Cambridge Assessment International Education

Cambridge IGCSE™

COMPUTER SCIENCE **0478/22**

Paper 2 Problem-solving and Programming **February/March 2021**

PRE-RELEASE MATERIAL

5921674856

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.

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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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