Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

0440393403

COMPUTER SCIENCE **0478/23**

Paper 2 Problem-solving and Programming **October/November 2015**

PRE-RELEASE MATERIAL

No Additional Materials are required.

This material should be given to candidates on receipt by 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.

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

CAMBRIDGE International Examinations

Candidates' preparation for the examination should include attempting the following practical **program coding tasks**.

Write and test a program to complete the **three** tasks.

The temperature in an apartment needs to be kept between 22°C and 24°C. This is done by the use of an automatically controlled air-conditioning system, which monitors the temperature every five minutes. The temperature of the apartment is recorded, to one decimal place, in degrees Celsius. The cooling is activated when the temperature reaches 24.5°C and the heating is activated when the temperature reaches 21.5°C.

TASK 1

To simulate the monitoring required, write a routine that allows entry of the apartment's temperature in degrees Celsius. The routine checks whether the temperature is within the acceptable range, too high or too low and outputs a suitable message in each case.

TASK 2

Write another routine that stores, in an array, the temperatures taken over a period of five hours. This routine calculates the difference between the highest temperature and the lowest temperature. Then it outputs the highest temperature, the lowest temperature, and the difference between these temperatures.

TASK 3

Write a routine to find out how often the temperature was out of the acceptable range during the five hours and whether the temperature was too high or too low; output a suitable message showing a summary of the problem.

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. Each task must be fully tested.