



Cambridge IGCSE™

COMPUTER SCIENCE

0478/22

Paper 2 Problem-solving and Programming

February/March 2021

PRE-RELEASE MATERIAL

No additional materials are needed.

This material should be given to the relevant teachers and candidates as soon as it has been received at the centre.

INSTRUCTIONS

- You should use this material in preparation for the examination.
- You should attempt the practical programming tasks using your chosen high-level, procedural programming language.

This document has **2** pages.



Your preparation for the examination should include attempting the following practical tasks by **writing and testing a program or programs**.

A program is needed for a quiz to help younger students to practise their multiplication tables. There needs to be two ways of using the quiz; testing and learning.

Testing: the student is given **one** attempt at answering each question and the score is calculated for the whole test.

Learning: the student is given up to **three** attempts to get their answer to each question correct. There is no scoring.

A student can choose which multiplication table, from 2 to 12, to use for the quiz. There are five questions in each quiz, each question must use the chosen multiplication table and a different whole number (from 1 to 12) as the multiplier.

Write and test a program or programs for a multiplication tables quiz.

- Your program or programs must include appropriate prompts for the entry of data; data must be validated on entry.
- Error messages and other output need to be set out clearly and understandably.
- All variables, constants and other identifiers must have meaningful names.

You will need to complete these **three** tasks. Each task must be fully tested.

Task 1 – Testing a student

Students enter their name and choice of multiplication table. Each question is displayed on the screen one at a time, for example:

Question 1

2 X 7 =

Students enter their answer and move on to the next question. A running total of correct answers (score) is kept. At the end of the quiz the student's name and score are displayed with a personalised message related to the score, for example:

Aarav your score is 5/5

Well done full marks

Diya your score is 3/5

Have another practice

Task 2 – Student learning

Students enter their name and choice of multiplication table. Each question is displayed on the screen as in **Task 1**. If an answer is correct, a personalised message containing the student's name confirms this, the quiz then moves to the next question. If an answer is incorrect, a personalised message containing the student's name and a hint is displayed, for example:

Aarav your answer is too large

Up to three attempts are offered to get each answer correct. After the third incorrect attempt, the correct answer is displayed and the quiz moves on to the next question.

Task 3 – Varying the quiz

Modify **Task 1** to allow students to choose how many questions they would like in the test and if they would like a 'mixed' set of questions. A 'mixed' set means that each question can be from a different multiplication table; from 2 to 12.

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