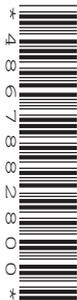


Year 11 to 12 transition project

A453 Programming Project

CONTROLLED ASSESSMENT MATERIAL 1

This assessment may be periodically reviewed. Please check on OCR Interchange that you have the Controlled Assessment material valid for the appropriate assessment session.



INSTRUCTIONS TO TEACHERS

- Please refer to Section 4 of the GCSE Computing specification for instructions on completing this controlled assessment task.
- The marking criteria should be available to candidates whilst completing the tasks.
- The quality of written communication will be assessed in the testing section.
- The total number of marks for this unit is **45**.

INFORMATION FOR CANDIDATES

- This document consists of **4** pages. Any blank pages are indicated.

Teachers are responsible for ensuring that assessment is carried out against the Controlled Assessment set for the relevant examination series (detailed above).

Assessment evidence produced that does not reflect the relevant examination series will not be accepted.

This assessment consists of three tasks.

Candidates should complete all tasks and provide evidence to meet all the marking criteria.

For the following scenario analyse the detailed requirements for each situation and, using suitable algorithms, design a solution to be coded in a suitable high-level programming language. Show the iterative development of the individual solutions with suitable testing throughout the process. Test the final products and evaluate your solutions against the detailed requirements you identified in the analysis.

The results for a task may be used without further testing in any subsequent task, or each of the tasks may be solved as a separate system.

Average speed checks**Task 1**

On many major roads average speed checks are in place. Two sensors are placed a known distance apart and vehicle number plate recognition is used to identify a vehicle and the time it enters the section of road being monitored. The time is recorded when the vehicle leaves the monitored section. By using the time taken to travel the known distance, the average speed of a vehicle can be calculated.

Analyse the requirements for this system and design, develop, test and evaluate a program for calculating average speeds for a vehicle travelling through a section of road. Output a list of those vehicles exceeding the speed limit set for that section of road.

Task 2

In the UK most vehicle registrations are in the format:

- two letters
- two numbers
- three letters.

For example, AZ01 XYZ.

The vehicle number plate recognition system will provide this information as a string of characters. By identifying any vehicle registrations that do not match this pattern, a list of non-standard vehicle registrations and average speeds in excess of the speed limit should be compiled and saved.

Analyse the requirements for this system and design, develop, test and evaluate a program for saving a file with these non-standard registrations for those vehicles exceeding the speed limit set for that section of road.

Task 3

The authorities have a file of known vehicle registrations and the vehicle's owner. Those vehicles with standard registrations can be looked up in this file and a fine automatically sent out. A new file is created by comparing the information from the average speed recording system with the file of registered vehicles and their owners' details. This new file should include the owner's name and address details, the registration of the vehicle and the average speed of the vehicle in the section of road.

Analyse the requirements for this system and design, develop, test and evaluate a program for creating a file of details for vehicles exceeding the speed limit set for a section of road. You will need to create a suitable file with test data, including standard registrations and vehicle owner information.

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