

day, XX May 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**

*(Answer ALL Questions).*

## Sample Solutions

1.

a) Briefly describe the importance that precision and recall have for the users of web-based search engines and what steps can web page designers take to improve these measures.

[4 marks]

[seen problem]

Precision is a measure of the number of relevant documents that are retrieved by a search engine compared to the total number of documents returned. The lower the proportion of relevant documents then the worse the precision. Conversely, recall is a measure of the total number of relevant documents retrieved compared to the total number of relevant documents in the corpus. The higher the proportion of relevant documents that are retrieved then the greater the recall. These measures are important for users because imprecise searches force the user to manually filter a large number of hits. Poor recall forces the user to perform repeated searches to find all of the relevant documents that were not returned in the initial search. A number of techniques can be used by web designers including the use of meta-tags to help crawlers correctly index pages. Alternatively, subscription services can be used to promote web site advertising on key terms.

b) What problems can Nielsen's concept of 'deep linking' create for the users of a search engine? Briefly describe three techniques that designers can use to reduce these problems.

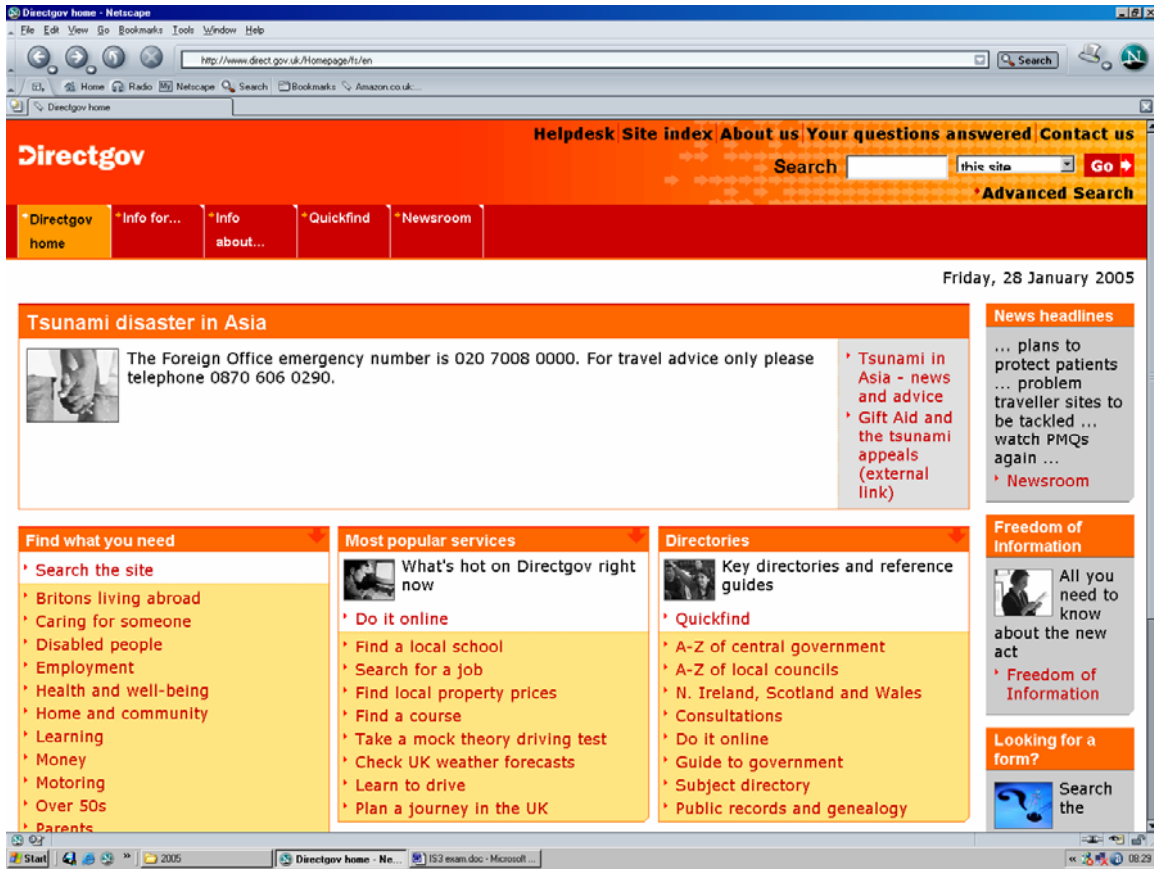
[5 marks]

[seen problem]

Deep linking occurs when search engines index into pages that are embedded deep within the structure of a web site rather than the home page or other entry points envisaged by the designer. This creates problems, especially for novice users because they have to orient themselves amongst the pages they find themselves in. Again there are many techniques that can be used to help people who find themselves embedded in a web site. The most obvious is to include a link back to a home page on every page of a web site. This takes up screen real estate so many sites use corporate logos or other icons to provide a link back. However, new users may find it difficult to identify this navigation mechanism. Similarly, sites may include links to site maps or search engines that users can exploit to get back to a more rational starting-point. Dynamic forms of web page generation can create particular problems. In such cases, a timestamp may be included in URL generation so any attempt to access an 'expired' page will be redirected to a recognised 'entry point'.

c) The following image is a screen shot taken from part of the entry portal to the UK government's main web site. Write a brief technical report to the website administrator identifying the THREE main strengths and THREE weaknesses of this design.

[5 marks]



[unseen problem]

This is a more open-ended question that should give the more able students the opportunity to demonstrate their skills and knowledge while still leaving the less able students something to work on. I'll be giving a mark per strength/weakness up to five in total. Good points include the search engine given the size of a site like this. They also include relatively sophisticated categorisation, for instance by popular services (tasks?) and by reference guides. If students look at this third category, I would hope that they would use some of the work that we have done on site maps. The A-Z of local government is a good example of a sub-site map. The right hand topics are also good in attracting attention towards 'hot issues' such as the Freedom of Information act. The choice of fonts might also be mentioned and the relatively discrete use of a limited palette. Some might criticise the choice of colour scheme (NB this may not be visible if the question is printed in gray scale and I'll adjust my marking to reflect the reproduction of the exam paper). Weaknesses include the amount of material presented on this initial page. As can be seen, the vertical scroll bar indicates an important limitation on this resolution of screen with a default text size. Many users may fail to scroll down – on the right-hand bottom of the screen you can see the start of an important link to a search engine for 'forms' – this could be overlooked. For many government web sites, there are options to gain information in other languages. This facility is not present or at least apparent here – hence some of the answers might refer to particular characteristics of samples of the wide intended user population such as this language issue. As mentioned, there are many potential solutions here. I'll be quite generous providing there's evidence of critical analysis.

d) Name the three most important benefits that large companies can obtain when they develop intranets. Justify your answer.

[5 marks]

[Seen/Unseen problem]

In the lectures, we have covered the Katz School review of intranet's within US corporations. The results of this survey of 275 managers was as follows. Percentages reflect the proportion of respondents ranking these particular benefits as the most important:

- 97% - Improved information sharing (customer svc.);
- 95% - Enhanced communications & information sharing;
- 94% - Increased consistency of info (customer svc.);
- 93% - Increased accuracy of info (customer svc.);
- 93% - Reduced or eliminated processing;
- 92% - Easier organisational publishing.

Conversely, the following list reflects the lowest scoring benefits from the use of Intranets within a large commercial organization:

- 63% - Increased control over purchasing process;
- 58% - Wider marketing reach;
- 55% - Increased collaboration w/ vendors reducing time;
- 55% - Reduced inventory;
- 54% - Less reliance on proprietary standards;
- 43% - Reduced capital cost by using ASP.

I am definitely not looking for people to memorize these figures but it would be great if they could mention the overall findings that managers focused on the 'softer' benefits: competitiveness; communication and content management. In other words, the ones that are more difficult to associate valid metrics with. In contrast, the 'harder' benefits scored lowest: procurement, sales and time to market. The results of this study are difficult to interpret from the information provided by the researchers. For instance, the population used may not reflect the distribution of industries now using Intranets. Even if answers do not focus on the survey that we discussed, acceptable answers could focus on the more conventional view of intranets and such solutions could score up to 5 out of 6 if they don't question the underlying assumptions about costs associated with managing an Intranet etc.

e) Use your analysis in part c) to write a further brief report describing the techniques that you would use to determine whether a large multi-national software company is actually obtaining the expected benefits from their intranet. (Hint: consider the metrics and statistical techniques that might be used to support any subjective arguments that you might make about the Intranet).

[6 marks]

[Unseen problem]

There are many solutions to this question. The key point is to pick up on the metrics issues that were mentioned in the sample answers to the previous question. If it is true that the softer benefits are most significant for the companies then how can we tell whether or not an existing design is successful? First class answers would explicitly identify this paradox. Good answers would simply identify a range of appropriate techniques for the measurement of usability in web design. We've covered a vast range of these including static assessment techniques using the NIST tool set, we've also covered empirical techniques and experimental design hence the use of appropriate populations and the use of both descriptive and analytical statistics might be mentioned. We've looked at TLX as well as the various questionnaires for User Satisfaction so a good answer would also consider the use of more qualitative metrics.