

# OCR

Oxford Cambridge and RSA

**To be opened on receipt**

**A2 GCE**

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**

**G054/01/IC** Software development

**INSTRUCTIONS FOR CANDIDATES**

**JUNE 2018**



**INFORMATION FOR CANDIDATES**

- This document consists of **8** pages.

### NOTICE TO CANDIDATES

The work you submit for these pre-release tasks **must** be your own.

- If you copy from someone else or allow another candidate to copy from you, or if you cheat in any other way, you may be **disqualified** from at least the subject concerned.
  - You **must** always keep your work secure and confidential while you are preparing it. **If it is stored on a computer network, keep your password secure. When printing work, collect all copies from the printer and destroy the copies you don't need.**
  - Any materials (e.g. books, information from the internet you have used to help complete this work, etc.) **must** be clearly acknowledged in the work itself.
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- All work **must** be submitted to your teacher once completed. Ensure you include your name, candidate number and centre number on all pages and that each page is hole punched in the top left-hand corner and secured with a treasury tag.
  - **You must not submit any materials other than your response to the pre-release tasks.**
  - When you hand in your completed tasks, you will be required to sign that you have understood and followed the regulations by completing a Candidate Authentication Statement.
  - Your work will be returned to you at the start of the exam, in the exam room. At the end of the exam, you **must** attach **all** tasks to your question paper using the treasury tag.

**ALWAYS REMEMBER:**

**YOUR WORK MUST BE YOUR OWN**

## PRE-RELEASE TASKS – INSTRUCTIONS FOR CANDIDATES

Read the attached case study and these instructions carefully, then carry out the tasks detailed below. There are two types of task.

In Task 1 you will produce notes that will help you to answer questions in the examination for this unit. The other tasks will be marked and will contribute up to 30 of the 100 marks available for this unit.

You will need your completed tasks when you take the examination for this unit.

The work produced in response to the pre-release tasks **must** be submitted to your teacher when it is completed. The work **must** be presented as a hard copy.

It is not acceptable for you to copy large parts of material from other sources as the tasks require you to apply your knowledge to the case study. Any books, information leaflets or other materials (e.g. videos, software packages or information from the internet) which you have used to help you complete this work, **must** be clearly acknowledged in the work itself. To present material copied from books or other sources without acknowledgement will be regarded as deliberate deception.

You **must not** submit any material other than your response to the pre-release tasks.

The work **must** be collated so that it is presented in task order.

Each page of the work **must** be marked clearly with your name, candidate number, centre number and task number.

When you have completed the tasks, you **must** sign and date a Candidate Authentication Statement. You **must** then ask your teacher to sign to confirm that the work is your own.

### Task 1

Produce the following for Progress Garage:

- a feasibility study
  - the purpose of the system
  - functional and non-functional requirements
  - process constraints
  - a list of deficiencies of the current system
  - the user requirements of the new system
  - recommendations for the development of the new system
- recommendations for hardware and software
- recommendations for investigation, implementation and training methods.

### Task 2

Develop a L0 DFD (Context Diagram) for the current system used at Progress Garage (see **Appendix 1**). The process starts when a customer contacts Progress Garage and ends when the customer receives the receipt.

Briefly evaluate the methods you used to develop this L0 DFD (Context Diagram).

**[15]**

**Task 3**

Develop a flowchart to show the process for ordering a general stock item. [10]

**Task 4**

Design the invoice to be produced from the new system for the customers of Progress Garage. [5]

## Progress Garage

Progress Garage is a small business based in Lancashire. The main function of the business is to service and repair customers' cars. The garage can also supply and fit tyres to customers' cars. Progress Garage is authorised to carry out MOT tests for cars.

The garage is based in Longridge, which is a small town just outside Preston. The garage premises include an office and reception area, as well as the workshop where the services, repairs and MOT tests are carried out. Tyres are fitted in a separate area of this workshop.

Customers can book their car into Progress Garage for a routine service, an MOT test or for a one-off repair. Progress Garage has two courtesy cars. Customers can book one of these to use while their own car is being serviced or repaired.

When a customer contacts Progress Garage to book their car for a service or repair the following details are required:

- customer name
- address and contact phone number
- car registration number
- make and model of the car
- if a courtesy car is required
- the date the customer needs the work to be done.

At the moment, these details are handwritten into a diary on the page for the date that the car is being dropped off by the customer. When the customer drops their car off at Progress Garage, the diary entry for the car is highlighted to show that Progress Garage is now responsible for the car.

Each car has a job card which is used to record the current mileage of the car, any parts that are used, such as an air filter or oil, and the amount of time the mechanic has worked on the car. The mechanic handwrites these details on the job card.

On occasions, a specific part, for example for a Land Rover, is required. These parts are ordered and delivered from a supplier three times a day. In addition to this, general stock items, such as antifreeze or oil, are ordered on Tuesdays and Thursdays for delivery the following day.

There are several diagnostic computers used in the workshop, which are only used for the diagnosing of faults with the cars and for completing the tests required by the MOT.

There are two general purpose computers used at Progress Garage. One, a laptop, is used by the owner. This computer is used for keeping staff personnel records and recording the company accounts.

The other computer is a desktop computer, which is used by the receptionist to create customer invoices. A printer is attached to this computer. This desktop computer is also used for contacting the DVLA, via the DVLA website, to record when a car has passed the MOT test.

This desktop computer holds the customer database. This database holds records of each customer including name and contact details. Details of their car, including its registration number, service and MOT history are also included in each customer record.

Once the work on the car has been completed, the mechanic passes the job card to the receptionist, who creates and prints the customer invoice. When the customer collects the car, the invoice is given to the customer. Some customers pay when they collect the car, whilst others pay within five working days. A receipt is given to the customer when the invoice has been paid.

The workshop manager keeps manual records about the general stock items. A stock count is done on the day before the order is submitted. The workshop manager passes the stock requirements to the receptionist. The receptionist orders the general stock based on these stock requirements.

A minimum stock level for each item has been set. The order is based on this level.

The calculation is:

$$\text{Required stock level} - \text{current stock level} = \text{amount to be ordered.}$$

For example, the required stock level of oil is 100 litres. The current stock level is 15 litres. The number of litres of oil to be ordered is 85.

General stock can be used up before the order is delivered. There have been occasions when stock of an item, for example brake fluid, has run out before the order is delivered. If this happens, then a top-up order is placed by the receptionist by phone. This has caused delays in the servicing of cars and has, on occasions, lead to cars not being ready for customers to collect.

This situation is causing Progress Garage to lose money because incorrect invoices have been created for customers. If a general stock item is not available, then the mechanic is unable to fully complete the job card. If this happens, some job cards may be incorrectly completed, because the mechanic has forgotten to amend the details when the stock item is available and used.

For example, if a car is being serviced but there is no oil, then the mechanic will complete the job card up to that point in the service. When the oil has been delivered and put into the car's engine, it is possible that the time taken to put the oil in the car and the amount of oil used are not recorded on the job card. This means that the invoice does not fully include all time spent and stock items used.

Customers can bring their car to Progress Garage if, for example, the tyres need air or the antifreeze levels need checking and topping up. These jobs are not booked into the system but are done on an ad-hoc basis. These jobs are very rarely invoiced to customers, as the details of the job are written on a piece of paper and handed to the receptionist. This paper can get misplaced before an invoice has been created. This is also causing Progress Garage to lose money and can lead to incorrect general stock levels.

The owner wants the new system to solve these problems.

There are other problems which also need to be solved by the new system. The main ones are:

- supplier details are held manually
- customer details are not being kept up to date
- information relating to the service and MOT history of a car is not always updated.

The owner of Progress Garage would like to be able to produce reports detailing:

- the number of tyres sold each month
- the amount of revenue generated by each type of tyre
- a monthly, up-to-date list of the cars requiring a service and MOT for the following month, so customers can be contacted.

The workshop manager, who will be using the new system, has asked that the stock system shows the re-order level of each stock item and provides a message when items need to be re-ordered. A report, listing the stock items that need to be re-ordered, should be generated each day. This report should be automatically sent to the receptionist. The workshop manager has also asked that the interface of the stock system has validation routines which will limit user error.

The receptionist has asked that the booking system should enable a customer's details to be located using the car registration number. The booking system should also enable a query to be run each month, with an automatic reminder sent to customers when a service or MOT is due. User errors should be limited through the automatic features of the system.

The owner would like the new system to have a function to 'hold' an invoice. This will enable jobs where items are out of stock to be partially completed but the invoice not generated until the work on the car is fully completed.

In addition, once the two courtesy cars have been booked to customers, the system should accept no further requests for a courtesy car.

The new system must be implemented over a weekend from Saturday lunchtime to Sunday evening, when Progress Garage is closed. This is to ensure minimum disruption to the business.

In future, it is hoped that Progress Garage would have an interactive website. This would enable customers to book their cars in for a service or MOT online.

## Appendix 1

When Progress Garage are servicing or carrying out an MOT on a customer's car the following procedures take place:

- The customer tells the receptionist their contact details, the registration number of the car, what work is to be done, the date for the work to be done and if a courtesy car is required.
- The receptionist confirms the date and enters these details into the diary.
- The work is done on the car and the completed job card is given to the receptionist.
- If a successful MOT has been completed the details are entered into the DVLA website.
- An invoice for the work is created.
- The invoice is given to the customer.
- The customer pays the balance of the invoice.
- A receipt showing full payment is either given or sent to the customer.

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