SWE 214–Introduction to Software Engineering, Fall 2006
Major Exam 1 Section 1

Date: Nov. 4th, 2006   Duration: 100 minutes

Name: ID#:

Question 1: [**12 marks**]

1. What is the main goal of any software development process?

2. Software development projects that fail to satisfy the main goal are either challenged or impaired. Explain the difference between these two failures.

3. State *and explain briefly* the three barriers (or syndromes) of requirements elicitation?

Question 2: [**8 marks**]

1. Explain why the following user need is ambiguous: "I'd like to see a big increase in the productivity of sales order entry."

2. What do we mean by "attributes of features"? and how do we use them to manage the complexity of a system?

Question 3: **[10 marks]**

1. Any interview is divided into context-free questions and solutions-context questions. Explain the difference between these types of questions. Give examples of such questions.

2. Why is the questionnaires technique not a substitute for interviewing? Give three reasons.

Question 4: **[26 marks]**

1. What is a requirements workshop and how is it usually done?

2. A workshop's facilitator could be a member from the software development team only if he satisfies some conditions. State three of these conditions.

3. Brainstorming is the main part of a requirements workshop. Explain what it is and state three of its benefits.

4. State *and explain briefly* the four steps of "idea reduction" phase of brainstorming?

5. what is the purpose of storyboarding?

Question 5: [22 marks]

1. Explain the differences between the following:

   (a) Stakeholder:

   (b) User:

   (c) Actor:

2. State two questions that will help you to identify actors of a certain system.

3. State two questions that will help you to identify Stakeholders that are not actors of a certain system.

4. Identify two possible stakeholders for each of the following systems:

(a) A train protection system which will automatically bring a train to a halt if it exceeds the speed limit for a track segment or if it goes through a red signal.

(b) An information system for television schedulers which provides information about viewing figures for all programmes produced by different TV stations as well as other information about major events, such as football matches, which may affect programme scheduling.

Question 6: [22 marks]

Refer to HOLIS case study (at the end of this exam) and answer the following:

1. In analyzing the problem, the HOLIS team discovered that there are actually three different groups of stakeholders, each of whom sees the problem differently. Complete the following table of the problem statement according to one of these stakeholder's prospectives.

Element	Description
The problem of ...	
Affects ...	
And results in ...	
Benefits of a solution ...	

2. State three actors that will interact with HOLIS.

3. HOLIS also has internal and external stakeholders that are not actors. State *two of each* such stakeholders.

4. User and stakeholder needs are usually different. State two needs *from the homeowner's prospective* for the HOLIS project.

5. State three features of HOLIS.

HOLIS Case Study

Lumenations, Ltd. has been a worldwide supplier of commercial lighting systems for use in professional theater and amateur stage productions for more than 40 years. In 2002, its annual revenues peaked at approximately $120 million, and sales are flat. Lumenations is a public company, and the lack of growth in sales is taking its toll on the company and its shareholders. The last annual meeting was quite uncomfortable since there was little new to report regarding the company's prospects for growth. The stock climbed briefly to $25 per share last spring on a spate of new orders but has since crept back down to around $15 per share. The theater equipment industry as a whole is flat, and there is little new development. The industry is mature and already well consolidated, and since Lumenations' stock is in the tank and its capitalization is only modest, acquisition is not an option for the company. What's needed is a new marketplace, not too remote from what the company does best, but one in which there is substantial opportunity for growth in revenue and profits. After conducting a thorough market research project and spending many dollars on marketing consultants, the company has decided to enter a new market, that of lighting automation for high-end residential systems. This market is apparently growing at 25 percent to 35 percent each year. Even better, the market is immature, and none of the established players has a dominant market position. Lumenations' strong worldwide distribution channel will be a real asset in the marketplace, and the distributors are hungry for new products. Looks like a great opportunity.

The HOLIS Software Development Team

The project for the case study is the development of HOLIS, our code name for an innovative new HOme LIghting automation System to be marketed by Lumenations. The HOLIS team is typical in terms of its size and scope. For the purposes of our case study, we've made it a fairly small team, only 15 team members, but it's large enough that all of the necessary skills can be fairly represented by individuals with some degree of specialization in their roles. It's the structure of the team that's most important, and by adding more developers and testers, the structure of the HOLIS team scales well to a size of 3050 people and commensurately larger software applications than HOLIS will require. To address the new marketplace, Lumenations has set up a new division, the Home Lighting Automation Division. Since the division and the technology are mostly new to Lumenations, the HOLIS team has been assembled mostly from new hires, although a few team members have been transferred from the Commercial Lighting Division.