

THE BCS PROFESSIONAL EXAMINATION
Professional Graduate Diploma

April 2002

EXAMINERS' REPORT

User Interface Design

Candidates for this paper continue to perform well, demonstrating a high degree of preparedness and an ability to select the relevant material for discussion and analysis. The Examiners were impressed by the candidates' ability to apply their knowledge and relate it to real-world systems and interfaces.

Question 1

Call Centres form an important part of many businesses – creating a key point of contact between the company and its customers. Outline the issues that affect:

- (a) the design of an employee's working environment within a call centre, and (10 marks)**
- (b) the software being used to access customer information. (15 marks)**

Answer Pointers

- (a) It is important that the operator is comfortable, can operate efficiently and free from the risk of RSI. Comfort will need to take into account the likes of seating position, temperature and telephone headphones. It should also take into account rest periods and amenities. The risk of RSI can be reduced by, for example, taking into account such things as the keyboard position, font size used, and encouraging staff to take regular breaks.

10 marks
- (b) The software will need to enable staff to obtain customer information easily and quickly. Also, for them to have access to details of previous conversations that the customer will have had with the company. Because of the relatively high turnaround and potentially limited computer skills of staff in call centres the software will need to be easy to use and encourage correct operations.

15 marks

Examiners' Comments

Most candidates were able to answer this question well, demonstrating for part (a) a reasonable knowledge of how important the design of a working environment is for such demanding roles, and for part (b) (to a lesser extent for most candidates) the knowledge of what is important in the design of software being used to access customer information. Few candidates talked about the need to access information quickly, i.e. the need for an effective search technique; remember that many people who call into a call centre will not necessarily have their "unique ID" number to hand!

Question 2

Discuss the different design priorities between:

- (a) a piece of software for use by large numbers of people, for example that found within an ATM, and**
- (b) specialised software for use by an expert user, for example, a computer aided design package for use within the automotive industry.**

Your answer should include a description of how you would verify that each product was fit for purpose in terms of product training and testing.

(25 marks)

Answer Pointers

The functionality of each system is very different. An ATM needs to be simple, easy to use, quick for the user to complete the task (get money) and failsafe. A CAD package on the other hand has a very broad range of functionality and will take time to enable the user to be proficient. Training an ATM user involves the provision of general information at banks / building societies, good help systems on the ATM itself and assistance from peers. Training a CAD user could take months, including short courses (2-5 days) and practice.

25 marks

Examiners' Comments

Answers to this question were mostly sound, except for the descriptions of how candidates would verify software was fit for purpose in terms of product training and testing. An ATM user needs to be lead through the process gently – onscreen and possibly with assistance from the financial institution should they have problems. A CAD system could take the user many months to become truly proficient. This process would involve training courses, manuals, trial projects, use of help systems, peer review of progress and so on.

Question 3

"In today's world of new media, Ben Shneiderman's rules of User Interface Design are no longer relevant." Discuss.

(25 marks)

Answer Pointers

No, they are still relevant. More recent work from Shneiderman has broadened the scope of this original research. The Eight rules:

Strive for Consistency. It is very important to make sure that the interface is consistent. This is more important now that user interfaces drive much more complicated software than 10 years ago.

Enable Frequent Users to Use Shortcuts. When users begin to use the software more, they want to be able to reduce the amount of time it takes to interact with the program.

Offer Informative Feedback. It is important that feedback be informative especially now that many web users are not very computer literate.

Design Dialogs to Yield Closure. During sequences of actions, it is important to allow the user to yield. This allows the user more control of what the program is doing.

Offer Error Prevention and Simple Error Handling.

Permit Easy Reversal of Actions. All actions that can be reversible, should be. This allows the user to undo something that might have been a mistake or was not appealing to them.

Support Internal Locus of Control. Users want to feel in control of the software. If the user does not feel in control, they will feel anxiety and dissatisfaction

Reduce Short-Term Memory Load. Too much information is bad information.

25 marks

Examiners' Comments

Very few candidates answered this question. Those who did generally did a good job – demonstrating a good understanding of the rules and why they are as relevant today as they have ever been. Illustrations as part of the answer are important here.

Question 4

Discuss the usability issues that make it difficult to turn a mobile phone into a mobile internet access device. Sketch a small form factor mobile internet device, illustrating how you address the issues you have identified with existing mobile phones.

(25 marks)

Answer Pointers

Mobile Phones: A discussion along the following:

- Their brick-like form factor is dictated by the distance between the human ear and mouth. Design for data-rich interaction is better achieved with less elongated form factor.
- The keypad dominates too much of their surface area. An internet device should allocate close to 100% of its surface area to the screen to maximise the amount of information the UI can show.
- A numeric keypad will always be a poor device for entering anything except phone numbers.
- Multi-modal designs that integrate visual display with audio and/or video commands are awkward because they force users to transfer the handset between the ear and a viewable location. Even the current primitive touch-tone services are painful to use on a mobile phone.

The sketch should be a palm device, using ear-plug with a dangling microphone. With pen input handwriting recognition, where you initiate a call to a person by tapping the person's contact card from the address book. The screen would occupy most of the device area. The devices will have a fast connection for speedy downloading.

25 marks

Examiners' Comments

Most candidates attempted this question. It was surprising that few candidates answered the question well. Although the examiners were expecting innovative design ideas due to the freedom of the question, most of the answers were incomplete, ill thought-out and basically sketches of the existing mobile phones. Most answers ignored the fact that the mobile internet access should still function as a mobile phone.

Question 5

Discuss the ten most important mistakes in Web Design.

(25 marks)

Answer Pointers

The following table lists the ten mistakes mostly encountered in websites today:

| Mistake | Comment |
|--|---|
| 1. Frames | Frames are no longer the disaster they were some years ago due to some advances in browser technology: Netscape fixed the Back button with version 3, and since virtually nobody uses version 1 and 2 any more, this means that users can now navigate through frames with fewer problems. Version 4 reduced the problems printing frames (though users still often get a different printout than they expected), and Internet Explorer 5 has finally regained the ability to bookmark pages despite the use of frames. Frames still prevent users from emailing a recommended URL to other users and they also make the page more clumsy to interact with. |
| 2. Bleeding-edge technology | Users have less patience for bleeding-edge technology these days as the Web gets dominated by later adopters and the upgrade speeds for new browsers and plug-ins slow down. Users who encounter as much as a single JavaScript error usually leave a site immediately. It's just not worth the time to figure out how to make something work when there are 5 million other sites to go to. |
| 3. Scrolling text and looping animations | It is as hard to read scrolling text, but aggressive use of distracting animation now causes even problems: users have started equating such designs with advertising which they routinely ignore. These days, it is extremely important for any content and navigation elements to look very different than prevailing advertising designs since users tune out anything that they don't think will be relevant to their task. |
| 4. Complex URLs | Users pay less attention to URLs these days than they did in the early days of the Web. Since most sites now have navigation support, users are also relying less on the URL to tell them about their location on the site. But long URLs still cause problems when users email page recommendations to each other. |
| 5. Orphan pages | Less likely to make users stuck since most people have learned the trick to get to the home page of a site by "hacking" the end off the URL. Still a disaster for novice users; still annoying for experienced users. |
| 6. Scrolling navigation pages | 90% of users choose not to scroll navigation pages; instead, they simply pick from the visible options. Most Web users know that pages scroll and that important links sometimes are not visible "above the fold." Even so, the visible options are still dominant and users sometimes overlook alternatives lower down the page. This is particularly bad if the visible part of the page seems to clearly communicate a certain |

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| | purpose or a certain best approach: users may then happily conclude that they know what to do and not bother spending time on the rest of the page. |
| 7. Lack of navigation support | Rarely seen, but a problem when it occurs. People are now getting used to certain canonical navigation elements such as a site logo in the upper left corner (linked to the home page) or a clear indication of what part of the site the current page belongs to (linked to the main page for that section). So if these elements are missing, users feel lost. |
| 8. Non-standard link colours | It is a problem since users rely on the link colours to understand what parts of the site they have visited. Often users bounce repeatedly among a small set of pages, not knowing that they are going back to the same page again and again. (Also, because non-standard link colours are unpleasantly frequent, users are now getting confused by any underlining of text that is not a link.) |
| 9. Outdated information | Since so many other sites on the Web are continuously updated, this is a major problem. Also, with the growth in e-commerce, trust is getting increasingly important, and outdated content is a sure way to lose credibility. |
| 10. Slow download times | The bandwidth problem has not been solved during the last three years; nor will it be solved during the next three years. |

25 marks

Examiners' Comments

Personal and business web pages have become a complementary part of marketing - and sales and good practices are very important. The examiners did take into account that the question was open to interpretation but were expecting knowledge of good practice techniques in web design rather than reiteration of Shneiderman's rules. Overall, a good proportion of answers was of a very good standard.