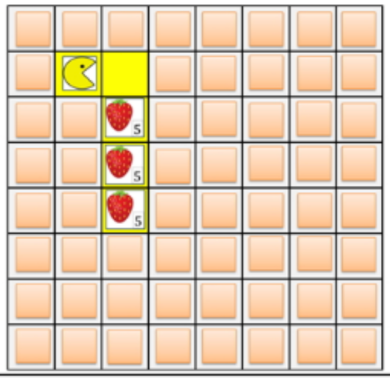


- Option A
- Option B
- Option C
- Option D
- I do not know.

Which instructions take 'Pac-Man' (yellow creature) to the strawberries by the path marked out in yellow, and tell 'Pac-Man' to eat all the strawberries shown?

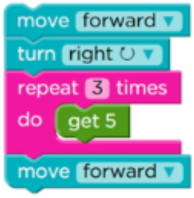
The following set of instructions is called **'get 5'**:





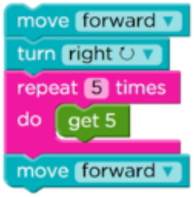
Option A

Option B



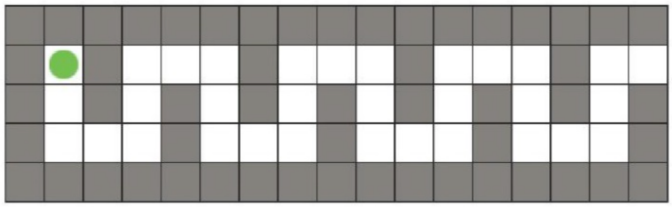
Option C

Option D

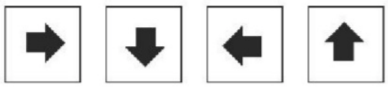


- Option A
- Option B
- Option C
- Option D
- I do not know.

Help the green robot to exit the maze.

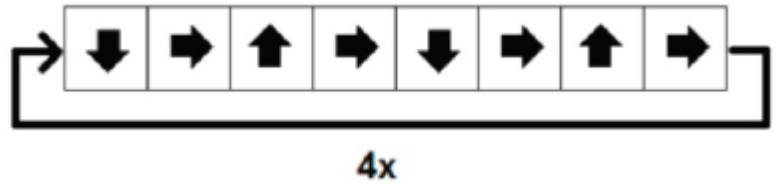


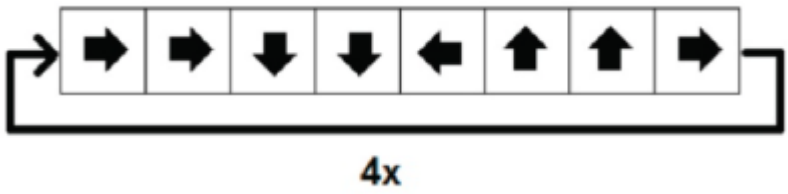
The arrows below represent the instructions that the green robot can follow.



Choose the correct set of instructions that will take the green robot to the exit. The robot will repeat these instructions 4 times.

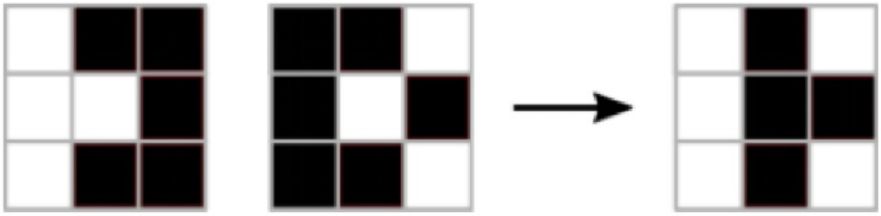
Select the correct answer:





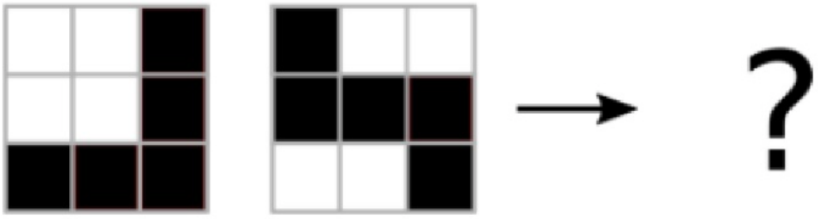
I don't know

Combining Card A and Card B, you get Card C:



Card A Card B Card C

Question:
How many black cells will Card F have after combining Card D and Card E?



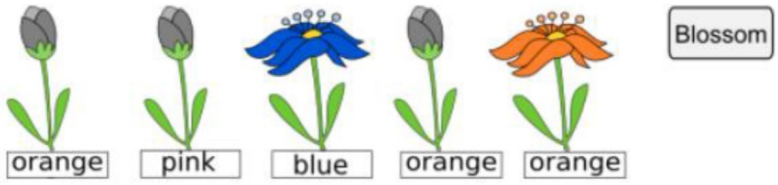
Select the correct answer:

- 3
- 4
- 5
- 6
- I don't know

Jane is playing a computer game.
First, the computer secretly chooses colors for five buds. The available colors for each flower are blue, orange, and pink. Jane has to guess which flower has which color. She makes her first five guesses and presses the Blossom button.

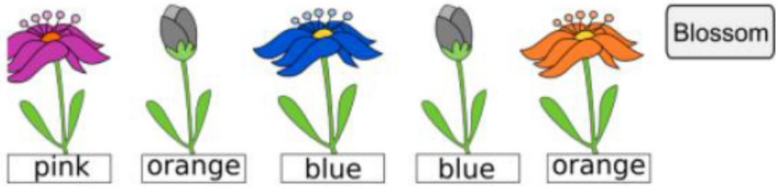
The buds, whose colors she guessed correctly, break into flowers. The others remain as buds.

Jane's first go:



Jane then has another go at guessing and presses the Blossom button again.

Jane's second go:



Question:
What colors did the computer choose for the flowers?

Select the correct answer:

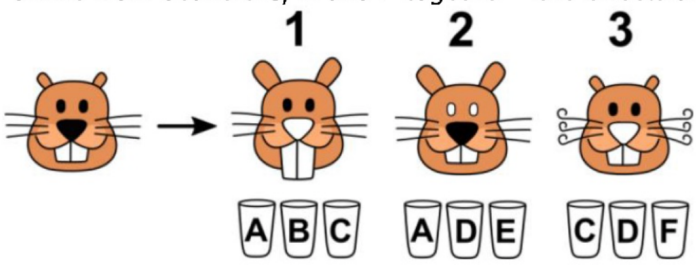
- blue pink blue orange orange
- pink blue blue blue orange
- pink blue blue pink orange
- pink pink blue pink orange
- I don't know

Betaro Beaver has discovered five new magic potions:
one makes ears longer
another makes teeth longer
another makes whiskers curly
another turns the nose white
the last one turns eyes white.

Betaro put each magic potion into a separate beaker. He put pure water into another beaker, so there are six beakers in total. The beakers are labeled A to F. The problem is, he forgot to record which beaker contains which magic potion!

To find out which potion is in each beaker, Betaro set up the following experiments:

Expt 1: A beaver drinks from beakers A, B and C together - the effects are shown in Figure 1.
Expt 2: A beaver drinks from beakers A, D and E together - the effects are shown in Figure 2 .
Expt 3: A beaver drinks from beakers C, D and F together - the effects are shown in Figure 3.



Question:
Which beaker contains pure water?

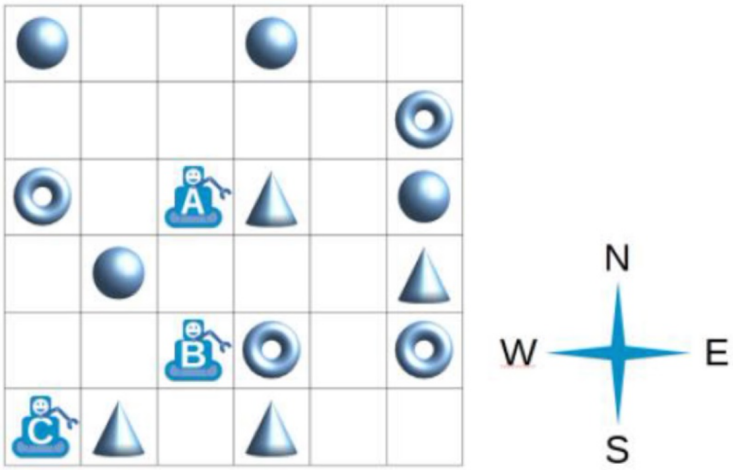
Select the correct answer:

- A
- B
- C
- D
- E
- F
- I don't know

In a warehouse, three robots always work as a team.

When the team gets a direction instruction (N, S, E, W), all robots in the grid will move one square in that direction at the same time.

After following a list of instructions, the robots all pick up the object found in their final square.
For example, if we give the list N, N, S, S, E to the team, then robot A will pick up a cone, robot B will pick up a ring, and robot C will pick up a cone.



Question:
Which list of instructions can be sent to the robots so that the team picks up exactly a sphere, a cone, and a ring?

Select the correct answer:

- N, E, E, E
- N, E, E, S, E
- N, N, S, E, N
- N, E, E, S, W
- I don't know

Agents Boris and Bertha communicate using secret messages.
Boris wants to send Bertha the secret message:

MEETBILLYBEAVERAT6

He writes each character in a 4 column grid from left to right and row by row starting from the top. He puts an X in any unused spaces. The result is shown below.

Then he creates the secret message by reading the characters from top to bottom and column by column starting from the left:

MBYVTEIBE6ELERXTLAAX

Bertha then uses the same method to reply to Boris. The secret message she sends him is:

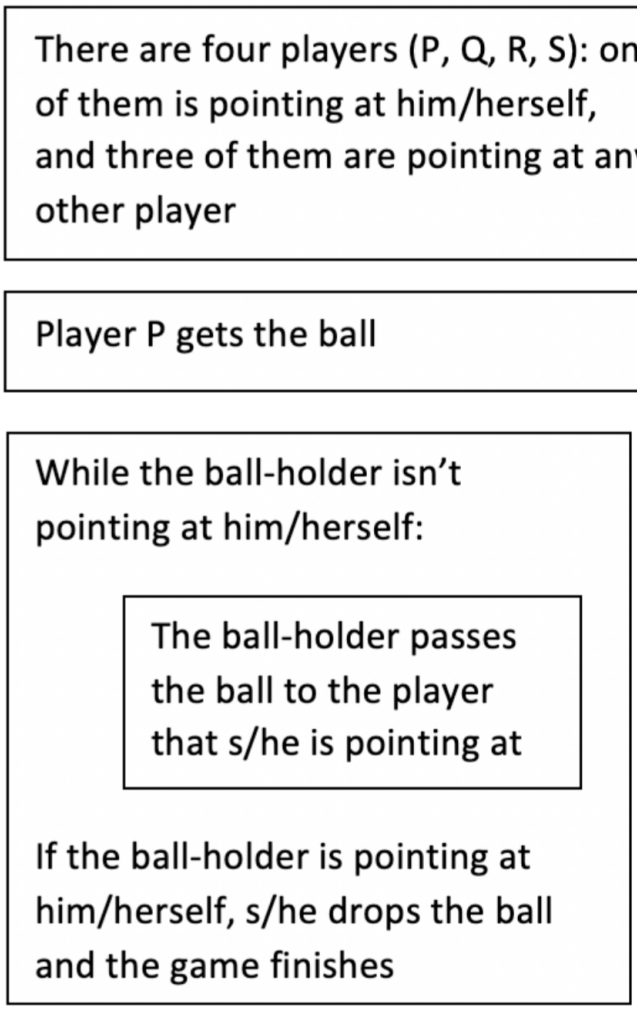
OIERKLTEILH!WBEX

Question:
What message does Bertha send back?

Select the correct answer:

- OKWHERETOMEET!
- OKIWILLBETHERE!
- WILLYOUBETHERETOO?
- OKIWILLMEETHIM!
- I don't know

We have this game:



Based on these rules, which statement is true:

- This game will gon on forever.
- This game will eventually stop because someone will drop the ball.
- This game will stop when player P gets the ball again.
- We don't know whether this game will ever stop.
- I don't know.

You have the following DNA sequence:

And you want to get the following sequence:

You can implement the following operations:

Swap (): it will swap one character for another. For example, *swap (A,G)* will turn the sequence AAGT into GGAT

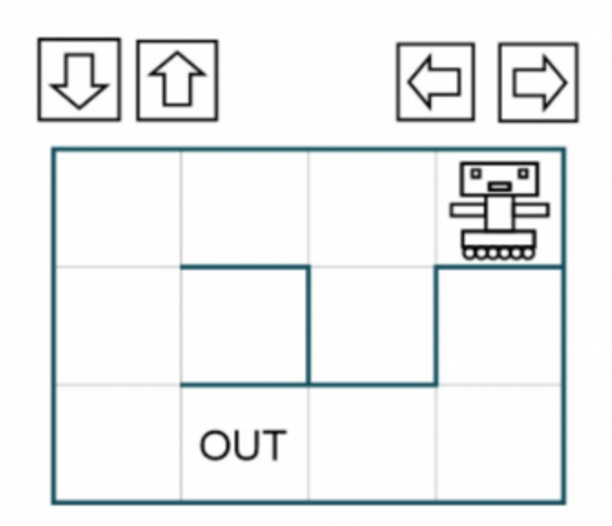
Insert (): it will insert a specified character at the beginning of the sequence. For example, *insert (A)* will turn the sequence GT into AGT

Delete (): it will delete all specified characters. For example, *delete (A)* will turn the sequence AAGT into GT

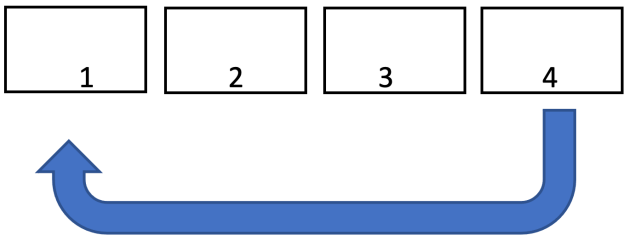
What operations will turn the initial DNA sequence into the one we want?

- Delete (G); then Insert (T); then Swap (C,T)
- Swap (C,T); then Insert (T); then Delete (G)
- Insert (T); then Swap (C,T); then Delete (G)
- Insert (T); then Delete (G); then Swap (C,T)
- I don't know.

This robot is programmed through a series of arrow commands (“*left”, “right”, “up”, “down”*). Each arrow command causes the robot to either move one step (if the move in that direction is possible) or not to move (if the move in that direction is not possible).



Imagine the robot has a series of four commands, which it will repeat over and over again.



You can put any arrow that you want (“*left”, “right”, “up”, “down”*) in each command, and you may repeat the same arrow in the series of commands if you want. What should be those 4 commands in order for the robot to reach the square called “OUT” and get out of the maze?

1_____ 2_____ 3_____ 4_____

- 1 down, 2 left, 3 up, 4 left
- 1 right, 2 left, 3 down, 4 down
- 1 left, 2 right, 3 down, 4 down
- 1 left, 2 left, 3 down, 4 right
- I don't know.