THE STRIVING

# MUSLIM ACADEMY

Islamic and Academic Education

STAGE 6 · COMPUTING · WRITING AND DEBUGGING PROGRAMS

# Writing and debugging programs

*Programs to read, to fix and to write, all of them on paper, because reading one before you run it is the whole skill.*

WHAT IS INSIDE

- Where does the robot finish?
- Find the mistake
- Write the program
- How each one is worked

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3 sets · every answer worked line by line

Written for a parent teaching at home. No training assumed, and nothing else to buy.

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# Find the mistake

Draw the grid first.



1. **This program was meant to finish at (-1, 15) facing west, but it finishes at (1, 1) facing east instead. Which line is wrong?**

```
FORWARD 8
LEFT
FORWARD 4
LEFT
FORWARD 7
LEFT
FORWARD 5
```

*Trace it until the robot is somewhere you did not expect. The line before that is the one.*

2. **This program was meant to finish at (-3, 7) facing west, but it finishes at (11, 7) facing east instead. Which line is wrong?**

```
FORWARD 8
RIGHT
FORWARD 4
RIGHT
FORWARD 1
LEFT
FORWARD 7
```

*Trace it until the robot is somewhere you did not expect. The line before that is the one.*

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# Find the mistake, continued

3. **This program was meant to finish at (-4, -3) facing west, but it finishes at (4, 13) facing east instead. Which line is wrong?**



```
FORWARD 5
LEFT
FORWARD 2
RIGHT
FORWARD 8
RIGHT
FORWARD 6
```

*Trace it until the robot is somewhere you did not expect. The line before that is the one.*

4. **This program was meant to finish at (-5, 0) facing west, but it finishes at (11, 8) facing east instead. Which line is wrong?**

```
FORWARD 4
RIGHT
FORWARD 3
LEFT
FORWARD 4
RIGHT
FORWARD 8
```

*Trace it until the robot is somewhere you did not expect. The line before that is the one.*

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# How each one is worked, continued

## WHERE DOES THE ROBOT FINISH?, CONTINUED



**7. The robot starts at (0, 0) facing north. Where does it finish?**

1. After **FORWARD 3** the robot is at (0, 3) facing north.
2. After **RIGHT** the robot is at (0, 3) facing east.
3. After **FORWARD 4** the robot is at (4, 3) facing east.
4. After **RIGHT** the robot is at (4, 3) facing south.
5. After **FORWARD 6** the robot is at (4, -3) facing south.
6. After **LEFT** the robot is at (4, -3) facing east.
7. After **FORWARD 8** the robot is at (12, -3) facing east.
8. So it finishes at **(12, -3) facing east**.

Answer: **(12, -3) facing east**

**8. The robot starts at (0, 0) facing north. Where does it finish?**

1. After **FORWARD 1** the robot is at (0, 1) facing north.
2. After **LEFT** the robot is at (0, 1) facing west.
3. After **FORWARD 5** the robot is at (-5, 1) facing west.
4. After **LEFT** the robot is at (-5, 1) facing south.
5. After **FORWARD 8** the robot is at (-5, -7) facing south.
6. After **RIGHT** the robot is at (-5, -7) facing west.
7. After **FORWARD 5** the robot is at (-10, -7) facing west.
8. So it finishes at **(-10, -7) facing west**.

Answer: **(-10, -7) facing west**

## FIND THE MISTAKE

**1. This program was meant to finish at (-1, 15) facing west, but it finishes at (1, 1) facing east instead. Which line is wrong?**

1. Trace the program one line at a time and compare with where it should be.
2. The first line that puts the robot somewhere unexpected is line 2.
3. Line 2 says **LEFT** and it should say **RIGHT**.
4. Change it and the program finishes at (-1, 15) facing west.

Answer: **Line 2**

**2. This program was meant to finish at (-3, 7) facing west, but it finishes at (11, 7) facing east instead. Which line is wrong?**

1. Trace the program one line at a time and compare with where it should be.
2. The first line that puts the robot somewhere unexpected is line 6.
3. Line 6 says **LEFT** and it should say **RIGHT**.
4. Change it and the program finishes at (-3, 7) facing west.

Answer: **Line 6**

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SAMPLE PAGES

# You have read a few pages. The pack is longer.

What you are holding is a short sample, taken from different parts of the pack so that you can see how a week is planned and what a child is actually asked to do, before you decide.

The complete pack, and the rest of the academic materials, are on our website: schemes of work for a parent teaching at home, and practice packs for the skills children get stuck on.

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Islamic and Academic Education

**Members of the homeschool community do not buy these.** If you have joined the community, the pack for the term you are working on is given to you at no cost.

Our Islamic Education classes are free. These packs are part of what pays the teachers who teach them.