MIS 515: Systems Design - Mid-Term Exam Review

The mid-term exam will be closed book and require you to answer short essay questions, draw UML diagrams for scenarios based on book chapter and readings coverage. Questions will be drawn primarily (but not limited to) from the following core ideas:

1. **Module 1: Fundamentals of Object Oriented Design**
   - The role of systems design in SDLC- What are the tasks performed during design and why is it important to focus on good design?
   - Using UML as the standard capture the requirements for a scenario described using use case diagrams, sequence diagrams, and class diagrams.
     i. Be sure to be clear on the fundamentals like what <<include>> means in a use case diagram. Use a consistent notation throughout and specify this explicitly to avoid any confusion.
   - Define frameworks and components in the context of system design? What role do they play in good design?
   - What is a design pattern? Choose one pattern and explain how it can foster good design?

2. **Module 2: Interface Design**
   - Why is good interface design important? Illustrate an interface design principle by showing a “good” and “bad” design.
   - What is “locus of attention”? Why is it important for you as a designer to understand this concept? How would you use it in user interface design? Illustrate with an example.
   - What is a “mode”? Specify ways in which mode can be minimized and comment on the practicability of each.
   - What does “visibility” mean for interface design? Illustrate a design with “good” visibility and another with “bad” visibility.
   - What is “monotony” and why is it good for interfaces to be “monotonous”? (as Jef Raskin describes it).
   - Should interfaces be designed to take into account the Beginner-Expert dichotomy? Provide arguments for and against it. As a
interface designer what approach would you take and why (justify your approach)?

- What is Information Theoretic Efficiency? Illustrate.
- Comment on the applicability (non-applicability) of Fitt’s and Hick’s laws.
- What is “uniformity”? And how does it, according to Raskin, help with design of interfaces?
- Jef Raskin provides a solution for File names and structures. Contrast this with the existing system and make a case for or against it.
- What are some basic principles to follow when designing/choosing icons? Illustrate some good and bad designs and state why.
- Several organizations are moving towards “standards for interface design”. Articulate the advantages and disadvantages that might result of this approach being followed to the letter. Present guidelines you think will be helpful in this regard.

3. **Module 3: Testing Techniques**

- Why is testing an important part of systems development? Should testing be a part of design (why or why not?) or should it be taken up *only* during implementation?
- Briefly describe the four-stage approach to software testing discussed by Whitaker in the article “What is software testing and why is it so hard?”
- What is blackbox testing? What are its advantages and disadvantages?
- Describe a strategy for testing in small software projects based on Menzies’s and Cukic’s article “When to test less”.