Test data

Teacher's Notes

Lesson Plan

Length	60 mins	Specification Link	2.1.7/r	Test data
Learning objective		Students should be able to (a) select and justify test data for a program, stating the expected outcome of each test		

Time (min)	Activity	Further Notes
10	Use the **Starter Activity.** Using a projector, go through the activity with the students. Stress that these are extreme problems caused by software failure but all bugs are unacceptable and cause problems. For example how would the students react if a bug in the school information management system gave them all E grades instead of As (and vice versa)? Show students the link to the specification. Explain the purpose and objectives of the lesson.	
10	Watch the set of videos, pausing and explaining as necessary and asking questions about the various test methodologies. e.g. If a postcode field was being tested which of these items would be valid test data? 76 DBE DB2 9AQ EF36MB EM656GF3 If a date of birth field was being tested for what type of test would the following input data be used? 07331 497634	DB2 9AQ invalid
5	Ask some questions about the video to assess learning. e.g. • Why is software testing required? • List the different tests explained in the video.	To remove bugs from the code and to test the logic of the algorithm. Valid, in range, out of range, boundary, null and invalid.
10	**Worksheet 1** Students to complete Worksheet 1 either on paper or on computer using knowledge gained from the video and from internet research. Ask individual students for their answers and discuss with the class so that all students have the correct answers entered on their worksheets.	Answers provided.
10	Students carry out the provided **Interactive Activity**.	

Time (min)	Activity	Further Notes
10	Ask the students to carry out individual or group research to find any other software testing methods.	The students should find a large variety of methods such as: **1. Acceptance testing:** Formal testing conducted to determine whether or not a system satisfies its acceptance criteria and to enable the customer to determine whether or not to accept the system. It is usually performed by the customer. **2. Accessibility testing:** Type of testing which determines the usability of a product to the people having disabilities (deaf, blind, mentally disabled etc). The evaluation process is conducted by persons having disabilities. **3. Active testing:** Type of testing consisting in introducing test data and analysing the execution results. **4. Age testing:** Type of testing which evaluates a system's ability to perform in the future. The evaluation process is conducted by testing teams. **5. Comparison testing:** Testing technique which compares the product strengths and weaknesses with previous versions or other similar products. Can be performed by tester, developers, product managers or product owners.
	Extension Challenge/Homework • The students should complete and submit Worksheet 2.	
5	**Plenary** Ask the students to work in pairs. Each member of the pair should ask the other to provide the names of two software testing methodologies with an example of each.	

WORKSHEET 1 ANSWERS

1 **Describe, with examples, the following software development tests.**

(a) Valid test

For a valid test you should use a value that you would expect someone to type into your system.

E.g. for day of month born you would enter a number between 1 and 31.

(b) In range and out of range tests

For an in range test you would enter a number in the required or expected range.
E.g. for mark out of 10 you would enter a number between 0 and 10.

For an out of range test you would enter a number not in the expected range.
E.g. if you enter a number greater than 10 or less than 0, the software should not accept it and should display an error message.

(c) Boundary value test

For a boundary test you should enter the highest or lowest number acceptable.
E.g. for mark out of 10, enter 0 or 10.

This test helps to catch logical errors that may have been introduced by using the >= and <= operators.

(d) Null value test

This is to check how the software deals with a blank field = null value.

If it is a compulsory field, it should display a warning and refuse to allow further progress until a value is assigned.

(e) Invalid test

For an invalid test, you should enter data that is totally unexpected to see how the software deals with it. E.g. enter text into a number field and vice versa.

WORKSHEET 2 ANSWERS

1 **(a) Explain why it necessary to thoroughly test software before it is used. (2)**

To ensure that there are no bugs or logical errors (1) and the software produces the outcomes expected. If software fails to perform as expected it can have disastrous consequences leading to fatalities.

(b)Explain the difference between alpha and beta testing. (2)

Alpha testing is carried out by the programmer or team of programmers creating the software. (1)

Beta testing is the second phase where a selected group of potential users are given a pre-release version to test in a working situation and report bugs and improvements. (1)

(c) A software developer was testing an application she had written for a secondary school with students aged from 11 to 18 years. She carried out the following tests on the year group entry field.

For each example state the type of test that she was carrying out. (3)

(i) She entered the numbers 7 and then 13.

Boundary test

(ii) She entered the text 'Test'.

Invalid test

(iii) She left the field blank and pressed submit.

Null test