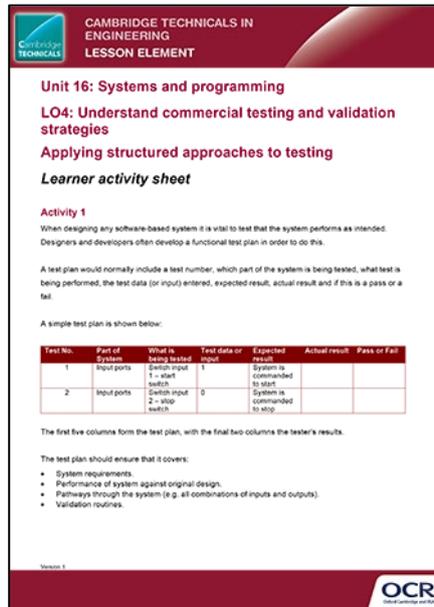# Unit 16: Systems and programming

LO4: Understand commercial testing and validation strategies

Applying structured approaches to testing

Instructions and answers for teachers

These instructions should accompany the OCR resource 'Applying structured approaches to testing' *activity which supports Cambridge Technicals in Engineering Level 3.*

The Activity:

For this activity learners are tasked to devise a test plan for an activity or for software they have produced.

Suggested timings:

1 hour

Activity 1

For this activity learners are tasked to devise a test plan for an activity or for software they have produced. The teacher might alternatively suggest an activity.

Learners have been presented with a basic test plan template, although teachers may use other styles. The test plan template (with two examples) is shown below:

Test No.	Part of System	What is being tested	Test data or input	Expected result	Actual result	Pass or Fail
1	Input ports	Switch input 1 – start switch	1	System is commanded to start		
2	Input ports	Switch input 2 – stop switch	0	System is commanded to stop		

The test plan table includes a test number, which part of the system is being tested, what test is being performed, the test data (or input) entered, expected result, actual result and if this is a pass or a fail.

The following website describes software-based system testing in more detail, and might be useful:

http://www.teach-ict.com/as_a2_ict_new/ocr/A2_G063/331_systems_cycle/testing/miniweb/index.htm

The test plan should ensure that it covers:

- System requirements.
- Performance of system against original design.
- Pathways through the system (e.g. all combinations of inputs and outputs).
- Validation routines.

Learners should also consider the following conditions:

- Normal data i.e. data within normal range.
- Extreme data i.e. data on the limits of normal range, but acceptable.
- Erroneous data i.e. data that should fail the test, such as an unusual combination of inputs.

Once learners have developed their test plans, these could be exchanged with class colleagues who could act as testers (recording actual test result and whether this passes or fails the test).

Test plans could be refined following feedback from testers.

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