Open-book examination
Calculators : only authorized models
Duration : 3 hours

04-SOFT-B2 USER INTERFACE

1st question   [/ 15]

The five human factors of Ben Shneiderman are the following :
1. Time to learn
2. Speed of performance
3. Rate of errors by users
4. Retention over time
5. Subjective satisfaction

a)   Explain each of these five human factors and illustrating your comments by examples (/ 10) ;
b)   Why it would be difficult for a designer to succeed in every category (/ 5) ?

2nd question   [/ 10]

The Eight Golden Rules of Interactive Design express themselves as follows :
1. Strive for consistency
2. Enable frequent users to use shortcuts
3. Offer informative feedback
4. Design dialogs to yield closure
5. Offer error prevention and simple error handling
6. Permit easy reversal of actions
7. Support internal locus of control
8. Reduce short-term memory load

Explain each of these rules in your own words and illustrating your comments by examples.

3rd question   [/ 10]

There are two prototyping approaches: the **Low Fidelity** prototyping approach and the **High Fidelity** prototyping approach.

Explain in some words the distinctive characteristics as well as some advantages and inconveniences of these 2 approaches.

4th question   [/ 10]

What is the main difference between the ergonomics and the usability ? You can illustrate your comments by examples.

5th question   [/ 10]

What is the main goal of task analysis for the design of an interactive software user interface ?

6th question   [/ 10]

Can you explain what is the difference between a scenario and a use case ?

7th question   [/ 10]

You have to evaluate the usability of a user interface and you hesitate between an **empirical** (user observation) or **analytical** (expert reviews) technique. In which situation you would have no other choice than to opt for an analytical technique ?

8th question   [/ 5]

We ask you here to describe and to illustrate by an example of graphic representation the technique of the *dynamic queries* (due to Shneiderman in 1994) used in the field of the information visualization.

9ᵗʰ question [/ 10]

In the 50s, George Miller showed in an experimental way that people can rapidly recognize approximately seven *chunks* of information at a time. Give a precise and concrete example of application of this experimental result in the conception of a user interface.

10ᵗʰ question [/ 10]

Figures 1 and 2 illustrate two models of system response time as proposed by Shneiderman. Why the model illustrated by figure 2 is more realistic than the first one ?
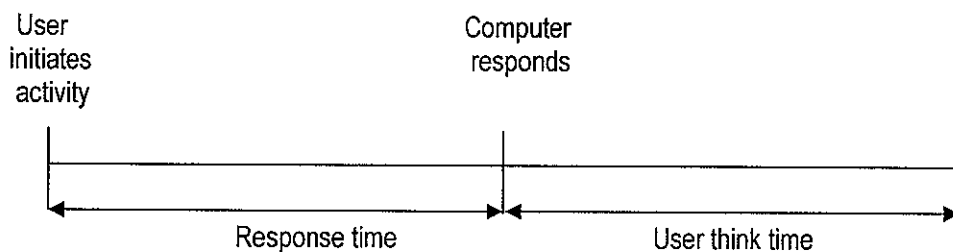
User
initiates
activity

Computer
responds

Response time   User think time

Figure 1 : Model of system response time and user think time

User   User   Computer   Computer
starts   initiates   begins   completes
typing   activity   response   response

Response time

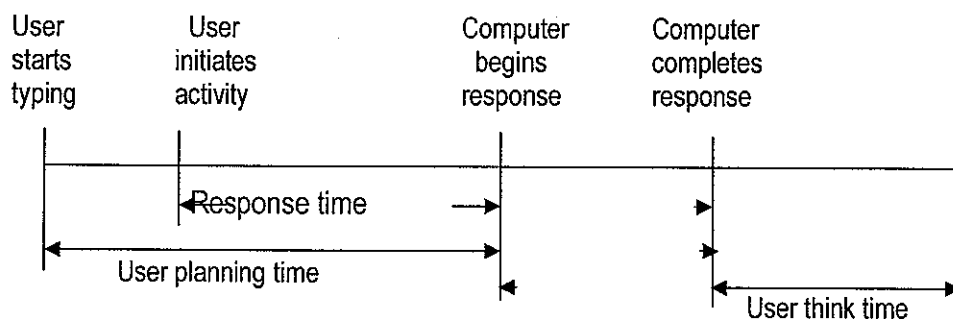User planning time

User think time

Figure 2 : Model of system response time, user planning time and user think time

end