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Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE **0478/21**

Paper 2 Problem-solving and Programming **May/June 2017**

PRE-RELEASE MATERIAL

No Additional Materials are required.

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

READ THESE INSTRUCTIONS FIRST

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

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **2** printed pages.

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In preparation for the examination candidates should attempt the following practical tasks by **writing and testing a program or programs**.

A teacher is planning a school trip to a theme park at the end of term. You have been asked to write a program to work out the cost per student, to record those who are going and whether they have paid. The maximum number of students who can go on the trip is 45.

Write and test a program for the teacher.

- Your program must include appropriate prompts for the entry of data.
- Error messages and other output need to be set out clearly.
- 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 – Work out the cost.

The cost of the trip for each student is a share of the cost of a coach plus the cost of entry to the theme park. The total cost of the coach will be $550. The entry cost to the park is $30 for each student. The theme park gives one free ticket for every ten that are bought, which must be taken into consideration. Set up a program that:

- stores the cost of the coach
- stores the cost of an entry ticket
- inputs the estimated number of students taking part, this must be validated on entry and an unsuitable entry rejected
- calculates and outputs the recommended cost per student to ensure the trip does not make a loss.

TASK 2 – Record the students who are going and whether they have paid.

Input and store the names of the students who have asked to go on the trip up to the maximum number allowed. Input and store whether each student has paid. Enable printouts to be produced to show students who have not paid and those who have paid.

TASK 3 – Work out final costs.

Not all students will end up going on the trip, for example they might not have paid. Modify the program so that it gives overall totals for the costs charged and the amount of money collected. Output whether the school trip has made a profit or loss, or has broken even, and the amount of the final balance.

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