**Chapter 7b - Review Questions**

1. **Explain software licenses and maintenance agreements.**

* A software license gives you the right to use a software package under certain terms and conditions. These could include the number of systems the software can be used on, whether the software can be modified, if it can be shared across a network or whether technical support is included in the purchase price. A maintenance agreement is usually an additional item purchased along with the license that offers additional support on top of the standard support included. It may include support for an extended period of time or it may list specific charges for particular services. It could be based on a charge per occurrence or a cost per minute/hour of technical support.

1. **What decisions might management reach at the end of the systems analysis phase, and what would be the next step in each case?**

* At the end of the systems analysis phase, management might choose one of five alternatives:

1. Implement an outsourcing alternative: If this option were chosen, you would work with representatives of the chosen service provider to achieve a smooth transition to the new environment.
2. Develop an in-house system: At this point you would begin designing and developing the system.
3. Purchase or customize a software package: Price negotiation would be the first step. If the package is to be used as-is, planning the system implementation phase would begin. If the package needs to be modified, you would start the system design phase. If it is to be modified by the vendor, then you would start planning the testing and documentation of the modifications as part of the systems implementation phase.
4. Perform additional systems analysis work: You may be asked to investigate other alternatives further, explore new alternatives, develop a prototype, reduce project scope due to costs or expand project scope due to new developments. This might require another follow-up presentation to management.
5. Stop all further work: This could be based on your recommendation, shifts in priorities or costs, or other considerations. At this point your work is completed with the exception of filing your research in a logical location so it can be retrieved in the future if the project is reopened.
6. **What is a prototype, and how do systems developers use prototyping?**

* A prototype is an early, rapidly constructed working version of a proposed information system. It involves a repetitive sequence of analysis, design, modeling and testing. Prototyping can be used in various different business environments. System analysts use two different prototyping methods. System prototyping produces a full-featured, working model of the information system. Using RAD methods, a team of users, managers and IT staff work together to develop a model of the IS that evolves into the completed system. Design prototyping (a.k.a. throwaway prototyping) is used by analysts to verify user requirements. After a user-approved model benchmarking the features of the finished system is achieved, the prototype is discarded and implementation continues.

1. **What is a fourth-generation environment?**

* Fourth-generation Environment: Most prototyping is done using CASE tools, application generators, report generators, screen generators and fourth-generation languages (a language where commands tend to resemble natural statements that a person would use). In combination, these tools provide a framework for rapid, efficient software development known as a fourth-generation environment. Development tools in this environment are highly interactive.

1. **Explain the relationship between logical and physical design.**

* Logical and Physical Design: A logical design defines what must take place, not how it will be accomplished. It does not address the actual methods of implementing the system. A physical design is like a blueprint for the actual construction of the system. It describes the actual processes of entering, verifying and storing data, the physical layout of data files, sorting procedures and the format of reports. Logical and physical design is very closely related and designing a system requires accurate and careful system analysis. For example, as you work through the process you may run into a problem that you hadn’t considered or you may discover that users have new needs that significantly change the system requirements.

**Chapter 7b - Personal Trainer, INC**

1. **Should Susan use a prototype during systems design? What options does she have, and how would you advise her?**

* I would definitely encourage Susan to use a prototype during the system design. It would allow the design team to get user feedback as they move along through the design process. By using the prototypes throughout the process, users can test drive the new system to see what is working for them and what needs to be adjusted in a risk free environment. She would have the option of using both system prototypes and design prototypes. I would advise Susan to take advantage of the opportunity to use prototypes and get feedback from the actual users at every possible turn.

1. **Susan wants to prepare a presentation that will calculate the total cost of ownership for the system. What financial analysis tools are available to her, and what are the advantages (and possible disadvantages) of each tool?**
   * Susan has some different Financial Analysis Tools available to her. The three main tools available to her are payback analysis which determines how long it takes for an IS to pay for itself through reduced costs and increased benefits, return on investment (ROI) which is a percentage rate that compares the total net benefits received from the project (return) to the total cost of the project (investment), and the net present value (NPV) of a project which is the total value of the benefits minus the total value of the costs with both being adjusted to reflect the point in time at which they occur.

Payback analysis uses the most reliable of your cost and benefit estimates. The earlier cost and benefit predictions are usually more certain, but the further out you extend predictions, the more unsure forecasts will be. Payback analysis is rarely used to compare or rank projects because later benefits are ignored.

Return on Investment analysis considers cost and benefits over a longer period of time. You can also use ROI to rank projects. Critics of ROI point out that ROI measures overall rate of return for the total period and annual return rates can vary considerably. One projects benefit may occur significantly earlier than another. The second concern is that ROI techniques ignore the timing of the costs and benefits.

Net Present Value uses the total present value of the benefits of a system minus the total present value of the costs. Present value analysis provides solutions to shortcomings of payback analysis and ROI analysis. Present value analysis takes into account all of the costs and benefits and not just the earlier values. It also takes into account the timing of costs and benefits so their values can be adjusted by the discount rate.

Companies often use all 3 methods to get more input and make good decisions.

**Chapter 7b - Case in Point 7.3: DOUG’S SPORTING GOODS**

My job as the system analyst would be to look at every option available, weigh the pros and cons of each and deliver my findings to the client for their consideration and ultimate decision. I would explain to Doug all of the information that I discovered, explain the pros and cons of each solution and give him an opportunity to ask whatever questions he might have of me to help him make the best decision possible. I am not sure that an in-house solution would be the best option, especially if there is a possibility that the company may do some business via the internet however, that could change if the in-house development team has experienced with modern techniques and deployment methods. There might be an option to purchase an existing software solution and customize it to meet the company’s specific needs. Regardless, I would present all of my findings and let Doug make the final decision.