

GCE

Computing

Advanced GCE **2511**

Integrated Information Systems

Mark Scheme for June 2010

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- 1 (a) Give 1 mark for naming each method and 1 mark for the advantage of each method to a maximum of 8.

Questionnaire

- A lot of data can be collected in a short period of time
- Not difficult for the users to complete as responses may only require marking/ticking boxes
- Does not require the same amount of time to complete for a user compared to an interview
- All questionnaires could be batched
- and read by an OMR/OCR device/automatic data entry [2]

Interview

- Detailed responses can be given to questions
- Further questions can be asked depending on user responses
- Analyst and the users can build up a working relationship
- Users can express their needs and concerns in detail
- Questions can be tailored to individual users [2]

Observation

- Allows the analyst to see a current process/task/activity first hand
- Analyst can get a "feel" of user competence and abilities in doing a task
- Analyst can get a better idea of time required to do a task/of constraints/of current system [2]

Record/Documentation Inspection

- Analyst can get an idea of the volume of data stored
- See what data has been collected and stored
- Can see how data has been verified and validated
- See how the data is manipulated [2]

Group Meetings/Discussions

- Quicker than interviews
- True picture of what is happening (which may not be the same as management are thinking) [2]

- (b) Give 1 mark per point to a maximum of 6.

- Specification of the system
- User Interface design
- Specification of data structures
- Prototyping
- Algorithms
- Files/file structure
- Input/form design
- Output/report design
- Validation procedures
- Security of data [6]

(c) (i) Give 1 mark for the method and up to 4 marks for the processing. [1]

- Bar code reader/magnetic stripe

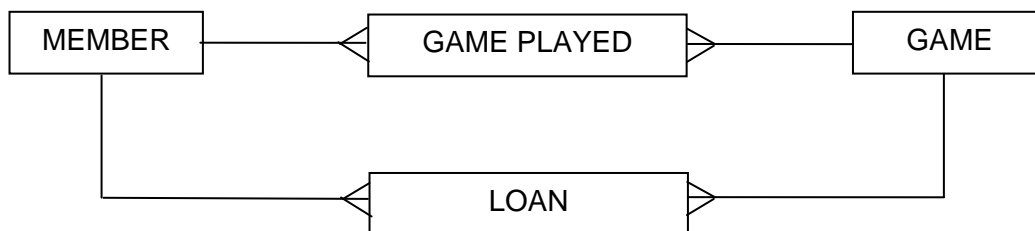
(ii)

- Bar code printed on members card/coded in magnetic stripe
- (is read and) compared with database
- If not found, eg no beep
- error message output
- otherwise code for game read and details entered into database [4]

2 (a) Many-to-Many [1]

(b) Give 1 mark per point on the diagram.

- The original ERD
- A new link entity between MEMBER and GAME
- that is sensibly named eg LOAN
- A one-to-many relationship between MEMBER and the link
- A one-to-many relationship between GAME and the link



[5]

(c) (i) Give 1 mark per point in each case
eg

- Membership number: Make sure it is an integer
- between 100000 and 999999 [2]

- Game ID: Use a mask
- for 2 letters followed by 4 digits [2]

(ii) Give 1 mark per row.

Attribute	Data Type
Member Number	Integer
Game ID	String
Date of Loan	Date/Time
Time of Loan	Date/Time

[4]

- (d) (i) Give 1 mark for the OS and 1 mark per point for explanation to a maximum of 2.

OS Batch Processing

- Large amount of data may have to be processed
- in the same way
- Doesn't need human intervention
- Can be done at a quiet time (eg night)

[3]

- (ii) Give 1 mark per point to a maximum of 6

- Filter loans
- For members with overdue loans
- check no letter has been sent
- Insert member details
- and loan details
- into standard letter template
- in positions indicated in template
- Print result
- Repeat for each member
- Until all are printed

[6]

- (e) (i) Give 1 mark per point shown on a diagram to a maximum of 4

- Suitable heading eg Name of club and "List of Members"
- Date of report
- Details of each member inc. name, address, DOB/Age/Age group
- In alphabetical order of name
- Page number
- Sensible layout

[4]

- (ii) Give 1 mark per point to a maximum of 4

- Search loan table for each loan
- For each game copy in the loan table, count number of times the game has been on loan
- Use foreign key in the loan table
- To find details of game in game table
- Print the heading and date
- and column headings
- Print details of each game and number of times on loan

[4]

- 3 (a)** Give maximum 2 marks per facility.
- Pay for loans/subscriptions on-line
 - ... safely
 - ... using credit/debit card

 - Search for information
 - ... about games
 - ... including age limits

 - Enquiry system
 - ... to see which games are available
 - ... and which are overdue
- [4]**
- (b) (i)** To enable the user to navigate the site/www **[1]**
- (ii)** In each case, give 1 mark per point, maximum 2.
- Hotwords
 - Words marked by underlining/different colour/picture
 - ... that allows a user to click on them

 - Buttons
 - Labelled rectangles/shapes/icons
 - ... and cause the computer to link to another site/part of current site

 - HTML
 - Mark-up language
 - ... developed for multimedia documents
 - ... and links to other documents
 - underlying code
 - that has an address
 - to another part of the site
 - or to an anchor on the same page
 - or to another website
 - using its URL
- [9]**
- 4 (a) (i)** Use of the internet to do business. **[1]**
- (ii)** Give one mark per point to a maximum of 4
- Members can order a loan 24/7
 - Deliveries/returns can be handled automatically
 - Can test members' needs without expensive questionnaires
 - ... that are rarely answered
 - Shortens times between requesting a loan and receiving it
 - Can keep adverts for new games up-to-date
 - No need for cash/cheques
 - Money can be directly transferred from member to club
- [4]**

(b) (i) Give 1 mark per point to a maximum of 2.

- It sits between a LAN/PC and a WAN/internet
 - ... and uses menus/IP addresses/applications in incoming messages
 - ... to validate incoming data
 - ... and to block unwanted data
- [2]

(ii) Give 1 mark per point to a maximum of 4 for encryption
Give 1 mark per point to a maximum of 2 for authentication

Encryption

- Apply a mathematical function
 - ... using a key value
 - ... to scramble a message
 - Sender has public key to encrypt
 - Receiver has private key to decrypt
- [4]

Authentication

- Uses a digital signature
 - ... which is a code attached to the message
 - to ensure that message is genuine/from the sender
 - Mention of digital certificates
- [2]

5 (i) Give 1 mark for description and 1 for example

- A device that responds to a physical property/heat/touch/humidity
 - Eg Touch sensor, Bar code reader
- [2]

(ii) Give 1 mark for description and 1 for example

- A device activated by signals (from a computer) causing physical movement
 - Eg motors
- [2]

(iii) Give 1 mark per point that is clearly explained to a maximum of 4.

- Each item has a barcode that can be read automatically by a robot
 - ... that collects the items listed by a computer
 - A robot is sent a radio message
 - ... using aerials
 - ... to indicate where the item is in the warehouse
 - Computer works out position of robot
 - ... and guides it to its destination
 - The computer delivers the items to a delivery point
- [5]

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