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Oxford Cambridge and RSA

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A2 GCE

APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

G054/01/IC Software development

INSTRUCTIONS FOR CANDIDATES

JUNE 2015



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 whilst 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 Hats and Things:

- 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
- investigation, implementation and maintenance methods.

Task 2

Develop a rich picture diagram for the current stock system (see **Appendix 1**). The process starts when the Stock Manager manually completes the stock check form. The process ends when the suppliers are notified of any differences.

Briefly evaluate the methods you used to develop this rich picture diagram.

[15]

Task 3

Develop a flowchart to produce the order for a given stock item.

[10]

Task 4

Design a computerised stock check form to be used by the Stock Manager.

[5]

Hats and Things

Hats and Things is a small business based on a site in Southampton. The main function of the business is to supply wool, knitting needles and knitting patterns direct to the public through mail order.

The warehouse and office are in two separate buildings on the site. The owner and four staff are based in the office. Two of the staff deal with customer orders; one is responsible for the accounts while the fourth deals with the general day-to-day administration of the business, including publicity.

A catalogue is sent to all existing customers twice a year. The catalogue shows the stock that is available at the time of printing and the stock number and price of each item. Customers can place their orders by post using the order form in the catalogue or by telephone.

When telephone orders are received a computerised system is used to record the orders. Existing customers' contact details are accessed using their unique customer number. When the telephone order has been confirmed, the customer is given an order reference number and a delivery date. Customers who order by telephone have to provide a credit or debit card number to pay for their order.

When order forms are received by post, the same process takes place. Existing customers have to write their unique customer number in a section on the order form and give an email address. Customers enclose a cheque or give their debit or credit card number for payment. The email address is used to confirm the order and an order reference number is given with the delivery date.

All orders are handwritten onto a confirmed order form. These are sent to the warehouse twice a day. The orders are collated and despatched, every evening, to the customers using a guaranteed 48-hour delivery service. A handwritten delivery note is included with the order.

The Stock Manager is responsible for checking each order prior to despatch, keeping manual records of the stock levels of wool, knitting needles and knitting patterns and notifying the office staff of any stock item which needs to be reordered. As each customer order is collated, the manual stock record should be amended to show the reduction in stock. As new stock arrives, the stock records should be amended to show an increase in stock levels.

As the stock records are manually updated, problems have begun to occur. When the Stock Manager is busy, changes to the stock records are not completed. With the renewed interest in knitting, the business of Hats and Things has increased. This has resulted in an increase in the number of orders being collated each day. This means the manual stock records are not always up to date. This has led to problems when orders have been placed for an item which is not in stock. If this happens, the delivery note shows the items not included and gives an estimated delivery date for these items. This is causing extra work as the delivery notes are handwritten.

The Stock Manager manually completes a stock check form at the end of each day. This form is completed based on the number of a given item required to fill the customers' orders, the number in stock and the pre-defined minimum stock level.

For example, the stock level of 4 mm knitting needles is 25 pairs. The minimum stock level for this item is 40 pairs. 23 pairs are needed to complete the customers' orders. The calculations would be:

$$25 \text{ (number in stock)} - 23 \text{ (number needed for orders)} = 2 \text{ (number left)}$$

$$40 \text{ (minimum level)} - 2 \text{ (number left)} = 38 \text{ (number to be ordered)}$$

The orders to each supplier are based on the manually calculated number to be ordered. This number is not always correct and, as no further checks are made, the number of each item of stock can be incorrect. This has led to stock items being either over or under stocked in the warehouse.

The completed stock check form, showing the number of each stock item to be ordered, is sent to the office. A member of staff sends orders for the stock items to the relevant supplier with copies of the order forms sent to the Stock Manager. When the orders have been sent, the stock check form is returned to the Stock Manager to be filed.

Copies of the order forms are used to check the stock when it is delivered by the supplier. Any differences between the order and the delivery are noted by the Stock Manager. Office staff are notified of these differences. The relevant supplier is then contacted to advise them of the difference.

The owner of the company has asked that the stock system be computerised. The system needs to:

- display all the stock numbers and descriptions
- display the current stock level of each item of stock
- display the reorder level of each item of stock
- automatically calculate the number of each item of stock to be ordered.

In addition, the new system should be able to produce the following reports for the owner:

- the number of each stock item sold per week
- the most and least popular stock items sold per week
- the amount and names of stock provided by each supplier.

The stock system needs to incorporate contact details of suppliers, with each supplier being allocated a unique supplier number. It is hoped that this will speed up the process of reordering stock items and reduce input errors as the supplier details will already be stored.

Office staff have requested that they are able to access this system. This will enable them to check that the wool, knitting needles and knitting patterns that customers have ordered are in stock prior to the final order being placed. Customers can be given an estimated delivery date for items that are currently out of stock. Customers who order by telephone will be given this information verbally whilst those customers who order by post will receive this information by email prior to the order being processed.

The member of staff responsible for accounts has asked that they are able to access the stock system. This will enable them to access supplier contact details.

The stock system software must be compatible with the payments system, used by the accounts staff member, to enable existing supplier details to be imported. It should also enable stock levels to be checked. Therefore, the new stock system must be fully compatible with the systems currently in use. The owner has asked that while stock levels are being updated, no other user can amend the stock system.

Hats and Things currently has four desktop computers, all located in the office.

The first computer is used to keep records of customers including the unique customer number, name and contact details. The second is used to record details of customer orders.

The third computer is used by the general administration member of staff and is used for creating flyers to, for example, give details of special offers. The flyers are included when the catalogues are posted to customers. This computer is also used to print the stock check form used by the Stock Manager.

The fourth computer is used by the member of staff responsible for accounts. This is used to record payments made to suppliers and received from customers.

The owner of Hats and Things has asked that a computer system is installed in the warehouse. This computer system must be linked with the four desktop computers currently in the office.

The owner has a tablet computer which is used to store records of all staff who work at Hats and Things and private company information such as the financial accounts of the business.

Security on the tablet and computer used for accounts is provided by password protection. None of the other three computers have any form of security, leaving the information stored on them open to misuse.

The Stock Manager occasionally uses the computer systems in the office. They have asked that the vendor of the operating system and applications software, to be installed on the new computer system for the warehouse, is the same as that used in the office. However, it is accepted that an updated version may need to be installed.

The stock system must be implemented in the warehouse over a Bank Holiday weekend. This will begin after 5pm on the Friday and must be completed before 9am on the Tuesday morning to ensure minimal disruption to Hats and Things. The Stock Manager will be trained whilst they are using the new stock system.

The owner is considering expanding the business to include selling knitting and craft kits. They have requested that the stock system is developed to incorporate this potential expansion. A shop on the site is also planned, so the systems that will be developed for this will also need to interact with the stock system.

The owner has allocated a maximum budget of £20 000 for this project. This must cover the cost of hardware, software development and staff training.

Appendix 1

The following procedures take place within Hats and Things when stock items are ordered.

- The stock check form is manually completed by the Stock Manager.
- The number of each stock item which needs to be reordered is manually calculated.
- The completed stock check form is sent to the office staff.
- The order is sent to the relevant supplier.
- Copies of the supplier orders are sent to the Stock Manager.
- The stock check form is returned to the Stock Manager for filing.
- Stock is delivered by the suppliers.
- The delivery is checked.
- The office staff are told of any discrepancies.
- Discrepancies are notified to the relevant supplier.
- The stock is stored in the warehouse.



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