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Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMPUTER SCIENCE **0478/21**

Paper 2 Problem-solving and Programming **October/November 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 small airfield operates a flying club where people can take a short flight to see if they would like flying lessons. The owner of the airfield has asked you to write a program to organise the flight bookings. The airfield operates three different planes and offers either a 30 minute or a 60 minute flight.

The following table shows the tariff:

Length of Flight	2 Seater Plane	4 Seater Plane	Historic Plane
30 minutes	$100	$120	$300
60 minutes	$150	$200	$500

After each flight, 30 minutes must be allowed for refuelling and safety checks before the next flight can take off. All planes offer both 30 minute and 60 minute flights, but, for the purpose of this activity, they will not be mixed on a given day, e.g. the 2 seater will offer 30 minute flights ONLY on one day and 60 minute flights ONLY on another day.

Write and test a program for the owner of the airfield.

- Your program must include appropriate prompts for the entry of data.
- 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 – Work out the maximum income.

Assume that the flights take place between 08:00 and 18:00. Write a program that will work out the maximum income that can be generated by each plane in a day for each type of flight. The program should allow you to:

- input the type of plane
- input the length of flight
- calculate the maximum number of flights in a day
- output the total possible income per day for the choice of plane and length of flight

TASK 2 – Record bookings.

Write a program to store bookings for each plane and to allow you to find which planes are available at a given time slot during the day. The program should calculate the actual number of flights taken by each plane in that day.

TASK 3 – Work out income.

Modify TASK 2 so that it will calculate the total amount of money taken in a day for each plane, as well as the overall daily total for all three planes, and output the results.

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