Cambridge O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME	

CENTRE NUMBER					CANDIDATE NUMBER				

COMPUTER STUDIES **7010/31**

Paper 3 Alternative to Coursework **May/June 2014**

1 hour 30 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

There is one compulsory question on this paper.

Each part must be answered in the space provided.

No marks will be awarded for using brand names of software packages or hardware.

You are advised to spend at least 20 minutes reading the information at the start of question 1 since this information is needed to answer all the sections in this question.
All answers must refer to this information system.

The number of marks is given in brackets [ ] at the end of each part question.
The maximum number of marks is 60.

This document consists of **13** printed pages and **3** blank pages.

CAMBRIDGE
International Examinations

[Turn over

In this question you are asked to read about:

- an existing manual, paper-based system for people to book by telephone a ride on a Ferris at a time of their choice,
- the online computer-based booking system proposed to replace it.

You are given a description of both the existing system and the proposed new online booking system.

Description of the existing system

The Ferris wheel takes half an hour to rotate and there are 40 pods that can contain up to 8 people. People can book their ride on the Ferris wheel over the telephone, between 24 hours and 12 months in advance, or on the day at a staffed kiosk next to the Ferris wheel. Tickets booked in advance are posted or can be collected on the day from the staffed kiosk.

Tickets are timed at half-hour intervals. The Ferris wheel and the telephone booking system operate from 10:00 to 22:30. People with tickets are asked to arrive at the start of their half-hour slot. The tickets are checked by staff, who then direct people to their pod when it arrives.

When a telephone booking is made, the following details are **always** required:

- date of the ride
- time of the ride
- number of people, maximum 8
- details of the person making the booking
  - ○ name
  - ○ address
  - ○ telephone number
- tickets to be posted or collected.

The diary for the Ferris wheel is updated and payment is taken using a credit/debit card over the telephone. The tickets are posted to the person who has made the booking or put on one side for collection on the day.

When a booking is made at the kiosk, the following details are required:

- date of the ride
- time of the ride
- number of people, maximum 8.

Payment is taken using a credit/debit card or cash and the tickets are handed over straight away.

Description of the proposed online computer-based Ferris wheel ride booking system

The proposal is to replace the existing system with an online booking system. The new system have advance booking and self-service touch screen kiosks for booking just before a ride. Ticket issued for 10 minute intervals. Each booking is for a specific day, time and number of people. Ti ticket has a unique barcode and can be printed, or the barcode sent directly to a smartphone. People can book online, via the Internet, using a computer or a smartphone for between 2 hours and 12 months in advance. The touch screen kiosks at the venue are for bookings in the next hour. People using these are offered the next available time.

The barcodes are automatically read at the entry to the wheel. People due to get on the wheel are directed to the correct pod for boarding. Slightly early arrivals are sent to a waiting area. If people arrive very early, entry is refused and a time to return is advised. Late entries are refused.

A systems analyst is to be employed to review the existing manual method. The systems analyst will be responsible for drawing up an action plan for the new system. This will then be designed, tested and implemented. All the necessary documentation will also be produced, together with a full evaluation of the system performance 6 months after its introduction.
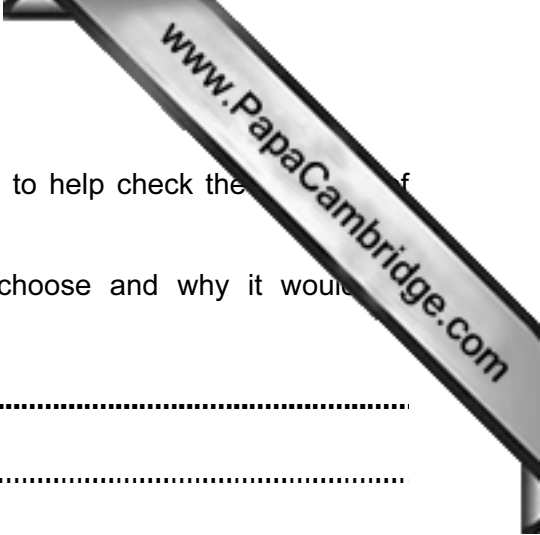
1 (a) The systems analyst has decided to use computer software to help check the .... f this project.

State what type of software the systems analyst could choose and why it woul............. appropriate.

Software ....

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Reasons ....

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.... [3]
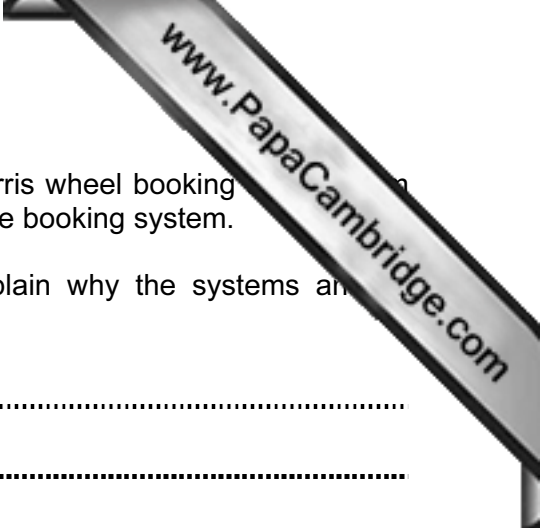
(b) The systems analyst wants to find out about the existing Ferris wheel booking ███████ people who have previously bought tickets using the telephone booking system.

(i) State **one** method that would be appropriate and explain why the systems a███ should choose that method.

Method ....

Explanation ....

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.... [3]

(ii) State **one** method that would **not** be appropriate and explain why the systems analyst would **not** choose that method.

Method ....

Explanation ....

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.... [3]

[Turn over

(c) Draw a design for a screen to be used to enter the required details online when made using a **smartphone**.

[5]
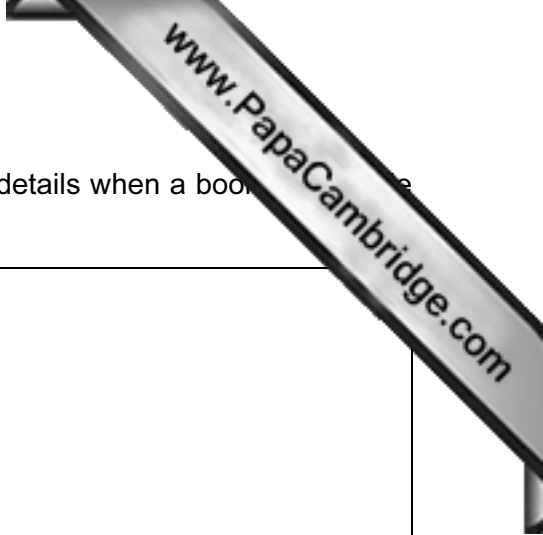
(d) Draw a design for a screen to be used to enter the required details when a book... e using a **touch screen kiosk** at the Ferris wheel.

[5]

(e) State what details are accessed when the barcode is read at entry to the Ferris wheel.

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.... [3]

[Turn over

(f) Draw a systems flowchart, with a key, to show how the online computer-based booking system should work.

    (i) Include in your systems flowchart:

- what happens when a person makes a booking for a Ferris wheel ride.

[5]

(ii) Show in the key:

- **four** symbols that you have used in your flowchart
- a description of the purpose of each of these symbols.

Key	
Symbol	**Description**

[4]
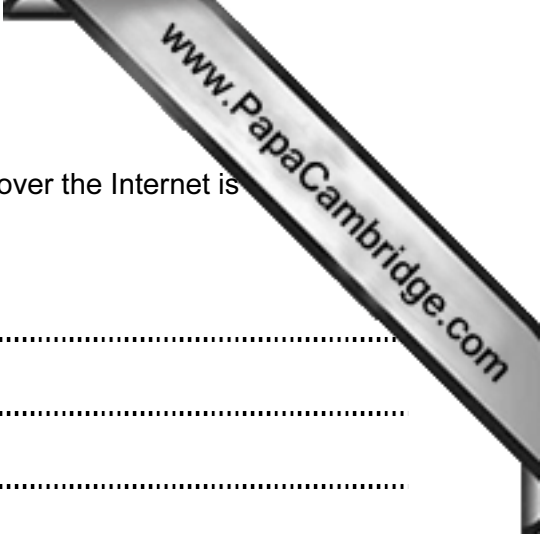
(g) The systems analyst wants to ensure that the payment taken over the Internet is

Explain what steps the systems analyst needs to take.

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.... [3]

(h) The systems analyst is employing a programmer to write bespoke software for the new online computer-based Ferris wheel booking system.

(i) Explain, with reasons, why the systems analyst should choose bespoke software.

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(ii) State possible drawbacks to making this choice.

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.... [2]
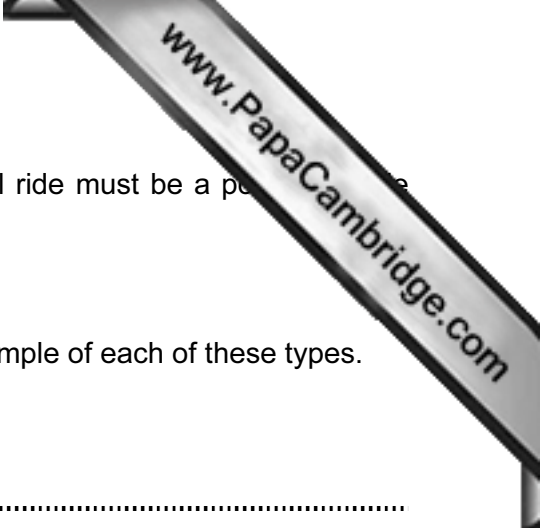
(i) The number of people in a single booking for a Ferris wheel ride must be a positive whole number between 1 and 8 inclusive.

Give **three** different types of test data.

Using the number of people in a single booking, give **one** example of each of these types.

Explain why you chose each one as a good example.

Type 1 ....

Example 1 ....

Explanation ....

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Type 2 ....

Example 2 ....

Explanation ....

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Type 3 ....

Example 3 ....

Explanation ....

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.... [9]

[Turn over

(j) Write an algorithm, using pseudocode or a flowchart, which:

- inputs the number of people in a booking
- checks the number is between 1 and 8
- outputs an error message if not
- allows a maximum of 3 attempts.

[6]
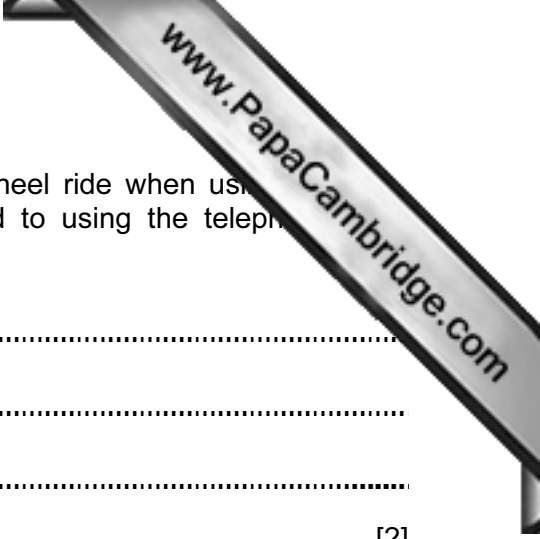
(k) (i) Describe **one** advantage to people booking a Ferris wheel ride when us[ing the] new online computer-based booking system compared to using the teleph[one] booking system.

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.... [2]

(ii) Describe **one** advantage to the Ferris wheel company of introducing the new online computer-based booking system compared to the telephone booking system.

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.... [2]

(l) Describe how this new booking system should be evaluated.

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.... [2]

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