

2014 Information Technology: IT Applications GA 3: Examination

GENERAL COMMENTS

In the 2014 Information Technology: IT Applications examination students were able to design screens for data capture, taking into account the particular needs described in a scenario. Responses demonstrated that students were aware of a wide range of screen objects and could explain why, for example, a text box, radio button or check box could be chosen. Many designs were enhanced by annotations and, if validation techniques were required, by the addition of associated error messages.

In the design and development of a relational database management system (RDBMS), most students were able to correctly recommend data types, field and table names, and data formats. Generally, students demonstrated an understanding of the purpose and process of normalisation. When presented with a flat file data table, most students provided partial solutions consistent with the first normal form INF.

Students demonstrated skill at using their chosen software to solve problems presented in a variety of scenarios. However, many of the explanations that accompanied the designs that students created were difficult to follow because students confused evaluation with testing, and the term 'acceptance testing' was used without any explanation or reference to the scenario.

Questions couched in terms of efficiency require responses that address one or more of the components of efficiency: time, cost or effort. Similarly, in the case of effectiveness, responses must address one or more of the components of effectiveness: accuracy, timeliness, completeness, readability, attractiveness, accessibility, relevance, usability, communication of message or clarity.

Students seemed to understand the roles of various procedures and equipment used within security strategies to protect data and information. In Question 7d., many otherwise comprehensive responses were incomplete because students did not address the organisation's specific responsibility for the disposal of information.

In general, responses that focused on the specific requirements stated in the question and that provided examples appropriate to the scenario were awarded full marks.

SPECIFIC INFORMATION

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual information.

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subjected to rounding errors resulting in a total less than 100 per cent.

Section A – Multiple-choice questions

The table below indicates the percentage of students who chose each option. The correct answer is indicated by shading.

Question	% A	% B	% C	% D	Comments
1	82	6	4	7	
2	44	24	25	7	Criteria for evaluation are determined in the design stage.
3	3	12	5	80	
4	12	8	71	8	
5	2	4	91	2	
6	10	80	7	2	
7	61	5	12	22	
8	64	19	10	8	
9	3	6	24	66	

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Question	% A	% B	% C	% D	Comments
10	29	7	46	18	Effectiveness is measured in terms of the timeliness of files.
11	3	89	4	4	
12	5	29	5	60	
13	1	2	24	73	
14	20	6	13	60	
15	20	63	13	4	
16	3	51	44	1	Option C required the ascending sort process to test all three suburbs in the first instance.
17	18	3	77	2	
18	5	2	75	17	
19	16	56	11	17	
20	18	23	3	55	Effectiveness is measured in terms of accuracy. One reason for removing redundant data is to remove the chance of errors occurring when records are edited.

Section B

Question 1a.

Marks	0	1	Average
%	24	76	0.8

Most students were able to state the purpose of a quick start guide. A typical response was 'it provides brief help or simple step-by-step instructions when you start using hardware or software'.

Question 1b.

Marks	0	1	Average
%	32	68	0.7

The most common correct response was that a quick start guide cannot solve any unusual problems that are encountered. A number of students stated that a user must have a working computer to use an onscreen guide. This is a response that can apply to a wide range of software applications and does not sufficiently demonstrate understanding of the limitations of an online quick start guide compared to, for example, an online tutorial.

Question 2

Marks	0	1	2	3	4	Average
%	70	11	13	2	4	0.6

The first action

A chat site with an open section and access to the internet will attract users from a wide range of language and/or cultural groups. Students who explained that providing language options and culturally sensitive content protocols would support global interactions, be they social or knowledge-sharing, or collaboration on work-based projects, all received marks.

The second action

Adding audio and video options to the chat site will help meet the needs of a more diverse group of individual online community members. Students who explained that an audio option meets the needs of vision-impaired users or video and/or onscreen text helps meet the needs of hearing-impaired users all received marks. Generally, high-scoring responses suggested that a combination of video, audio and text modes increases accessibility and extends the likelihood of meeting the social needs of a wider range of individual users.

To gain full marks students needed to address both actions; however, many students focused only on one action.

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Question 3

Marks	0	1	2	3	4	Average
%	3	5	18	27	46	3.1

This question was answered well. Most students could identify equipment or a procedure to prevent unauthorised access directly to the report files or to the network and, in either case, explain how this security worked. The most frequently accepted responses included: a firewall to prevent hackers from entering the network, encryption to stop hackers from reading the content, and strong passwords that allowed authorised administrators to edit the reports and permitted students and parents to read the reports.

Similarly, students' responses gave details of a range of procedures and equipment for ensuring the stored report files could be recovered if the server room were destroyed by fire or if the files in the server room were corrupted by a virus. These included backup to portable hard drives that are stored either off site or in a fireproof safe or stored on the cloud using a reputable business.

Question 4a.

Marks	0	1	2	Average
%	34	35	31	1.0

Students identified a number of electronic techniques to validate the value entered into the quantity (kg) text box. The most frequently accepted correct response was a range test technique where $0 \leq \text{Quantity} < 15$ and a drop list displaying the numbers 0 to 15. Students who stated the range in words received marks, as did those who identified a type test and an existence test. Some students enhanced their response by explaining that when the value is outside the range, an appropriate error message is needed to help users understand what they have to do to proceed.

Question 4b.

Marks	0	1	2	Average
%	20	20	60	1.4

This question was well answered. Most students identified the clutter of buttons as a problem that could cause the receptionist to click 'Close' instead of 'Save'. Another concern was the placement of all buttons across the bottom of the screen. Many students explained that buttons should be positioned according to the natural workflow of the screen. For example, the 'Total' button should be closer to the 'Quantity (kg)' text box because it will be clicked after the quantity value is entered.

Question 5a.

Marks	0	1	2	3	4	Average
%	18	9	29	8	37	2.4

Most students could demonstrate knowledge of data types to determine what changes needed to be made to an existing design to accommodate new products. Correct responses stated that Boolean must be changed (to text) in the Umbrella_Styles field because four styles cannot be represented by a '1' or a '0', whereas the Accept field can stay Boolean because the two options can still be represented by '1' or '0'.

Question 5b.

Marks	0	1	2	Average
%	32	30	38	1.1

A range test with the statement $0 \leq \text{Order_Quantity} < 26$ as part of the test data for one of the new Umbrella_Styles was the most frequently accepted response to this question.

Other statements of the range included $1 \leq \text{Order_Quantity} \leq 25$ together with explanations such as 'Order_Quantity can be any integer from 1 to 25'. Drop lists with the appropriate range were also suggested. A number of students suggested placing dummy orders with sets of test data to test every field. All of these responses received marks.

Question 6a.

Marks	0	1	2	Average
%	25	42	33	1.1

This question required students to identify the consequences of Josh breaking the law or behaving unethically. Many students described Josh's action but did not go on to state consequences of that action for either himself or Suzie.

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Responses that received marks began, for example, with a statement such as ‘Josh will be using Suzie’s intellectual property without her knowledge’ and then stated, ‘as a consequence Suzie could be upset and angry’. Other consequences for Suzie could include she could be cheated of money, she could be cheated of fame or she could be embarrassed about her image being used. Examples of consequences for Josh include he could be sued, fined, forced to pay Suzie money, he could be forced to crop Suzie out of the publicity images or he could be forced not to proceed with the project.

Question 6b.

Marks	0	1	2	Average
%	12	28	59	1.5

Josh has a responsibility to consult Suzie, ask her permission to use her image and their songs, offer to pay her a fair share of the profits, offer to include her in the credits or apologise for not consulting her. He should make sure she is aware of exactly how he intends to use her image and that she can give informed consent for her image to be used in the concerts.

Question 6c.

Marks	0	1	2	Average
%	11	36	53	1.4

Responses to this part were expected to address consequences identified in part a. and the responsibility stated in part b. Those students who set down a coherent plan for resolving or documenting the issues they had previously discussed received marks. For example, if Josh contacts Suzie and provides details of how he hopes to use their songs and share the profits with her, it will give her the opportunity to decide what she wants to do. This will put Suzie in the picture and reduce the tension caused by Josh not telling her what is happening.

Question 7a.

Marks	0	1	2	3	Average
%	35	18	34	13	1.3

This question required students to redesign any fields in the data table that could be broken into components and then provide an example of one record from the new data table. Most students who received marks replaced the name field with two new fields, lastName and firstName, and provided the following example.

username	lastName	firstName	interestGroup	contactList
fancy_cat	Ulas	Francine	love_planes	paperclip55

Students who used other correct examples of a record or who added a key field also received marks. Responses that extended the normalisation process and grouped the data into tables consistent with the construction of an RDBMS also received marks. Typical of this type of response is the example below.

Table 1

username	lastName	firstName
fancy_cat	Ulas	Francine

Table 2

username	interestGroup	contactList
fancy_cat	love_planes	paperclip55

No marks were given for adding multiple fields such as interestGroup1, interestGroup2, interestGroup3, interestGroup4, or contactList1, contactList2, contactList3, contactList4 and contactList5 to the existing flat file structure.

Question 7b.

Marks	0	1	2	Average
%	39	35	25	0.9

The most frequently accepted responses to this question were ‘users can search a contact_List by lastName and find people they want quickly’ and ‘a sort of interest_Groups can be searched by lastName’.

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Question 7c.

Marks	0	1	2	Average
%	83	11	6	0.3

Many students confused testing with evaluation. Those students who described test data and stated the expected results received marks. For example, Celeste could create a set of dummy users with known interests and then use a search function to see if the results were as expected. Many responses stated Celeste could use an acceptance test without describing what this involved.

Question 7d.

Marks	0	1	2	Average
%	47	33	20	0.8

Many responses to this question were general and did not describe an advantage or disadvantage specifically for Celeste. Many students did not address the cloud company's responsibility for disposing data and gave answers about general security.

The following is an example of a possible response.

Advantage

The cloud is easily accessed with just a click when Celeste is using the database. This makes it easy for Celeste to make regular backups or dispose of data. These tasks are all done for her.

Disadvantage

Celeste must rely on the cloud company's reputation for the disposal of stored data and, as the actual location of the cloud server that stores the data is not always known, Celeste cannot be sure the company follows correct disposal procedures.

Question 8a.

Marks	0	1	2	Average
%	18	13	68	1.5

This question was well answered. A wide range of responses was accepted, the most common being 'no capital letters should be used in chat sites or forums because this is considered "shouting" and will discourage some users'.

Question 8b.

Marks	0	1	2	3	4	5	6	7	8	Average
%	11	10	13	13	15	13	13	7	6	3.7

Many students answered this question in general terms and without reference to the design of the home page. They received some marks. Where responses included examples from the design for the home page to illustrate and explain the purpose of a design element, full marks were awarded. Examples of some accepted responses are shown below.

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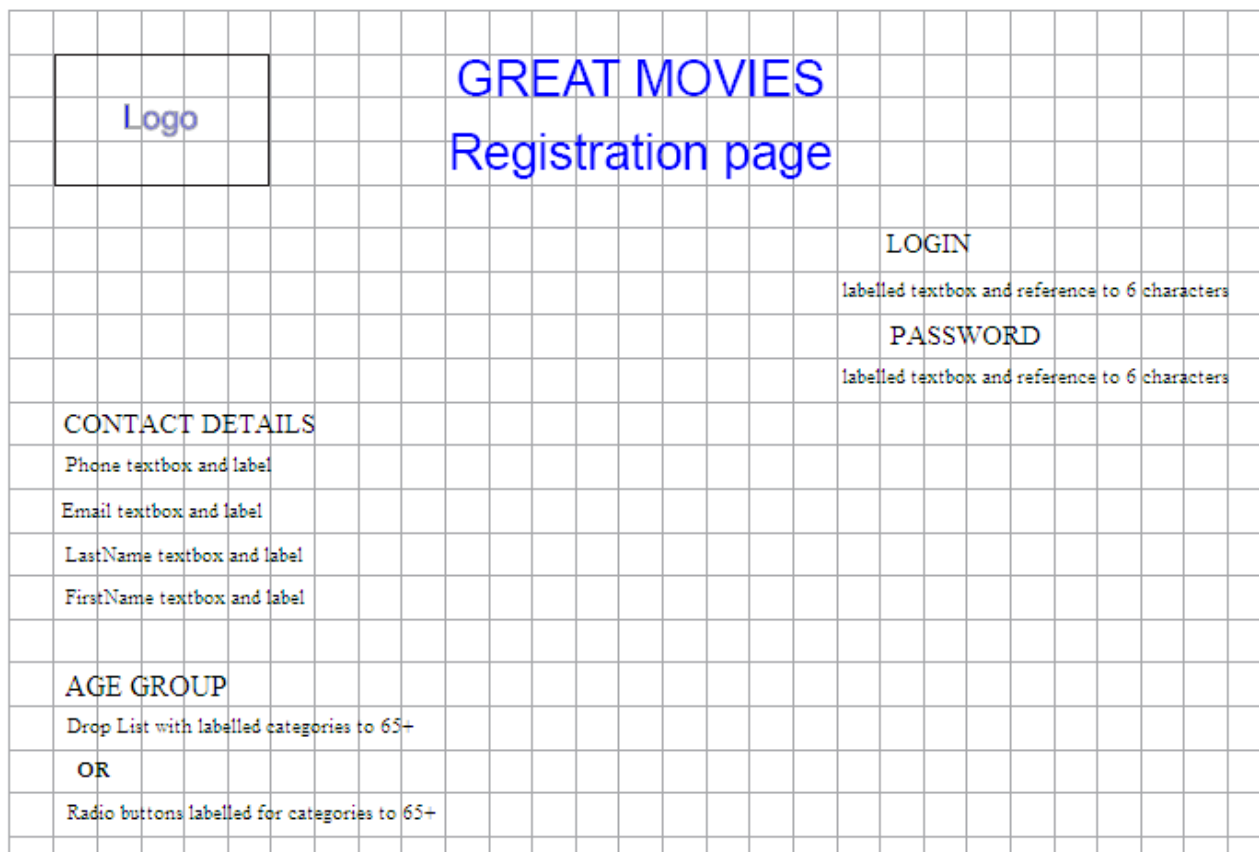
Design element	Purpose	Explanation
consistency	to enhance the appearance of the website	fonts are all the same style, making the site look professional and orderly, thus impressing new users who might be thinking of becoming members
contrast	to attract new members	- white font on black background (or reversed) is easy to read for those who are new to the site - casual browsers will find information easily and be more likely to join
usability	to support the functionality of the website	- right-to-left presentation of information makes it easy for users to follow ideas - it is legible and easy to use even for inexperienced computer users
navigation	to encourage youth participation in the sport	- menu items such as 'Free!! Junior Try-outs' and 'Beginners' Classes' all have links to information designed to attract young members - a chat option provides a space for social interaction with other young members

Question 9a.

Marks	0	1	2	3	Average
%	4	12	40	44	2.3

This question was very well answered. Most students used the grid lines to design a registration page with appropriate alignment and grouping of information categories.

High-scoring responses typically set out the required components as shown in the diagram below.



Logo

GREAT MOVIES Registration page

LOGIN

labelled textbox and reference to 6 characters

PASSWORD

labelled textbox and reference to 6 characters

CONTACT DETAILS

Phone textbox and label

Email textbox and label

LastName textbox and label

FirstName textbox and label

AGE GROUP

Drop List with labelled categories to 65+

OR

Radio buttons labelled for categories to 65+

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Question 9b.

Marks	0	1	2	3	4	Average
%	17	10	37	10	27	2.2

Students were asked to recommend two security measures to help protect the Great Movies website from fake reviews. The most frequently accepted measure was a verification email address to check a user's identity. Many students struggled to recommend a second security measure. Those who discussed the problem coherently and suggested a secure member login procedure and regular moderation of reviews or a star rating for reviews that allowed other members to identify fake reviews all received marks.

Question 10a.

Marks	0	1	2	3	Average
%	3	5	31	62	2.5

This question was well answered. Most students stated six meaningful field names in a consistent format. Examples of possible responses include the following.

	Example 1	Example 2
Field 1	lastName	Last_Name
Field 2	firstName	First_Name
Field 3	yearLevel	Year_Level
Field 4	afterSchoolActivity	Afternoon_Activity
Field 5	weekDay	Week_Day
Field 6	startTime	Start_Time

Question 10b.

Marks	0	1	Average
%	62	38	0.4

Many students were not able to name or describe the convention they had correctly used in part a. Responses that received marks included descriptions such as 'lower-case prefix' or 'first word and second word begin with a capital/upper case letter' and 'no spaces between the words, which are separated by an underscore'.

Question 10c.

Marks	0	1	2	Average
%	35	17	48	1.1

Most students could explain the advantage of following a naming convention when designing a database table. An example of a response that received marks is 'a widely used name format is familiar to users and makes it easier for them to understand/read/interpret field names when debugging or creating queries, or allows them to do so faster'. The response needed to include the data format, not just refer to a format.

Question 11ai.

Marks	0	1	2	3	4	Average
%	6	4	15	36	39	3.0

This question was generally well answered. Most students provided a design for an online poll headed with the club name, included a text box for comments that indicated a 100-character maximum and a statement of the club's privacy policy or other feature to indicate that data being supplied by individuals was protected.

Most designs used labelled radio buttons and images of two options for the new club uniform for which members could vote. A number of students confused ensuring only one voting option could be selected with the requirement that 'a vote must be placed'. Those students who made checking a voting option a required field and/or had an error alert that reminded a member to vote before he/she left the page received marks. The diagram below lists the features most frequently found in responses that received marks.

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The correct page to vote

BIG MOUNTAIN FOOTBAL CLUB (title)

Cast Your Vote(heading)

Two labelled radio buttons and images of options

Vote must be placed

Voting options is a required field

Space for members to comment

Textbox for comments

Labelled with 100-character restriction

Evidence of rights being protected

Privacy policy statement about security of data supplied

Question 11aii.

Marks	0	1	Average
%	19	81	

This question was very well answered. Most students could describe how their design met one of the requirements. Examples for each requirement are shown below.

- A vote must be placed.
 - Checking a radio button is a required field. This means the form cannot be submitted until a vote is cast.
- Each member knows they are on the correct page to vote.
 - The Big Mountain Football Club logo or title is on the top of the page and the page is headed 'Place Your Vote'.
- Members have space to make brief (100 characters) additional comments before submitting their vote.
 - A textbox labelled 'Add your comment' is included so that users can type in whatever text they wish.
- There is evidence that the rights of individuals supplying data are being protected. A statement on how Big Mountain Football Club secures users' data or adheres to legal requirements is at the bottom of the page.

Question 11aiii.

Marks	0	1	2	Average
%	32	28	40	

A number of workable solutions were suggested to solve the problem presented in this question. Generally, the ideas were coherent, detailed and used technically accurate terminology. A typical example was, 'In the data table, have a YES/NO field or column to record that a user has voted. Then make the voting form accessible only to users whose record shows they have not voted'.

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Question 11bi.

Marks	0	1	2	3	Average
%	22	32	22	24	1.5

This question was well answered. Most designs for a database table included an appropriate title for the table, headings and data types for the Member_ID, Uniform_Option and Member_Comments fields. Responses that also included an example of one user's record received full marks. The diagram below illustrates features most frequently found in high-scoring responses.

Database title		
MFC Voting Results		
Field headings	Data types	
Member_ID	text	
Uniform_Option	text	
User_Comments	text	
Sample record		
MemberID	Uniform_Option	User_Comments
00023	Design 2	

Spreadsheet title		
MFC Voting Results		
Column headings	Data types	
Member_ID	text	
Uniform Option	text	
User Comments	text	
Sample record		
MemberID	Uniform Option	User Comments
00023	Design 2	

A number of responses correctly illustrated a database or spreadsheet table but gave an example of the total vote for each option. They received some marks.

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Question 11bii.

Marks	0	1	2	Average
%	45	23	32	0.9

Most students listed steps to test the database or spreadsheet table. Responses that included detailed descriptions and examples for each step received full marks. Typical of an accepted response was ‘they could create nine dummy users and enrol them as members with usernames, and place four votes for one option and five for the other option, then check if the data stored is as expected’.