**Chapter 8a - Review Questions**

1. **Explain the concept of human-computer interaction (HCI).**

* Human-computer interaction describes the relationship between a computer and the people that use them to perform their jobs. The concept of HCI applies to everything from a personal computer to global networks. It is really all about the user interface, which can include any instructions or communications necessary to enter input into a system and obtain output from that system in the form of displays on your screen or reports that are printed.

1. **Explain the concept of a GUI and a switchboard. How does a GUI design differ from a character-based screen design?**

* GUI stands for Graphical User Interface. This interface uses icons, graphical objects and pointing devices to allow users to input data into the computer and receive output from it. The GUI design is much different from a character-based design. The older character-based design was all about typing words and commands into the system to get it to perform the tasks you required. When systems were first designed, most users were very knowledgeable about technology and systems, but with more and more users being novices, the GUI design is becoming more standard. The GUI is simpler to use and easier to learn than the old character-based interface.

A switchboard is an opening screen of a system that uses command buttons to allow users to move around within the system and select from groups of related tasks. Basically, it is a main form of a system that has numerous buttons on the screen that represent different areas of the system. If a user pushes a specific button, it takes them to that area of the system. This is an easy to use interface.

1. **Describe seven principles for a user-centered interface design.**

* The seven principles for a user-centered interface design are:
  1. **Understand the Business** – The interface designer must understand the business functions and how the system supports individual, department and enterprise goals.
  2. **Maximize Graphical** Effectiveness – People learn better visually, so the system should use graphical interfaces that will be easy for users to use and learn.
  3. **Think Like a User** – Try to see the system through the user’s eyes. Take into account user experience, knowledge and skill level, and design the system to be flexible enough to meet the needs of novices and experts alike.
  4. **Use Models and Prototypes** – allow users to test all aspects of the system as soon as possible so that they can provide feedback to the designer on ease of use and understandability of the interface.
  5. **Focus on Usability** – The interface should include all tasks, commands and communications between the user and the information system. The easier the system is to use, the more productive the users will be.
  6. **Invite Feedback** – Even after the system is up and running you will still want to monitor its use and get feedback from users regarding the system. A problem might come up once the system is implemented that wasn’t found during testing or certain features may not be utilized the way they were intended.
  7. **Document Everything** – All screen designs, approved sketches and storyboards should be documented and saved for future use by programmers. This allows the quality of support for a system to remain constant even if there are changes to personnel and it allows for future designers to not have to re-invent the wheel if the company requires something similar in the future.

1. **Describe six types of user interface controls, and provide an example of how you could use each type in a data entry screen.**

* The six types of user interface controls are:
  1. **Toggle Button** – Used to represent on or off status. For example, there might be a button on the screen that allows you to choose whether or not to include the customer’s phone number in a membership report being generated.
  2. **Calendar Control** – Allows a user to select a date the system will use as a field value. For example, the user might choose the date of a sales report to be generated.
  3. **Check Box** – Used to select one or more choices from a group. For example, the user may choose up to three training courses to include in a sales report being generated.
  4. **Drop-down list box** – Displays the current selection, but when the user clicks the arrow, the list of available choices displays. For example, a user might click on a drop-down list box of personal trainers to choose the one they want to assign to an upcoming training class.
  5. **Text Box** – Can display a message or provide a place for a user to enter data. For example, a text box might be used by the person entering data to include a note about a member’s training class history.
  6. **List Box** – Displays a list of choices that a user can select. For example, the user could choose their preferred class time from a list of available class times.

1. **Define detail reports, exception reports, and summary reports. Explain the concept of a control field and how it is used to produce a control-break report.**

* The following reports as defined:
  1. **Detail Reports** – A detail report produces one or more lines of output for each record processed. The detail report can be quite lengthy due to this. An example of this type of report might be a payroll report that shows all the deductions and taxes for the employees of a business.
  2. **Exception Reports** – An exception report displays only the records that meet a specific condition or conditions. An example of this type of report might be a grade report for a college of students with a current grade of D or below.
  3. **Summary Reports** – A summary report is a report that gives a higher level view of information without a lot of specific details. An example of this type of report might be a student grade report that shows overall grades for each class they are in, but not grades for every specific assignment.
  4. **Control Field** – A control field controls the output of a report. For example, in a report that tracks training classes, students attending those classes and the instructor teaching those classes, a control field named Class Number could be used to separate different classes and their instructors/students from one another. Whenever the value of a control field changes a control break occurs. The control break usually causes a specific action to occur such as printing subtotals for a group of records. The control break can separate specific data from a larger report and generate a new report with just that data. That type of report is called a control break report.

**Chapter 8a - Personal Trainer, INC**

1. **Create a detail report that will display all Personal Trainer courses in alphabetical order, with the course name and the instructor name in a group header; the Social Security number, name, and telephone number of each current student in the detail section; and the student count in a group footer.**

* See attached detail report.

1. **Create a switchboard design with control buttons that lead to members, fitness instructors, activities and services, schedules, and fitness class rosters. Allow a user to add, update, or delete records in each area.**
   * See attached switchboard design.

**Chapter 8a - Case in Point 8.2: BOOLEAN TOYS**

Allowing users to customize their own data entry screens through the use of a menu-driven utility program would definitely have some advantages. If you design the screen yourself, there is less chance that you won’t understand what the system is asking for in a particular field. The screens are designed specifically for the way that specific employee works and understands the system, so productivity of that employee would probably go up. A more advanced user would have the ability to eliminate extra steps or details within the order entry process, while newer users would be able to keep those things in if needed. If the system is graphically attractive to that user, they may be able to spend more time in front of the screen working. Some of the disadvantages of a system like this would be consistency between all workers. What may be input area number one for one employee might be area seven for another. Training a new employee could be a problem if every employee has a different interface and a different way of inputting data. If one employee’s system went down and they were required to work at someone else’s station, they may not be as productive due to the differences in the screens. Also, trying to provide support to the people using the system might be more difficult since the IT person working on the help desk doesn’t know the exact configuration of that person’s screen. You could also run into problems with running reports if the system isn’t designed for the different interfaces.