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General Certificate of Education
 June 2006
 Advanced Subsidiary Examination



COMPUTING
Unit 3 Practical Systems Development

CPT3

Wednesday 17 May 2006 1.30 pm to 3.00 pm

In addition to this paper you will require:
 your completed Practical Exercise for CPT3.
 You may use a calculator.

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Show all your working.
- Do all rough work in this book. Cross through any work you do not want marked.

Information

- The maximum mark for this paper is 65.
- The marks for questions are shown in brackets.
- You are reminded of the need for good English and clear presentation in your answers. Quality of Written Communication will be assessed in all answers.

At the end of the examination

- Hand in **both** this question paper **and** your Practical Exercise documentation to the invigilator.
- **Warning:** If you do not hand in both documents it may not be possible to issue a result for this unit.

For Examiner's Use			
Number	Mark	Number	Mark
1		5	
2		6	
3		7	
4			
Total (Column 1)		→	
Total (Column 2)		→	
TOTAL			
Examiner's Initials			

Answer **all** questions in the spaces provided.

Answer this paper using the documentation you have prepared for the Village Hall practical exercise as requested in the 2006 specification. A copy of the brief for this practical exercise has been included at the end of this paper if you need to refer to it.

Many of these questions require you to give the page number in your documentation, where the evidence for the answer may be found. You **must** write the number and part of your question in the margin of that page in your documentation.

At the end of this examination your documentation **must** be handed in with this question paper.

1 This question relates to the DESIGN process.

(a) You were told that there were 21 booking slots per week.

(i) Give a page number where there is a reference to the booking slots.

Page (1 mark)

(Write Q1 (a)(i) in the margin, in the correct place, on that page)

(ii) Explain how each booking slot is identified in your solution.

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(2 marks)

(b) Give the page reference where the data items to be recorded about individual bookings are defined.

Page (1 mark)

(Write Q1 (b) in the margin, in the correct place, on that page)

- (c) For each of the following data items in your solution, give the data type used and the field length, if appropriate.

	Data Type	Field Length
i. title of event		
ii. fee		
iii. contact telephone number		

(6 marks)

- (d) Explain your choice of data type for **each** of these three data items.

- (i) title of event

.....

(1 mark)

- (ii) fee

.....

(1 mark)

- (iii) contact telephone number

.....

(1 mark)

13

Turn over for the next question

2 This question relates to the IMPLEMENTATION process.

- (a) (i) Give a page reference showing that your solution records that a booking fee has been paid in advance.

Page..... (1 mark)

(Write Q2 (a)(i) in the margin, in the correct place, on that page)

- (ii) How does your solution record and identify those bookings where the fee was paid in advance?

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(2 marks)

(b) You were told to produce a weekly list of bookings.

- (i) Where is there a **hard copy** of such a list in your documentation?

Page..... (1 mark)

(Write Q2 (b)(i) in the margin, in the correct place, on that page)

- (ii) Give the steps in your solution to produce this weekly list.

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(3 marks)

(c) You were told to keep a record of the total money taken for occasional bookings each month.

(i) Where in your documentation is your **coding or equivalent instructions** to calculate these totals?

Page (1 mark)

(Write Q2 (c)(i) in the margin, in the correct place, on that page)

(ii) Explain how, in your solution, the money taken for occasional bookings is totalled each month.

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(4 marks)

(d) You were told to calculate the percentage usage for each weekly slot every month.

(i) Where in your documentation is your **coding or equivalent instructions** to calculate these percentages?

Page (1 mark)

(Write Q2 (d)(i) in the margin, in the correct place, on that page)

(ii) Explain how, in your solution, these percentages were calculated.

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(3 marks)

Turn over for the next question

3 This question relates to the IMPLEMENTATION and TESTING processes.

(a) (i) Explain how your solution prevents double bookings.

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(2 marks)

(ii) Give a page reference of your test plan showing a test to detect and prevent double booking.

Page

(1 mark)

(Write Q3 (a)(ii) in the margin, in the correct place, on that page)

(b) (i) How did you test the accuracy of your solution’s calculations for the total money taken each month?

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(2 marks)

(ii) Give the page reference giving evidence of this test.

Page

(1 mark)

(Write Q3 (b)(ii) in the margin, in the correct place, on that page)

(c) (i) Give the page reference of a test showing an attempted booking that is too far in advance.

Page

(1 mark)

(Write Q3 (c)(i) in the margin, in the correct place, on that page)

(ii) How did your solution check that the booking was too far in advance?

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(3 marks)

4 This question relates to the OUTPUT processes.

- (a) (i) On which page of your documentation is a hard copy of a bill **with** an evening extension?

Page (1 mark)

(Write Q4 (a)(i) in the margin, in the correct place, on that page)

- (ii) On which page of your documentation is a hard copy of a bill **without** an evening extension?

Page (1 mark)

(Write Q4 (a)(ii) in the margin, in the correct place, on that page)

- (iii) How did your solution ensure that an extension could only be booked for a Friday or Saturday evening?

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(3 marks)

- (b) (i) On which page of your documentation is a hard copy of a reduced payment bill for a party?

Page (1 mark)

(Write Q4 (b)(i) in the margin, in the correct place, on that page)

- (ii) List the steps in your solution, which identify a booking for a party and the production of a reduced payment bill.

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(3 marks)

5 This question relates to the ANALYSIS process.

- (a) In the future, the treasurer wants to send out most bills by e-mail. Suggest what analysis method the treasurer might use to investigate if this was feasible. Explain why this method would be appropriate.

Method.....

Why appropriate

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(2 marks)

- (b) You were asked to bear in mind the use of e-mail when designing your system. What steps would you take to make this possible for your system?

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(3 marks)

5

6 This question relates to the INTEGRITY and SECURITY of data in your solution.

(a) Describe **one** technique that might be used to improve accuracy on data entry.

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(1 mark)

(b) The treasurer wants to keep the booking data secure against unauthorised access. Describe **two** techniques that might be followed to improve data security.

1

2

(2 marks)

(c) Describe a technique that the treasurer should have in place to prevent accidental loss of the data.

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(2 marks)

5

Turn over for the next question

7 In this question, consider how you might EXTEND your solution.

- (a) The committee has decided that, due to an unexpected cost of repairs to the village hall, the cost of hiring has to include an extra surcharge of £2.00 per booking which will be applied until the cost of the repairs has been covered.

Explain how you would modify your solution to allow for the temporary collection of this extra charge.

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(4 marks)

- (b) The treasurer is thinking of retiring in the near future. Give **three** items of documentation that should be available to enable someone else to maintain this system effectively.

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2

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3

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(3 marks)

7

END OF QUESTIONS

This question paper has been based on the Practical Exercise – The Village Hall – which was given in the 2006 specification. A copy of this exercise is given below for reference purposes only.

AS Practical Exercise
(CPT3) – The Village Hall

Background

The Village Hall Committee looks after bookings for the Village Hall. The Hall is available for individuals and societies to use.

You have been asked to create a computer application, **either programmed or using a relational database or using a combination of both**, to replace the current manual booking and billing system for occasional bookings. Initially, at least, there will be only one workstation with Internet access and a printer attached. This is owned by the treasurer of the Village Hall Committee and kept at his home.

Current System

1. Bookings for the Village Hall must be made in advance. Occasional bookings are made by contacting the treasurer, at least one week and not more than two months, in advance of the date booked. Often the fee is paid at the time of booking.

Regular Bookings are considered by the Village Hall Committee at their annual general meeting and are made for the whole year.

Bookings can be made for Morning (9am to 12.30pm), Afternoon (1.30pm to 5pm) and Evening (6pm to 9.30pm). Evening bookings can be extended to 11.30pm on Fridays and Saturdays only.

2. Cost of hiring Village Hall

Morning	£12.00
Afternoon	£12.00
Evening	£15.00
Evening Extension	£5.00

18th Birthday parties and Golden or Silver Wedding parties for villagers can be held on a Friday or Saturday Evening for a special rate of £10.00 including the extension.

3. Occasional bookings are placed by visiting or telephoning the treasurer. When a booking is made the following information is recorded in the Village Hall Bookings Book:
 - Name of individual or society,
 - Title of event,
 - Contact address,
 - Contact telephone number,
 - Fee paid or fee to be billed.

The book uses one page per week, showing the 21 booking slots and the information is written in the appropriate slot.

4. Regular bookings for 2006 are as follows:

Play Group – Monday and Wednesday Mornings
Guides & Brownies – Tuesday Evening
Cubs & Scouts – Thursday Evening
Women's Institute – Third Tuesday in every month
Afternoon
Line Dancing – every other Monday Evening

The billing for these bookings is **not** part of this system but these slots need to be shown as hired to the appropriate group and included in the usage statistics.

5. Every Saturday Morning a list of bookings for the next week is placed on the Village Hall Notice Board.
6. Once a month the treasurer sends out bills for the previous month's occasional bookings. There are two copies of each bill one for the Village Hall records and one is sent to the hirer. If the fee was paid on booking then both these bills are marked as paid, otherwise the Village Hall copy is marked as paid when the fee is received.
7. Every month the treasurer needs to calculate the following: total money taken for occasional bookings and the percentage usage, including regular and occasional bookings, for each weekly slot. These figures are included in his monthly report on Village Hall bookings. These reports are considered by the Village Hall committee at their annual general meeting.
8. In order to save money on postage and envelopes the treasurer is planning to send out bills by e-mail in future. You should bear this in mind when designing your system.

Testing

Test data for two month's bookings, January and February 2006, should be used. Testing should ensure that the bills produced show the booking made, details of the hirer, the fee due and whether the fee has been pre-paid. Testing also should show that the monthly hiring calculations and statistics are correct. The system should be tested for any problems that may arise including trying to book a slot that is already reserved, trying to make a booking too far in advance or too close to the date of the hiring.

Requirements of the Practical Exercise

Candidates will need to design and implement an appropriate computing system and provide sufficient documentation to demonstrate the following practical skills:

- Design
- Implement/Test.

The task may be undertaken by:

either writing a program in a chosen high level language

or using a suitable relational database

or using a combination of both.

Candidates are expected to produce brief documentation including some or all of the following, as appropriate.

Design

- Definition of data requirements
- User interface design including output, forms and reports
- Method of data entry, including validation
- E-R diagram, table design, queries
- Record structure, file organisation and processing
- Security and integrity of data
- System design

Implementation/Testing

- Details of test plan with explanation, and evidence of testing having been carried out
- Hard copy output of a weekly list of bookings, **samples** of bills (including a bill with a Friday/Saturday extension and a reduced payment bill for a party), takings and statistics for January and February 2006
- Hard copy of solution, e.g. annotated program listing or annotated copies of database tables, forms, reports queries etc. in design view. A hard copy is a form of output that exists after the program/application is completed. This can be inserted into a word-processed document for the purpose of adding page numbers and headers/footers.

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