

# Keywords

Iterative testing, Final/terminal testing,  
Syntax Errors, Logic errors, Test Data

# Robust Programs

Testing Programs

# Starter

What tests do you do during your life?

What is a programming error?

## Objectives

### **BEGINNER:**

Understand the purpose of testing and Identify different types of program errors.

### **ADVANCED:**

Know the difference between iterative and terminal testing.

### **EXPERT:**

Be able to select suitable test data.

An error in a program is sometimes called a Bug  
This is because Grace Hopper discovered a moth in a computer which was stopping it from functioning correctly.  
Bugs cause the program to run incorrectly and are usually caused by an error in the coding  
Not all errors will stop a program from running.



# Errors



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**Find and fix the errors in this code:**

```
number 1 = input("Please enter a number")
number 2 = input ("Please enter another number")
Sum = number 1 / numBer 2
print (Summ)
```

```
number 1 = input("Please enter a number")
number 2 = input ("Please Enter another
number")
Sum = number 1 / number 2
print (Summ)
```

**Define runtime, logic and syntax errors.**



# Errors



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## ***RUNTIME ERRORS***

errors which may cause program errors or the computer to crash even if there appears to be nothing wrong with the program code.  
They are only detected once the program is executed  
Examples could be: Running out of memory

## ***SYNTAX ERRORS***

mistakes in the way that the code is written.  
Translators can only execute a program if it is syntactically correct.  
Common syntax errors include:  
spelling mistakes  
incorrect use of punctuation  
-use of capital letters

## ***LOGIC ERRORS***

a bug in a program that causes it to operate incorrectly, but not to terminate or crash.  
A logic error produces unintended or undesired output or other behaviour, although it may not immediately be recognised.



# Testing



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## *Define iterative and final/terminal testing.*

Iterative testing is testing the code as you create it. This could be completed line by line or a section at a time. Once tested and feedback is received you then alter your code as required.

You could consider this type of testing similar to tuning a guitar.

You keep playing the string and adjusting the tension until the note is the correct pitch.

Final or Terminal testing is carried out at the end of the program when it has been written.

This is more similar to the GCSEs which are taken at the end of the term.

It is used to check what happens when a range of predefined test data is entered or used in the program.



# Test Data



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*Define the following types of test data:*

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### **EXPERT:**

Be able to select suitable test data.

- valid/in range
- out of range
- boundary value
- null value
- invalid

**Valid – Data that is correct**

**In Range – The maximum values of the data that could be entered for example for teenagers 13 - 19**

**Out of Range – Values higher or lower than the expect range, for teenagers greater than 19**

**Null Value – when no data is entered or left blank to test what happens.**

**Invalid - incorrect values such as entering 'Dave' in an age field.**



# Test Plan



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## What is a test plan?

Testing is often completed in a test plan which sets out:

The test number

The data entered

The type of test data

The expected outcome

The result of the test

Action required as a result of the test

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Test No.	Test Type	Target File or Screen	Test Name	Purpose of Test	Test Data or Situation	Expected Result	Actual Result	Outcome and Actions Required
1	Browser	flight_info.php	Rendering of arrivals table	Test that table renders as expected for arrivals	Date set: 2 <sup>nd</sup> July 2007  1. Internet Explorer 7.0.6000  2. Mozilla Firefox 2.0.0.6  3. Safari for Windows 3.0.3	Six rows for arrivals, five coloured blue, one coloured red, displayed in ascending order by time.  Column sequence: flight number, from, time expected, status, gate.  Row 1 should contain an image arrivals.jpg).  Last row should contain an image in right-most cell (corner.jpg)	1. As expected  2. As expected  3. As expected	All screens rendered as expected. No actions required
2								

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