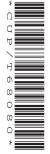# OCR
RECOGNISING ACHIEVEMENT

ADVANCED GCE

APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY **G054/IC**

Unit 15: Software Development

INSTRUCTIONS FOR CANDIDATES

To be opened on receipt **JUNE 2009**

INFORMATION FOR CANDIDATES

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

2

BLANK PAGE

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 or advisable 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 Rods Recycling:

*   a feasibility study
*   investigation methods
*   security, implementation and maintenance recommendations.

Task 2

Develop a L1 data flow diagram (DFD) for the current system in place at the yard (See Appendix 1). The process starts when the booking is sent to the yard and ends when the recycling box or container is returned to stock.

Briefly evaluate the methods you used to develop this DFD. **[15]**

Task 3

Develop a Data Dictionary for the proposed system (See Appendix 2). **[10]**

Task 4

Staff at the yard need to input the required data in order to calculate the recycling bonus payments due to customers.

Design a screen that allows the data to be input and the calculations and resulting bonus payments to be displayed. **[5]**

Rods Recycling

Rods Recycling is a business based in Leeds. The business supplies a range of recycling boxes and containers, including those for paper, cardboard, aluminium cans, glass and plastic.

The main function of the business is to hire, deliver and collect recycling boxes and containers. Its customers include schools, leisure centres, hotels, hospitals and other businesses.

Rods Recycling also has the facility to collect and recycle IT equipment and ink cartridges. This facility is limited as Rods Recycling only has 10 containers available for this type of recycling.

The number of boxes and containers available is given in Table 1.

Type	Number available
Paper	150
Cardboard	150
Aluminium cans	175
Plastic	90
Glass	125
IT equipment / ink cartridges	10

Table 1

The head office of Rods Recycling is based in a purpose-built office complex on the outskirts of Leeds. The owner of Rods Recycling is based at this office, as is the main administration office. The recycling boxes and containers are stored at a secure yard about 15 miles away. The delivery and collection vehicles are also stored at this yard.

The recycling boxes are hired for a specified time as requested by the customer. When the box or container is collected it can, if the customer wishes, be replaced with an empty one.

When the boxes and containers are collected they are taken to the yard to be checked and sorted, ready to be taken to a recycling factory. Customers receive a recycling bonus payment based on the weight of items in each recycling box or container. This is calculated and paid to the customer by cheque.

At the moment all communication between the two sites is by phone, fax or by a member of staff driving between the two sites delivering the information by hand. This information may be on paper or on electronic media.

There are two desktop computers at head office. One computer is in the owner's office. This computer is used for keeping staff personnel records and recording the company accounts.

The other computer is in the main administration office and is used to:

- keep records of all the hires made by customers
- record payments that are received for hiring the recycling boxes and containers
- record payments that are due to customers.

Neither of these computers has any form of security leaving the information stored on them open to misuse.

There is one desktop computer at the yard. This computer is situated in the office and is supposed to be used to keep records about the recycling boxes and containers. As there is no formal method for keeping these records, the computer is very rarely used. Most of the information is stored on paper and pinned to the notice board on the wall in this office. This method of storing the information is very disorganised and information is often lost or misplaced.

The owner wants to modernise the business and the working practices. There is concern about the poor security of the information currently on the computers. The other concern is that the computer at the yard does not have internet access. The owner has asked that the new system has full internet access with email communication, both internal to the business and externally. In future, it is hoped that the business would develop a website to advertise the business and enable bookings for the recycling boxes and containers to be made on-line.

It is very important that the two sites are in touch with each other, as there have been instances in the past when the number of requests for recycling boxes and containers have exceeded the number that are available. This has led to customer dissatisfaction. This happens when special events, such as garden parties and other fund-raising events, are taking place, causing requests for recycling boxes and containers to increase.

In addition to this there are other problems that need to be solved by the new system. The main ones are:

- recycling boxes and containers being unavailable due to cleaning or maintenance
- IT equipment and ink cartridge collections being arranged but the appropriate recycling containers not being available
- the recycling bonus payments made to customers are incorrectly calculated.

The owner would also like to be able to produce reports detailing:

- the number of bookings, on a monthly basis, for each type of recycling box and container
- the amount of revenue each type of recycling box and container generates for Rods Recycling
- an up-to-date list, each week, of the number of each type of recycling box and container that is hired or available.

She has also asked that the applications software, which is used throughout the company, be standardised. At present different software packages are used at the office and yard and this has proved to be a problem when information and data has to be shared.

It is hoped that the new computer system will meet the owner's requirements and solve the problems with the current system. The staff who work at the yard, who will be using the new system, have limited ICT skills and so will need to be fully trained in order to use the new system. The administration staff are computer literate as they currently use computers to carry out many tasks. They will, however, need specific training on the new system.

The owner has asked that head office has four computers, which must be linked, and the yard has three, these should also be linked. She has also asked that the existing computers, in the head office and the yard, be incorporated into the new system. As the staff are familiar with the operating system that is currently used on the computers in Rods Recycling they have requested, with the agreement of the owner, that the vendor of the operating system be the same in the new system. The staff do, however, appreciate that an upgraded operating system may be required.

The owner would also like to have a laptop computer so she can work away from the office. This laptop computer must have internet access. When she is working in the head office the laptop computer must be capable of linking to the other computers. This will enable the sharing of information and files with the rest of the business. The owner would also like to upgrade the peripherals that are currently used by the business.

She is aware that files and information can be transferred between the sites through the use of the internet and feels that this would be an appropriate method for her business, although she is very concerned about the security implications of this.

The owner is considering expanding the business in the future to supply compost bins, water butts and wormeries. It is essential that the new system will be able to cope with these changes and can also be adapted for any other changes, such as VAT rate change.

The new system must be implemented within 25 weeks as an event has been planned to promote recycling. The budget for the hardware and software is £25,000.

Appendix 1

When a customer wishes to hire recycling boxes and containers the following procedures take place within Rods Recycling.

- The customer advises the administration staff of the start date, type of recycling box or container and the duration of the hire.

- A member of the administration staff enters the booking onto the booking system.

- The cost is worked out, the customer is given a booking reference and an invoice is sent.

- The customer pays the invoice.

- The information about the booking is sent to the yard.

- A record of the booking is made – this is done by hand.

- A delivery note is created.

- The recycling box or container and the delivery note are delivered to the customer's address on the first day of the hire.

- The recycling box or container is collected on the last day of the hire. If required, another box or container is also delivered.

- The recycling box or container is emptied, the contents weighed and any recycling bonus payment due to the customer is manually calculated.

- The details of this payment is sent to the administration office where the recycling bonus payment is organised and sent to the customer.

- The recycling box or container is cleaned and any maintenance needed is carried out.

- The recycling box or container is returned to stock.

Appendix 2

The following entities could be used when developing the new system.

BOOKING (**Booking_Number**, *Cust_ID*, start_date, duration, *Container_Number*)
CUSTOMER (**Cust_ID**, surname, first_name, address1, address2, postcode, contact_number)
CONTAINER (**Container_Number**, Type, cost)
DELIVERY (**Delivery_Number**, *Booking_Number*, *Staff_Number*)
STAFF (**Staff_Number**, staff name)

Key
Primary Keys are in **bold**
Foreign Keys are in *italics*