

Comprehensive Exam for Requirements Engineering
Spring 2013

Student ID_____

Answer any 4 of the following: (25 points each)

Circle the number of the questions that you wish to have marked. *If you leave this blank, questions 1-4 will be graded.*

1 2 3 4 5

Answers MUST be specifically related to the problem statement.

Answers without specific relation the the problem at hand will not receive credit.

The questions of this examination use the following requirement specification:

Risk-based authentication is an authentication system which takes into account the profile of the agent requesting access to the system to determine the risk profile associated with that transaction. The risk profile is then used to determine the complexity of the challenge. Higher risk profiles leads to stronger challenges, whereas a static username/password may suffice for lower risk profiles. Risk based implementation allows the application to only challenge the user for additional credentials when the risk level is appropriate. Machine authentication is often used in a risk based authentication set up. The machine authentication will run in the background and only ask the customer for additional authentication if the computer is not recognized. In a risk based authentication system, the institution decides if additional authentication is necessary. If the risk is deemed appropriate, enhanced authentication will be triggered, such as a one time password delivered via an out of band communication. Risk based authentication can also be used during the session to prompt for additional authentication when the customer performs a certain high risk transaction, such as a money transfer or an address change. Risk based authentication is very beneficial to the customer because additional steps are only required if something is out of the ordinary, such as the login attempt is from a new machine.

1. What is a *non-functional requirement*? Identify 4 non-functional requirements of a risk-based authentication system using any requirements specification technique you wish; then specify how the requirement is to be tested, i.e., what is the acceptance criterion or criteria for each requirement that you have identified?

2. Describe the characteristics of a good requirement. Critique the risk-based authentication system specification with respect to the characteristics of a good requirement. Identify the major activities of requirements analysis and discuss whether or not the above requirement specification supports the activity.

3. List and briefly describe the stake-holders in this project. Then select any two the stakeholders, and give a single use case in which their respective stakeholder viewpoints might be in conflict; finally, propose a solution to this possible conflict.

4. Select a life-cycle model for the development of a risk-based authentication system. Identify a possible evolution of the software requirements of risk-based authentication system and its affect on the selected software life-cycle model. Discuss the general principles for determining the appropriate software life-cycle based on the expected evolution of the software requirements.

5. Many studies have shown that faulty Requirements Engineering is a major contributor to software failures. Identify the most common RE problems and discuss whether or not the risk-based authentication system requirement specification addresses these problems. Where the specification does not address a particular common problem,