**Chapter 10 Questions and Answers**

1. What three primary factors influence users’ expectations and attitudes regarding response time?

Previous experiences, Individual personality differences, and Task differences

1. How does the longest acceptable response time delay vary depending on the user and task?

Users generally prefer shorter response times. Longer response times (> 15 seconds) are disruptive. Shorter response time leads to shorter user think time. A faster pace may increase productivity, but it may also increase error rates. Error-recovery ease and time influence optimal response time. Response time should be appropriate to the task:

Typing, cursor motion, and mouse selection: 50–150 milliseconds

Simple, frequent tasks: 1 second

Common tasks: 2–4 seconds

Complex tasks: 8–12 seconds

Novices may exhibit better performance with somewhat slower response times. Novices prefer to work at speeds slower than those chosen by knowledgeable, frequent users.

When there is little penalty for an error, users prefer to work more quickly. When the task is familiar and easily comprehended, users prefer more rapid action. If users have experienced rapid performance previously, they will expect and demand it in future situations.

1. Explain how short-term and working memory affect acceptable response times for users.

People have limited capacities for absorbing information. They store short “chunks” of information in short-term memory. People use short-term memory in conjunction with working memory for processing information and for problem solving. Short-term memory processes perceptual input, whereas working memory is used to generate and implement solutions. When using an interface, users may formulate plans and then have to wait while they execute each step in the plan. If a step produces an unexpected result or if the delays are long, the users may forget part of the plan or be forced to review the plan continually.

1. Under what conditions might a *slower* response rate might be more desirable?

Short response times may lead to a faster user pace in which solution plans are prepared hastily and incompletely. As response times grow shorter and screens refresh faster, users tend to work faster and may fail to fully understand the presented material. They may generate incorrect solution plans and/or make more execution errors.

People’s expectations also play a role in this. For example, network installers might implement a response-time choke by which they could slow down the system when the load was light. This surprising policy makes the response time uniform over time and across users, thus reducing complaints.

1. Describe ways a designer can reduce user frustration.

* Increase server capacity, network speed, and network reliability.
* Improve user training, online help, and online tutorials.
* Redesign instructions and error messages.
* Protect against spam, viruses, and pop-up advertisements.
* Organize consumer-protection groups.
* Increase research on user frustration.
* Catalyze public discussion to raise awareness.

**Important Terms and Concepts:**

1. Quality of Service
2. Response Time
3. User Think Time
4. Short Term Memory
5. Working Memory
6. Dynamic Progress Indicators
7. Response Time Choke
8. Automaticity