Debugging 1

Introduction

You will aim to learn the following objectives and keywords during this lesson.

Learning Objective	To identify an error To demonstrate how to find and fix an error in code
Keywords	Debug Error

Setting the Scene

Concept	How it is used
We need to look at the problem to find the ***error*** so it can be fixed.	When you write code, you are building a sequence. If there is an error in the sequence it needs to be found and fixed.

Can you think of a problem you faced where you needed to find the error?

Activity 1

Scenario 1	Scenario 2
You have been given a maths task and you and your friend have two different answers. How do you find who is right? 1. Complete math task again 2. Check numbers added in are the same 3. Check the correct math operator has been used	You are playing a new game on a games console and you think A is to jump but it is not working. What would you do to find the error? 1. Read the instructions 2. Press A and see what happens 3. Press other buttons in turn to find out which jumps

Where else do you debug a problem?

Small Group/Individual Activity

In your group, look at the patterns below (colours, symbols and letters). Without any information can you work out what the **error** is with these patterns? Circle the errors, and then fix the ***error*** and draw the correct pattern below.

@	?	!	]	@	?	!	@	?	!	?	]

M	J	T	G	M	T	G	M	J	T	G	M

Did you find it easy to find the errors?

What made it easy to find the errors?

Were you able to fix the errors?

You use ***debugging*** daily without thinking when you are faced with a new challenge. You may not get it right first time and need to learn from the errors you make.

Activity 2

Any blocks used in your program could need ***debugging*** if an error occurs. Depending on the program you create, depends on the blocks you use.

When you create a program you should plan it, create it and then test it. When you test a program you are testing if it works as you want it to. If it does not work then you start to look at the sections of code to find the error and fix it.

Why should you test a program as you develop it?

I have some code that is not working, can you help and debug it?
We are going to recreate the code and debug and fix it.

There are two pieces of code that allow MiRo to simulate 'YES' by nodding its head and 'NO' by shaking its head; but something is wrong, can you help?

Algorithm planning

YES	NO
1. Repeat when simulation running A. Lift head _____ B. Lift head _____	1. Repeat when simulation running A. Look _____ B. Look _____

What does the code look like?

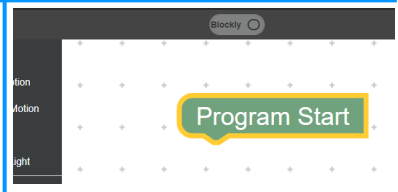
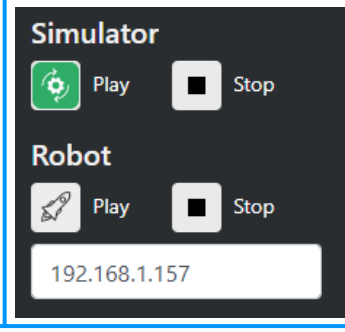
Can you see anything wrong as you create it?

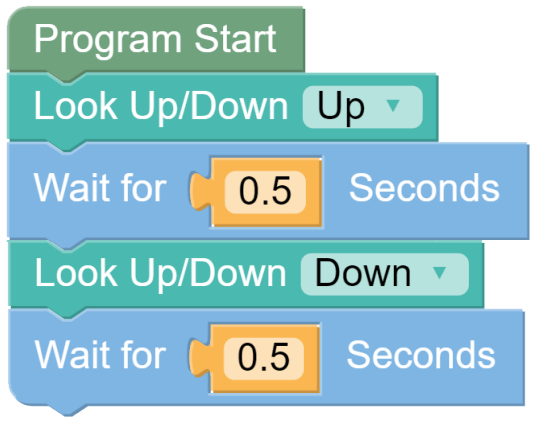
Using this algorithm as your plan, can you re-create the program in the MiRoSIM.

Summary Self-Assessment

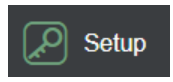
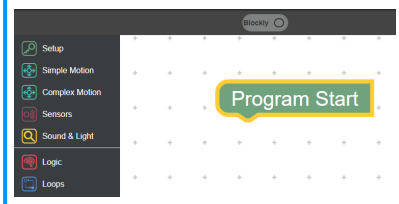
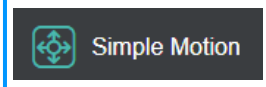
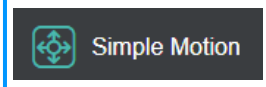
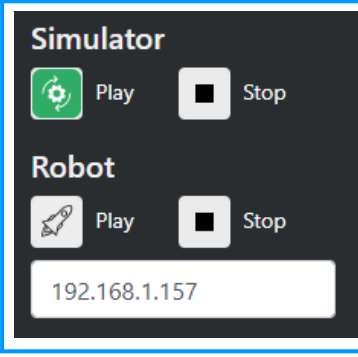
Question	Got it	Got it with help	Unsure
Can you describe what debugging is?	☐	☐	☐
Can you give an example of how debugging is used?	☐	☐	☐
Can you debug a given program in MiRo simulator and fix it?	☐	☐	☐

Step-by-Step - Simulate MiRo to show YES

Step				Image
1	Add 1 x **Program Start** block	Program Start	Setup	
2	Add 1 x **Look Up** block	Look Up/Down Up	Simple Motion	Program Start Look Up/Down Up
3	Add 1 x **Wait** block	Wait for 1 Seconds	Control	Program Start Look Up/Down Up Wait for 1 Seconds
4	Add 1 x **Look Up** block	Look Up/Down Up	Simple Motion	Program Start Look Up/Down Up Wait for 1 Seconds Look Up/Down Up
5	Add 1 x **Wait** block	Wait for 1 Seconds	Control	Program Start Look Up/Down Up Wait for 1 Seconds Look Up/Down Up Wait for 1 Seconds
6	Change the number of seconds to wait to 0.5 seconds			Program Start Look Up/Down Up Wait for 0.5 Seconds Look Up/Down Up Wait for 0.5 Seconds
7	Click **Simulator Play** or **Robot Play**			

DEBUG SOLUTION The error is that both blocks are set to ‘up’ so will not go up and down and ‘nod’.	

Step-by-Step - Simulate MiRo to show NO

Step				Image
1	Add 1 x **Program Start** block			
2	Add 1 x **Look Left** block			
3	Add 1 x **Look Left** block			
4	Set to look ‘**Left**’ then ‘**Right**’			
5	Click **Simulator Play** or **Robot Play**			

DEBUG SOLUTION

The error is that both blocks do not have the wait block in between the blocks to allow the code to run.