SPECIMEN

OCR
RECOGNISING ACHIEVEMENT

Advanced Subsidiary GCE (or Advanced GCE)

APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

G054/CASE STUDY

Unit G054: Software Development

Pre-Released Material

Candidates answer on the question paper.

Additional materials:

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 completes 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 acknowledges 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.

This document consists of **7** printed pages and **1** blank page.

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Task 1

Produce the following for Island Fly

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

Task 2

Develop a L1 data flow diagram (DFD) for the booking system currently in use at Island Fly (See Appendix 1). The process starts when a passenger contacts Island Fly to book a flight and ends when the booking reference number is given to the passenger.

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

Task 3

Produce a decision tree that relates to the decision table given in Appendix 2. **[10]**

Task 4

Design a web-based form to enable passengers to book flights on-line. **[5]**

Island Fly

Island Fly is a small airline based at Blackpool Airport. The main function of the business is providing scheduled flights between Blackpool, The Isle of Man and Belfast. The airline also offers a charter service to private customers who wish to charter an aeroplane for private flights.

Island Fly operate flights that depart from Blackpool, land in the Isle of Man and then fly to Belfast. The return journey departs from Belfast, lands in The Isle of Man and then flies to Blackpool. This service is provided three times a day.

Passengers can book for a return flight or a 'leg' of a flight. For example, a passenger may fly from Blackpool to The Isle of Man and then return to Blackpool on a later flight. Alternatively a passenger may book a single flight from Blackpool to Belfast via The Isle of Man.

The normal aeroplane will take 8 passengers, a pilot and co-pilot. However, if demand is high, e.g. during the TT races in The Isle of Man, aeroplanes that will carry more passengers are available. However, before extra passengers are booked, the staff who work in the hangar must be consulted to check that a larger aeroplane is available.

The head office of Island Fly is based in the Terminal at Blackpool Airport. The owner and administrative staff of Island Fly are based at this office. The aeroplanes are kept in a hangar on the opposite side of Blackpool Airport. Island Fly also has staff based in offices at the airports in The Isle of Man and Belfast.

All flight bookings are handled at the Blackpool office. Passengers must pay the total cost of the flights at the time of booking. This is done by credit or debit card. A booking number is given to the passenger and this must be quoted when they check-in for their flight.

The staff at The Isle of Man and Belfast provide administrative support including the checking in of passengers and general support to the pilots. An up-to-date list of all passengers to be checked-in or leaving the flight is faxed to The Isle of Man and Belfast when the flight has left Blackpool.

When the flight has departed The Isle of Man or Belfast airport, an updated passenger list is faxed to the office at Blackpool.

Island Fly has recently introduced a Frequent Flyer scheme. This entitles passengers to a discount on the cost of all flights. In addition, when a passenger has completed 12 return flights they are entitled to their next flight at a discounted rate of 50%. No further discount is available on this flight. When this flight has been taken, a further 12 flights must be completed to receive this discount again. If passengers are members of this scheme they should provide their membership number at the time of booking. In addition, a discount is available for all passengers booking a return flight. These details are given in Appendix 2.

At the moment, all communication between the main office in Blackpool and the hangar is by phone or by hand from the administrative staff to the pilots. 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 passengers who belong to the Frequent Flyer scheme
- keep records of all the bookings made by passengers
- record payments that are received for flights
- keep details of passengers booked on each flight – these are provided to the pilots prior to each departure from Blackpool.

The computers in the offices have security procedures installed but these are out-of-date and are very rarely implemented.

There is one desktop computer at the hangar. This computer is situated in the office and is supposed to be used to keep records about the aeroplanes. 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 hangar 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 flights to be made on-line.

It is very important that the office and hangar staff are in touch with each other. There have been instances in the past when the number of passengers on a flight has exceeded the number the aeroplane prepared can carry. This has lead to delays in take-off, which has resulted in flights being late for arrival and departure at The Isle of Man and Belfast Airports. This also causes delays in getting aeroplanes ready for further flights scheduled that day.

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

- larger aeroplanes being chartered to private customers, leaving some passengers on scheduled flights being unable to fly due to overbooking
- passengers receiving the incorrect discount when booking flights
- passenger's flight details not being linked to their Frequent Flyer membership number.

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

- the number of bookings for each leg of the flight schedule
- the amount of revenue generated for each leg of the flight schedule
- an up-to-date list of the number of bookings for each day of the working week (Monday – Friday).

The owner has also asked that the applications software used throughout the company is standardised. At present, different software packages are used by staff at head office, the hangar and the airports. This has proved to be problematic 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 hangar, 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.

[Turn over

The owner has asked that the office at Blackpool Airport has a total of four computers, which must be linked, and the hangar has a total of three, these should also be linked. The owner has asked that the existing computers, in the head office and the hangar, are included into the new system. As the staff are familiar with the operating system that is currently used on the computers in Island Fly, 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 a laptop computer that can be used when visiting the other offices. This laptop must be able to access the Internet and when used in the head office must be able to share information and files with the rest of the business. The owner would also like to upgrade the peripherals that are currently used by Island Fly.

The owner 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 Island Fly. However, there are major concerns about the security implications of this.

The owner is considering expanding the business in the future to fly to other airports within the U.K. The owner is concerned that the system is able to cope with these changes and can be adapted when this and any other changes, such as Government introduced flight taxes, are required.

The new system must be implemented within 20 weeks and the budget for the hardware and software is £25,000.

Appendix 1

The following procedures take place within Island Fly:

- the passenger advises the administrative staff of the flight day, time, departure and arrival airport, whether a single or return flight is needed, personal details and, if applicable, Frequent Flyer scheme membership number
- a flight requirements form is completed by a member of the administrative staff
- a member of the administrative staff enters the booking onto the booking system and checks that the passenger requirements can be met
- if the flight required is available, the passenger details are confirmed
- if the passenger is a member of the Frequent Flyer scheme, the passenger's record is updated
- the cost is worked out and any discounts are applied
- the cost of the flight is recorded on the flight requirements form and the passenger is advised of the cost
- the passenger pays the total cost of the flight(s)
- the details are confirmed on the booking system and a booking reference number is generated
- the booking reference number and flight details are printed and sent to the passenger – this is used to check in for the flight
- the flight details are sent to the hangar
- at the time of departure, the passenger checks in for the flight giving the booking reference
- number
- details of passengers leaving or checking in for flights to The Isle of Man or Belfast airports
- are faxed to the member of staff at these airports
- an updated passenger list is faxed to Blackpool when the flight has departed from The Isle of Man or Belfast airports
- on arrival back at Blackpool, after the passengers have left the aeroplane, any maintenance needed on the aeroplane is completed in the hangar, the records are updated and the aeroplane is made ready for the next flight.

Appendix 2

The following simple decision table is used to calculate the amount of discount each passenger is entitled to.

Conditions	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6
Member of Frequent Flyer scheme	Y	Y	Y	Y	N	N
Return flights completed = 12	Y	N	N	Y	N	N
Return flight booked?	Y	Y	N	N	Y	N
Actions						
0% discount						X
5% discount			X		X	
10% discount		X				
50% discount	X			X		