

## Solutions

1.

a) Please provide BRIEF answers to the following questions:

i) Name two differences between short and long term memory.

[Seen problem] Short term memory, as the name suggests, is capable of storing information for shorter periods of time. Items can be remembered but often only with conscious effort. Short term memory also has a more limited capacity than long term memory. Marks may also be awarded if students mention the processes by which items may gradually be acquired by long term memory through repeated rehearsal in short term memory.

ii) Why is functional ageing important for the design of interactive systems?

[Seen problem] There are two primary forms of ageing, chronological ageing describes the physiological, cognitive and perceptual changes that take place in users as part of the natural ageing process over time. In contrast, functional ageing usually refers to the degradation of physiological, cognitive and perceptual resources at a rate that is faster than might otherwise be anticipated for the rest of the population. An example might be loss of hearing acuity amongst the long term users of personal hi-fi equipment or the high incidence of back injuries amongst long term computer users. Functional ageing is important for the design of interactive systems because these physiological, cognitive and perceptual changes may characterise particular user groups. For example, pilots often suffer from hearing problems related to the frequent changes in cabin pressure. Hence care must be taken with audible alarms.

iii) When would you use a serif font?

[Seen problem] A serif font is one that has glyphs or marks that typically lead the eye along the line. An example would be Times or New Century Schoolbook. Hence, serif fonts are suitable for large passages of continuous prose in documentation and manuals for instance. This contrasts with sans serif fonts such as Helvetica which stand out in discrete chunks and are used, for instance in menu labels.

iv) Describe the relationship between challenge and control in Csikszentmihalyi's 'flow' theory of game playing.

[Seen problem] Csikszentmihalyi's 'flow' theory describes a situation in which game players may become almost entirely absorbed in a game. It depends both on 'optimal challenge' and a sense of control. Optimal challenge is important because experts may not be absorbed by situations that are easy to them and hence to not stretch their abilities. Conversely, a sense of control is important if users are to feel that they can meet these challenges. Players will often get frustrated if they feel that they cannot control whether they win or lose.

v) What are the benefits of observational rather than lab based evaluations?

[Seen problem] Observational techniques, typically, place the use in the eventual context in which a system will be operated. In contrast, lab-based techniques rely upon careful control of variables that might otherwise confound experimental results. These controls may not reflect the characteristics of an eventual working context. Observational techniques also have the advantage that designers do not have to establish an experimental hypothesis before the study. A wide range of additional answers would also be acceptable here.

b) The following screen-shot is taken from the Microsoft XP operating system. As can be seen, it helps users to manage the security settings for their computer.



Briefly describe the main features that are you feel will support the user of this operating system. (Hint: you do not need to describe the detailed operation of any of the particular services; you do need to comment of the interface design, choice of widgets etc).

[6 marks]

[Unseen problem/seen problem] During the course we have analysed a number of interfaces to identify their strengths and weaknesses. There are many possible solutions here. For example, the interface provides a considerable amount of contextual information about the options that are available. It does not simply provide buttons or menu options but it embeds them within the explanation. Some students may notice that there are double cherons (arrows) on the right hand side of the sections entitled Firewall, Automatic Updates and Virus Protection. These can be used to alter the amount of additional help that is provided. Hence, the help on Automatic Updates is hidden while the user has uncovered the rest. The interface also shows how the distinction between the operating system and web-based information sources is becoming blurred as hypertext links are used to follow additional information. Some of these links such as 'How does a firewall...' access local help files. Other such as 'Check for updates' rely on external servers to identify additional information. Some solutions may also choose to comment on the Microsoft privacy statement at the bottom of the window.

Other solutions may refer to more standard features of the interface including the window title, the use of colour in the active window, the ellipses to indicate a further dialogue box under Recommendations etc.

c) You have been asked to design a commercial web-site. Users will be able to browse or search for music and then download it to their hard disk and any associated devices, such as MP3 players. Briefly explain how you would identify the potential end-users of such a service and then explain how you would conduct a summative evaluation for these users once the system had been built.

[9 marks]

[unseen problem] I would try to identify the users of competitor sites. However, this type of market research would only be the starting point because of the need to identify new customers. I would also be very careful about stereo types in this context with some surveys already indicating high levels of usage amongst the over 30s and over 40s. Focus groups, questionnaires, field trials of prototype designs with groups of potential users who do not currently buy music on-line would all be appropriate.

Once the system has been designed, I would use a range of techniques. Ideally, formative evaluation would have been conducted using cooperative evaluation and think-aloud techniques. Some students might mention participatory design approaches but I'm not convinced that they would be useful here with such a potentially diverse set of users. Assuming that formative evaluation had been conducted then I might employ either observational or lab-based techniques, as mentioned in the short answers to Question 1. It would be good exam practice if answers explicitly made this connection. However, in either case we are dealing with a web based application. It can be difficult to recreate the very diverse setting of web users in a lab – these include social environments as well as technical issues including a vast range of processor and connection speeds. Similarly, with observational studies it can be very difficult to look at users in a range of settings without them feeling that they are being watched and, therefore, acting differently. There are further ethical issues to complicate matters here. Web server logs provide a further source of data and can be used with, for instance, automated usability assessment tools for web interfaces. Beta testing with users and the use of on-line forums for informal feedback increasingly provide support for interface designers in this area.