

Monday 23 January 2012 – Afternoon

**A2 GCE APPLIED INFORMATION AND COMMUNICATION
TECHNOLOGY**

G054/01/IC Software Development

INSTRUCTIONS FOR CANDIDATES

Duration: 1 hour 30 minutes



INFORMATION FOR CANDIDATES

- This document consists of **8** pages. Any blank pages are indicated.

INSTRUCTION TO EXAMS OFFICER/INVIGILATOR

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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 whilst you are preparing it. **If it is stored on the computer network, keep your password secure. When printing work collect all copies from the printer and destroy those you don't need.**
- Any materials eg books, information from the internet you have used to help complete this work must be clearly acknowledged in the work itself.

- 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.
- **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.
- 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 a 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.

In Task 1 you will produce notes that will help you to answer questions in the examination for this unit. There are 30 marks available for Tasks 2, 3 and 4.

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 material (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, 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 The Corner Shop

- a feasibility study to include
 - 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
- investigation, implementation and maintenance methods
- legislation implications relating to the new system

Task 2

Develop a Level 0 data flow diagram (context diagram) for the current stock system (see Appendix 1). The process starts when the shops fax the daily orders and ends when the stock delivery note is given to the shop manager.

Briefly evaluate the methods you used to develop this data flow diagram. [15]

Task 3

Develop a flowchart to calculate the business order for a given stock item. [10]

Task 4

Design a printed report layout showing stock details for The Corner Shop including the supplier, current stock levels and reorder levels. [5]

The Corner Shop

The Corner Shop is a small independent company based in Sheffield. The main function of the company is to run small, local shops in the Sheffield area. The business currently owns and runs three shops.

The company's main office and a warehouse are based in two separate buildings on a site in the outskirts of Sheffield. The administration staff, who deal with the orders from the shops for stock, personnel and accounts staff are based in the main office. The owner of the company is also based in the main office.

The stock for the shops are stored in the purpose-built, secure warehouse. An office, used by the warehouse manager, is also in the warehouse. The vans, used to deliver the stock to the shops, are also stored on this site. Stock is delivered to each shop every morning.

The stock for the shops is ordered centrally by the administration staff. This strategy enables the company to order stock in bulk and to get discounts from their suppliers.

The manager of each shop sends an order by fax to the administration staff by 3pm each day. The orders are pre-printed but the shop managers complete the quantities required by hand. The shop managers will base their order on the day's sales, knowledge of their customers and other factors such as the weather.

The orders are submitted to the suppliers by the administration staff by 5pm each day, with the stock being delivered to the warehouse by the suppliers on the morning of the following day.

The Corner Shop currently has six computers. Five of these computers are used in the main office. One is in the owner's office and is used for keeping private company information such as the financial accounts of the business. Two computers are in the administration office – one for each member of the administration staff. One of these computers (the stock system) is used to:

- keep records of all stock ordered by each shop
- keep records of stock levels held in the warehouse

The other computer in the administration office is used for the day-to-day administration of The Corner Shop business, such as creating posters for the shops giving details of the special offers and up-dating and printing the pre-printed form which shop managers use to order the stock.

The fourth computer is used by the accounts staff to keep records of payments made to suppliers. The fifth computer is used by the personnel staff to keep records of all staff who work in the shops, the warehouse and the main office. Both these computers can only be accessed by the relevant members of staff and the owner. Security on these computers is provided by password protection. None of the other computers have any form of security leaving the information stored on them open to misuse.

The sixth computer is located in the warehouse and is used by the warehouse manager to keep records of deliveries (in and out) and to record the service history, MOTs and running costs of the delivery vehicles.

Each shop manager will create their stock order every afternoon and fax this to the main office. The order is created using a paper-based, pre-printed form on which all stock sold by the shops is listed. The blank, pre-printed order forms are faxed to the shop from the administration staff each morning. The shop manager handwrites the quantity of each stock item they require on the form. There is space on the form for additional stock items which the manager would like to order.

When the order form is received in the main office the orders are put onto a spreadsheet. The spreadsheet calculates the total amount of each stock item required for all three shops. The spreadsheet also calculates the amount of the stock items that need to be ordered. This is calculated by adding the orders from the three shops and taking this number from the amount of stock currently held in the warehouse. A minimum stock level, to be held in the warehouse, has been set and the order to the suppliers is based on this level. A copy of the order is sent to the warehouse manager so that they can organise the delivery to the shops.

For example, the total order of tins of baked beans from the three shops is 100. The stock level currently held in the warehouse is 143 tins. The minimum stock level for baked beans is 125 tins. The calculations would be:

$$\begin{aligned} 143 \text{ (stock held in the warehouse)} - 100 \text{ (stock required by the shops)} &= 43 \\ 125 \text{ (minimum stock level)} - 43 \text{ (remaining stock)} &= 82 \text{ (number of tins to be ordered)} \end{aligned}$$

When an order has been sent to a supplier a copy is sent to the warehouse manager. The warehouse manager uses this to check the stock that is delivered by the supplier each morning. If there are any differences between the stock ordered and the stock delivered then the administration staff are notified. This is usually done by telephone.

The stock is then stored in the warehouse – each item has a designated storage area to ensure that orders for the shops are collated efficiently. The order for each shop is put onto a separate delivery van. The completed, pre-printed order form, sent by the shop manager, is included with the delivery so that the shop manager can check the stock delivery against the original order.

When the deliveries have left the warehouse, the warehouse staff count the number of each item left in stock. This number is passed, by the warehouse manager, to the administration staff who update the spreadsheet to show the correct stock levels.

If a shop manager requires an urgent order, for example extra supplies of a stock item, then they telephone the administration staff. They then notify the warehouse manager who collates the order which is then delivered.

It is becoming apparent that the urgent orders are causing some problems. The stock in the warehouse is counted after the main deliveries have been sent to the shops each day. When an urgent order has been received and delivered the stock is rarely counted again. This means that the administration staff are basing the orders to the suppliers on the incorrect stock levels. This has led to stock not being available to be delivered to the shops and additional telephone orders being made to suppliers.

Another problem which needs to be solved relates to the quantity of the stock required by each shop. There have been occasions when the illegible handwriting or the quality of the fax has led to incorrect stock being delivered to shops.

The owner wants to modernise the business and the working practices. However, the six computers currently being used were purchased recently and the owner would like to keep these as part of the new system. They use a standard windows operating system with an office suite. The owner would like to retain this software.

There is concern about the poor security of the information currently held on some of the computers. The other main concern is that the shops do not have computers. The owner has asked that the new system has full internet access with email communication, both internal to the business and externally. This will, it is hoped, speed up communication between the shops, warehouse and the main office.

The new system should be able to produce the following reports:

- the number of each stock item sold per week as a total and broken down by shop
- the most and least popular stock items sold per week
- the amount and names of stock provided by each supplier.

The warehouse manager will be inputting the number of each stock item held in the warehouse after the stock check and has requested that input errors be limited through the automatic facilities of the system. He has asked that the stock system shows the reorder levels of each stock item and that a daily, automatically generated report be sent to the administration staff showing which items of stock need to be reordered. The report should also show the number of each stock item held in the warehouse and the number to be reordered.

As the shop managers have limited ICT skills they have asked that the user interface of the stock system be user friendly with helpful user messages. They have also asked that user errors be limited through the automatic facilities of the system. Orders from the shops should be created using appropriate software to ensure that all calculations are completed automatically by the software.

The accounts staff have asked that supplier contact details and the stock they supply be accessible through the use of a unique supplier number. These are currently stored on paper in alphabetical order. The administration staff have asked that they have access to the supplier system to enable all supplier details to be accessed. Details of orders made will need to be recorded. User errors need to be limited through the automatic facilities of the system.

The owner has asked that the new system for The Corner Shop has a total of nine computers, which must be linked. Each computer should be connected to a black and white printer. She is aware that files and information can be transferred between the shops, warehouse and main office through the use of the internet. The owner feels that this would be an appropriate method for her business, although she is very concerned about the security implications of this.

As the staff are familiar with the operating system and applications software that are currently used on the computers in The Corner Shop they have requested, with the agreement of the owner, that the vendors of these be the same in the new system. The staff do, however, appreciate that upgrades may be required.

The owner would also like to have an iPad so she can work away from the office accessing data and information remotely. When she is working in her office the iPad must be capable of linking to the other computers to share information and files with the rest of the business.

The owner will be expanding the business in the future with more corner shops. It is essential that the new system will be able to cope with this expansion and also be adaptable for any other changes, such as changes in VAT, suppliers and prices of stock.

It is expected that the new computer system will meet all these requirements and solve the problems with the current system.

The new system must be implemented in the evenings when the business is closed so that disruption is kept to a minimum.

Appendix 1

The following procedures take place within The Corner Shop when the daily stock required is ordered.

- The blank pre-printed order forms are faxed to the shops each morning.
- The shop manager counts the stock in his shop and fills in the pre-printed order form.
- The pre-printed order form is faxed to the main office.
- A member of the administration staff enters these details onto a spreadsheet.
- The spreadsheet calculates the total amount of each stock item required for all three shops.
- The amount of the stock item which needs to be ordered is calculated.
- The order is sent to the relevant suppliers.
- A copy of the supplier and shop orders are sent to the warehouse manager.
- Stock is delivered by the suppliers.
- The stock is checked, differences are notified to the administration staff and the stock is stored in the warehouse.
- The orders for the shops are put onto the delivery vans with a copy of the order included.
- Stock in the warehouse is counted and the stock levels sent to the administration staff.
- The updated stock levels are entered into the spreadsheet.

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