Xday, XX XXX 2004.

9.30 am - 11.15am

University of Glasgow

DEGREES OF BEng, BSc, MA, MA (SOCIAL SCIENCES).

DEGREES OF Beng, BSc, MA, MA (Social Sciences)

INTERACTIVE SYSTEMS 3:

USABILITY OF WEB-BASED SYSTEMS (RESIT)

(Answer one question from Section A and one question from Section B).

Section A

1.

a) Give three reasons why it can be hard to identify the potential users of web-based interactive systems.

[6 marks]

b) Remote usability testing can be used to evaluate web sites without designers or evaluators having to be physically present in the end users' location.   Briefly describe the major problems with this approach.

[7 marks]

c) A range of organisations, including the US government's National Institute of Science and Technology, have developed automatic evaluation tools that identify usability problems from the static analysis of web pages.   Write a brief technical report explaining how these tools might be integrated into an iterative approach to web development for the web site that the UK government uses to provide information to the general public.

[12 marks]

2.

a) Briefly explain the key differences that affect requirements elicitation for Intranets compared to public access web sites.

[6 marks]

b) Many companies pay to have their web sites developed and hosted by specialist design consultancies. What problem does this business model create for the requirements analysis of an Intranet application?

[9 marks]

c) You have been asked you to write a document that describes the strategy you will use to select a good design company to develop and host the web pages for the Johnson International Insurance Company.   The initial development project will focus on an Intranet to be used by employees around the globe.   Your report should explain how the company management will ensure that the web developers have the necessary experience and skills to complete this project.

[10 marks]

Section B

 [end]

Sample Solutions

Section A

1.

a) Give three reasons why it can be hard to identify the potential users of web-based interactive systems.

[6 marks]

[Bookwork/unseen problem]
There is a range of potential answers to this question.   Two marks for each point.   It can be hard to identify the potential users because of the distributed nature of the web.   In a conventional business model, customers are often located in a single country or region.   However, the web can provide access to potential

markets across the globe.   Further problems arise from the diverse nature of the web – it is accessed by many different people of all ages and backgrounds.   However, this diversity should not be exaggerated.   The stereotype middle class young user retains an element of truth and one should not ignore the problems created by lack of Internet access for many sections of the community.   Another reason is that many areas of the web are still developing.   It can be difficult to anticipate the potential users when there is little or no experience in the existing application area.   Even if there are existing businesses, the user population is still changing as different areas of the globe gain access and as the penetration of Internet usage is increasing.   This growth should not be over emphasised as frequent web access remains below 50% even in the US.

b) Remote usability testing can be used to evaluate web sites without designers or evaluators having to be physically present in the end users' location.   Briefly describe the major problems with this approach.

[7 marks]

[seen problem/unseen problem]
Remote usability testing can be conducted by asking users to perform tasks and then report on their experience of interacting with a system even though the evaluator is not physically present with them.   These evaluations can also be assessed by examining the logs that bare generated during interaction.   This approach creates a number of problems.   The most significant is that it can be difficult to interpret the results of these exercises.   Logs are notorious hard to understand.   This is exacerbated when designers cannot directly observe interactions.   Traces and patterns may be seen, for example a user may repeatedly make an incorrect selection, However simply observing this 'error' provides little understanding of WHY it occurred in the first place.   For instance, the user might have been distracted or tired.   Such factors are more difficult both to account for and control than they are in more traditional experimental settings.

c) A range of organisations, including the US government's National Institute of Science and Technology, have developed automatic evaluation tools that identify usability problems from the static analysis of web pages.   Write a brief technical report explaining how these tools might be integrated into an iterative approach to web development for the web site that the UK government uses to provide information to the general public.

[12 marks]

[unseen problem]
Automated usability evaluation tools parse the code used to construct a web page.   Inferences are made about the potential usability of a site depending on patterns found in the code. For example, if a tool found that a frame was embedded within the html then the system might report a potential usability problem.   Such constructs can be difficult for screen readers to report on for users with a visual impairment.   The key point about this question is that such inferences are partial in the sense that they cannot easily predict all of the potential usability problems.   They are also relatively limited in terms of the accessibility issues that they consider – for example, it can be difficult to identify problems for users with motor skills issues simply from the static analysis of html.   I would argue that these tools can assist developers suring tight, frequent iterations in the formative evaluation of a web site. I would not recommend that they be used summatively.   They should also be used in conjunction with other forms of usability testing over longer time periods, in particular direct usability testing with a panel of potential users would be essential.   The importance of accessibility issues is emphasised by the fact that this is for a government website and social inclusion must be considered to be a major objective.   This is illustrated by the NIST involvement in these applications; they are seeking ways for the US federal government to ensure access to critical information.

2.

a) Briefly explain the key differences that affect requirements elicitation for Intranets compared to public access web sites.

[6 marks]

[seen problem/bookwork]
In some respects requirements elicitation is easier for Intranet applications because designers can make assumptions about the potential users of the application.   Intranets are often accessible to employees and trusted customers.   They can be assumed to have some level of familiarity with common terms and

concepts. They will often be frequent users of the system hence there will be relatively few novice users. Of course, these assumptions should be validated more formally. There will always be novice users learning to access a successful site. Also, as a company or organisation grows then there will be new classes of users who are less familiar with concepts that may otherwise have been assumed.

b) Many companies pay to have their web sites developed and hosted by specialist design consultancies. What problem does this business model create for the requirements analysis of an Intranet application?

[9 marks]

[seen problem/unseen problem]

A key issue becomes who will perform the requirements analysis. If it is the design consultancy then they will have to become 'competent' in the application domain. This can create considerable obstacles. If it is not done successfully then their intervention may be ill-placed and could alienate potential users. If the company does the requirements analysis then they may make assumptions about what might be included in the design that are not then justified during development because of their familiarity with the domain. There is also a danger that the company will fail to consult a wide enough range of potential users. For instance, they may rely on their own experience without conducting more formal elicitation exercises. Participatory design offers a more integrated approach but is not a panacea and can be difficult to manage. In addition, solutions might consider the contractual issues that can arise during multi-party requirements elicitation.

c) You have been asked you to write a document that describes the strategy you will use to select a good design company to develop and host the web pages for the Johnson International Insurance Company. The initial development project will focus on an Intranet to be used by employees around the globe. Your report should explain how the company management will ensure that the web developers have the necessary experience and skills to complete this project.

[10 marks]

[unseen problem]

The key issue here is what to include within a tendering document for a web based system development. There are several different approaches. One technique would be to focus on process requirements. For instance, the document could state the techniques that should be used during the development process. This approach would also ask for evidence that the companies have used these processes in the past. One idea would be to ask the companies to explain how they would integrate the specified techniques into a coherent development cycle. An alternate approach would be to look at artefact based tendering by specifying the outcomes or key deliverables to be provided at various stages in the development process. Formal or informal usability studies can be specified without necessarily stating the methods to be used. A key issue in first class answers will to place their recommended approach to tendering within the context of the insurance company. Good answers will also address the requirement to develop sites that can be accessed around the globe.