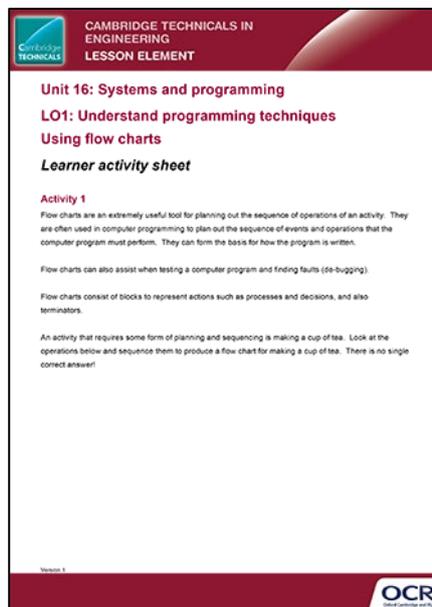# Unit 16: Systems and programming

# LO1: Understand programming techniques

# Using flow charts

## *Instructions and answers for teachers*

***These instructions should accompany the OCR resource 'Using flow charts'*** *activity which supports Cambridge Technicals in Engineering Level 3.*

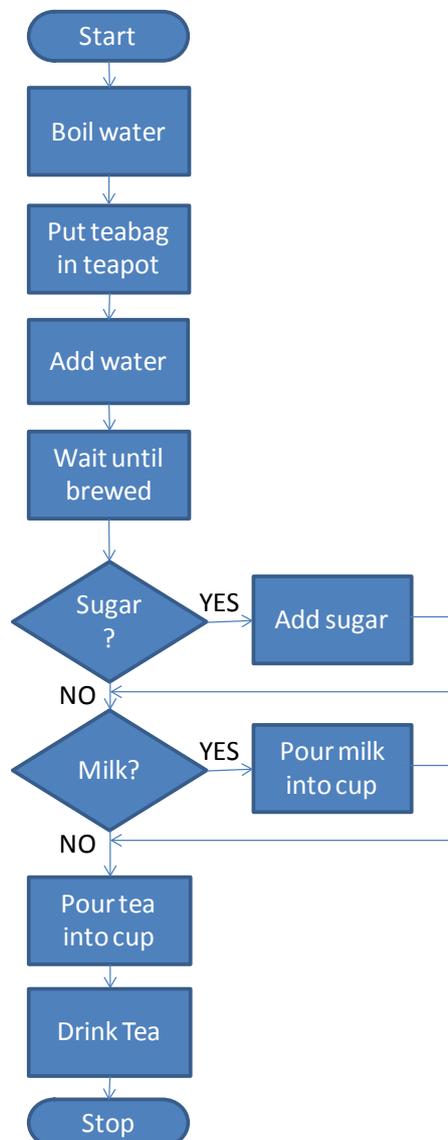| **The Activity:** |
| For this activity learners are tasked to produce a flow chart for making a cup of tea. |
| **Suggested timings:** |
| 1 hour |

## Activity 1

For this activity learners are tasked to produce a flow chart for making a cup of tea. Learners might require a teacher introduction to flow charts including the types and meaning of different flow chart operations and symbols (e.g. processes and decisions, and also terminators). The diagram below is one solution to the problem, but there is no correct or incorrect solution as the sequence in the flow chart may be altered. The decision blocks (diamonds) relate to prescribed operations however.

Learners could produce flow charts by hand or using suitable software.

## Activity 2

For Activity 2 learners should select different examples, producing flow charts showing operating sequence.  Examples might include a flow chart for a light emitting diode flashing at one second intervals, or a flow chart for sequence of operations of a set of traffic light.

Teachers could introduce learners to a wider range of operations and symbols that could be used on a flow chart, such as delays, manual operations and data.

Learners could use suitable software to develop and present their flow charts.  Learners have been provided with one web-based link, but there are many others (http://www.nchsoftware.com/chart/)

The activity could be used as the basis for learners producing flow charts to aid with programming their own problems.  Flow charts might also be used when developing test and fault-finding (debugging) plans.

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