

# Testing

| Key Words         |                                                                                                                            | Purpose of Testing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Test Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------|------------------|-----------------------------------------------------------------------------------|---------|--------------------------------------------------------|------------------|---------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------|
| black box testing | Another name for final or terminal testing.                                                                                | <ul style="list-style-type: none"><li>To ensure there are no errors (bugs) in the code.</li><li>To check that the program has acceptable performance and usability.</li><li>To ensure that unauthorised access is prevented.</li><li>To check the program meets the requirements</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"><li>To test a program effectively, it is necessary to identify suitable test data and the expected outcome required for that data.</li><li>Test data should cover the following situations:</li></ul>                                                                                                                                                                                                                                                                                                                             |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| boundary data     | Test data that is at the very edge of what is acceptable.                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <table><tr><td>Valid (Normal)</td><td>Test data that is a typical input for the system.</td></tr><tr><td>Valid (Boundary)</td><td>Test data that is valid but at the extreme end of the range of acceptable inputs.</td></tr><tr><td>Invalid</td><td>Test data that is out of range and should be rejected.</td></tr><tr><td>Invalid Boundary</td><td>Test data that is invalid but only just outside the limit for being acceptable.</td></tr><tr><td>Erroneous</td><td>Test data that should be rejected because it is the wrong type of input.</td></tr></table> | Valid (Normal) | Test data that is a typical input for the system. | Valid (Boundary) | Test data that is valid but at the extreme end of the range of acceptable inputs. | Invalid | Test data that is out of range and should be rejected. | Invalid Boundary | Test data that is invalid but only just outside the limit for being acceptable. | Erroneous | Test data that should be rejected because it is the wrong type of input. |
| Valid (Normal)    | Test data that is a typical input for the system.                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| Valid (Boundary)  | Test data that is valid but at the extreme end of the range of acceptable inputs.                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| Invalid           | Test data that is out of range and should be rejected.                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| Invalid Boundary  | Test data that is invalid but only just outside the limit for being acceptable.                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| Erroneous         | Test data that should be rejected because it is the wrong type of input.                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| erroneous data    | Test data that should be rejected because it is the wrong type of input.                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| final testing     | Testing to check that the whole program functions as expected.                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| invalid data      | Test data that is out of range and should be rejected.                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| iterative testing | The process of testing the program at every stage of the development process.                                              | <ul style="list-style-type: none"><li>Iterative Testing<ul style="list-style-type: none"><li>The process of testing the program at every stage of the development process.</li><li>Often called white box testing.</li><li>Programs are tested at a modular level to ensure the individual components function as expected.</li><li>If programs are not tested at a module level, it is often more difficult to find errors later on.</li></ul></li><li>Final Testing<ul style="list-style-type: none"><li>To check that the whole program functions as expected.</li><li>Often called black box testing.</li><li>Checking with a range of data that the program produces the required results.</li></ul></li></ul> | <ul style="list-style-type: none"><li>Example of a test table for this program is shown below</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| logic error       | The program will compile and run but it will not work as the programmer intended.                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <pre>validAge = False age = 0 WHILE not validAge     INPUT age     If age &gt;=-13 AND age&lt;=120 THEN         validAge = True     ELSE         OUTPUT "Invalid Age"     ENDIF ENDWHILE OUTPUT "Valid Age"</pre>                                                                                                                                                                                                                                                                                                                                                   |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| syntax            | The rules of a language.                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| syntax error      | An error where the rules of the language have been broken. The program will not execute until all syntax errors are fixed. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| test data         | The values used to test a program.                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| test table        | A table containing a set of tests to be carried out including the input data and the expected output.                      | <ul style="list-style-type: none"><li>Logic Errors<ul style="list-style-type: none"><li>The program will compile and run but it will not work as the programmer intended.</li></ul></li><li>Syntax Errors<ul style="list-style-type: none"><li>The syntax of a language is the rules of a language</li><li>A syntax error can occur if the rules of the language are not followed</li><li>A program will not execute until all syntax errors are fixed</li></ul></li></ul>                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| testing           | To ensure that there are no errors in the code and that the program has acceptable performance and usability.              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |
| white box testing | Another name for iterative testing during development.                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                                   |                  |                                                                                   |         |                                                        |                  |                                                                                 |           |                                                                          |

## Quizizz



## Extended Reading



## Exam Questions



## Video



## Revision Techniques



## Quizlet



## Specification

