



Computing Knowledge Organiser We Are Bug Fixers



Key Knowledge

Learn these key facts

Key Vocabulary

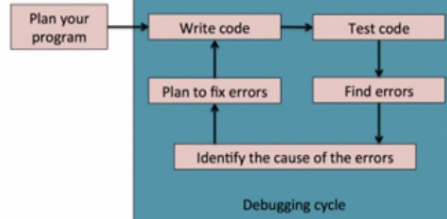
Understand these key words

Algorithms

"When the 'p' key is pressed
Move 10 steps
Then wait for 2 seconds
and then say 'hello' for 2 seconds



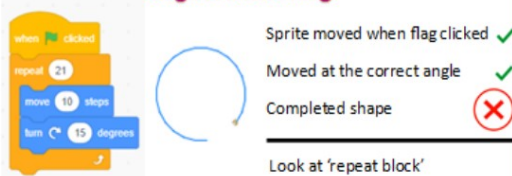
The Debugging Cycle



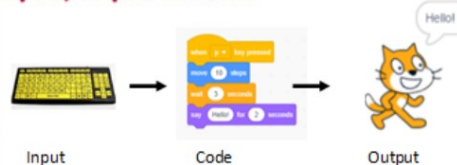
Algorithms are a set of instructions for a computer to follow. We need to be careful how we set out our algorithms as computers will follow the instructions exactly—even if they are wrong! Plan your algorithms by writing them out as a list of instructions, then use the blocks to create your code

The debugging cycle is used to help us find parts of algorithms that are not written correctly. Once we have found an error, we need to identify what has caused the error. Once we have done this we can plan to fix it. The cycle continues as we then write and test code to see if our bug has been fixed.

Logical Reasoning



Inputs, outputs and code



We can use logical reasoning to find bugs by breaking the algorithm into steps. We can then look at what has worked and what hasn't worked. Once we have used logical reasoning to find the bug, we can then use the debugging cycle to fix the problem.

We can use input devices (keyboards) to input information (code) which will change the output of the computer (how the program acts).

Word

Definition

Debug

The process of fixing any faults in an algorithm.

Logical reasoning

Looking at how a code works by breaking it into smaller steps and thinking about what the algorithm is asking the computer to do.

Algorithm

An algorithm is a list of instructions that tells your computer exactly what steps to take to solve a problem or reach a goal.

Input

Information or data that is put into a computer. In this case, an algorithm.

Output

Information or data that the computer puts out. In this case, sounds and images.

Code

Code is a language that computers understand. We use it to tell computers what we want them to do.



WALT debug programs that
accomplish specific goals

You are going to be fixing a computer program.

Does anyone know what this process in computing is called?

Check your knowledge organiser if you do not know.



WALT debug programs that accomplish specific goals

You are going to be fixing a computer program.

Does anyone know what this process in computing is called?

This is called debugging.

Debug	The process of fixing any faults in an algorithm.
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To be able to debug a program... we need to understand and use the following terms

Logical
reasoning



Algorithm



To be able to debug a program... we need to understand and use the following terms

Logical reasoning

Logical reasoning	Looking at how a code works by breaking it into smaller steps and thinking about what the algorithm is asking the computer to do.
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Algorithm

Algorithm	An algorithm is a list of instructions that tells your computer exactly what steps to take to solve a problem or reach a goal.
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Lets practise the 3 \times table up to 12 \times 3.

Can you give an algorithm to complete the 3 \times table? (the steps or rules to follow)

3 times table

1	\times 3	=	3
2	\times 3	=	6
3	\times 3	=	9
4	\times 3	=	12
5	\times 3	=	15
6	\times 3	=	18
7	\times 3	=	21
8	\times 3	=	24
9	\times 3	=	27
10	\times 3	=	30
11	\times 3	=	33
12	\times 3	=	36

Timestables.co.uk

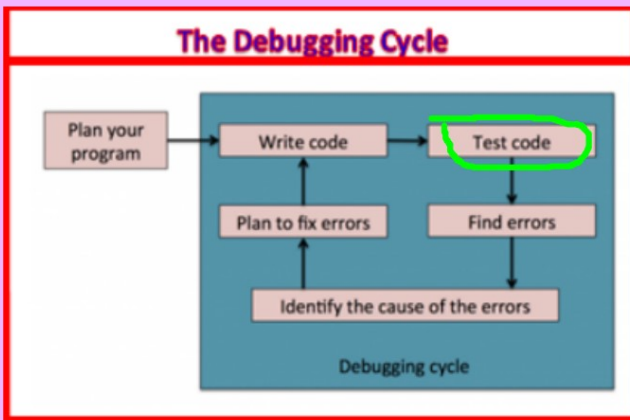
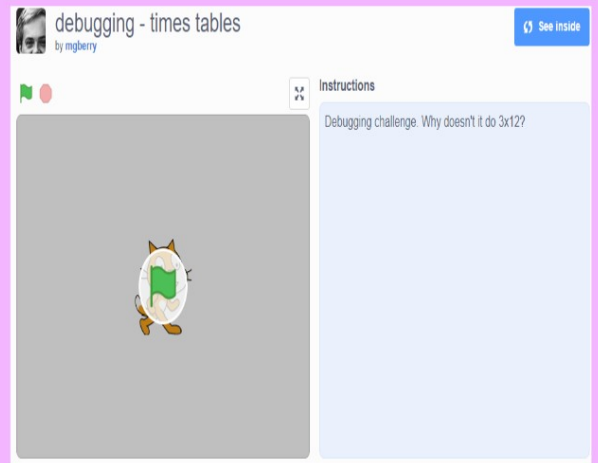


Look at this program

Click the green flag to start the program

Did it count all the way up to 12?

Click 'see inside' to look at the code.



We are 'testing the code and trying to 'find errors'.

How can we fix the program?

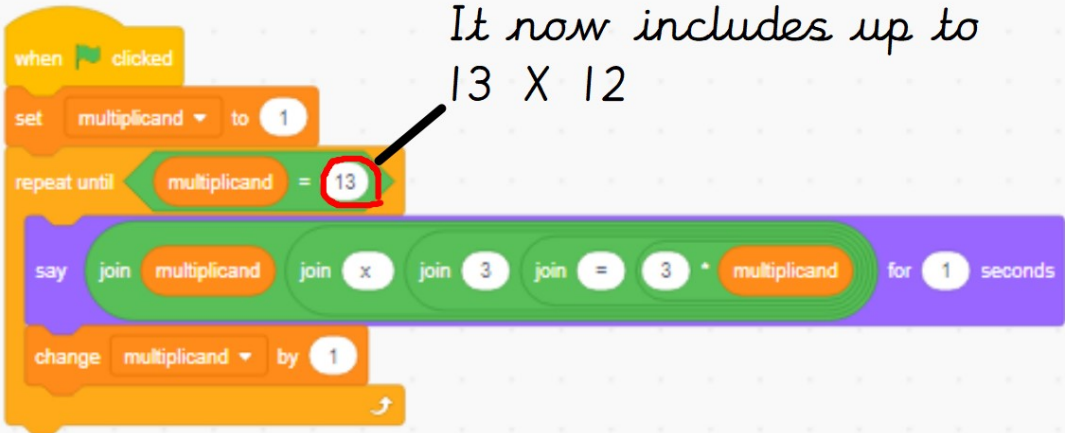
```
when clicked
  set multiplicand to 1
  repeat until multiplicand = 12
    say join multiplicand join x join 3 join = join 3 * multiplicand for 1 seconds
  change multiplicand by 1
```

Test out how to fix the program so it shows 12×3 .

DO NOT LOOK AT THE NEXT PAGE UNTIL YOU HAVE TRIED TO DEBUG (FIX) THE CODE.

Ext: Once you have got the script working properly, look at ways to improve the program, such as allowing users to choose the times table, or improving the graphics.

What have we changed?



It now includes up to
13 X 12

Does it work?

In pairs

Describe how the times-table program works

Explain how you debugged the times-table program using logical reasoning.

