

## 1. What are user requirements and system requirements?

Ans:

### **Requirements Specification**

It's just a process that the write down a user requirements and system requirements into a document. The requirements should be clear, easy to understand, complete and perfect. First iteration you specify the *user* requirements, then, you specify a more detailed *system* requirement.

### **User Requirements**

The *user* requirements for a system should describe the functional and non-functional requirements so that they are understandable by users who don't have technical knowledge. You should write user requirements in natural language supplied by simple tables, forms, and intuitive diagrams for understanding easily. The requirement document shouldn't include details of the system design, and you shouldn't use any of software jargon, or formal notations.

### **System Requirements**

On the other hand, The *system* requirements are expanded version of the user requirements that are used by software engineers as the starting point for the system design. They add detail and explain how the user requirements should be provided by the system. They shouldn't be concerned with how the system should be implemented or designed. The system requirements may also be written in natural language but other ways based on structured forms, or graphical notations are usually used.

## 2. What is the distinction between functional and non-functional requirements?

Ans:

Functional requirements: These are the statements of the services the system should provide, how the system is going to react to particular inputs and how the system should behave in particular situations. non-functional requirements: These are constraints on the services or functions offered by the system, which include timing constraints, constraints on the development process and standards. These often apply to the system as a whole.

## 3. List 3 types of non-functional requirement?

Ans:

**Security:** This is hugely important this one and the ramifications of not considering this are significant, things to think about are:

**Scalability:** This is increasing the level of load and concurrency to ensure the application can support predicted growth over a number of years.

**Maintainability:** The non-functional requirements categorized here are to ensure that the application can not only be maintained once delivered into production, but meets any regulatory requirements it may face.

#### **4. What are the principal stages of the requirements engineering process?**

Ans:

Requirements engineering processes ensures your software will meet the user expectations, and ending up with a high quality software. It's a critical stage of the software process as errors at this stage will reflect later on the next stages, which definitely will cause you a higher costs. At the end of this stage, a requirements document that specifies the requirements will be produced and validated with the stockholders.

There are four main activities of requirements engineering is :

- ❖ Feasibility study
- ❖ Requirements elicitation and analysis
- ❖ Requirements specification
- ❖ Requirements validation.

#### **5. Give 5 reasons why eliciting requirements is difficult?**

Ans:

- ❖ Stakeholders often do not know exactly what kind of system/services they want.
- ❖ Stakeholders naturally express requirements in their own terms and therefore, requirement engineers should be able to understand these requirements.
- ❖ Different stakeholders have different requirements. Requirement engineers have to consider all potential sources of requirements and discover commonalities and conflicts.
- ❖ Political factors may affect the requirements of the system.eg: managers may demand specific system requirements.
- ❖ The economic and business environment is very dynamic where analysis takes place, therefore, new requirements may be required in the future.

#### **6. What is ethnography and how is it used in requirements elicitation?**

Ans:

Ethnography is an observational technique that can be used to understand social and organizational requirements. It helps analysts discover implicit system requirements that reflect the actual rather than the formal processes in which people are involved.

### **7. What information should be included in a scenario?**

Ans:

- ❖ Of the scenario time there will be a description of what the system and users expect.
- ❖ A description of the normal flow of events in the scenario.
- ❖ A description of what can go wrong and how this is handled.
- ❖ Information about other activities that might be going on at the same time.
- ❖ A description of the system state when scenario finishes.

### **8. What is the distinction between the terms 'shall' and 'should' in a user requirements document, which is written in natural language?**

Ans:

Mandatory requirements are requirements that the system must support and are usually written using 'shall'. Desirable requirements are not essential and are written using 'should'.

### **9. What are the main advantages of using a standard format to specify requirements?**

Ans:

Especially for large system engineering projects, it is very essential to define the requirements to a fine level of detail. Standard format to specify requirements is also helpful for people who do not have technical knowledge to understand the behavior of a particular system.

### **10. What is a use-case?**

Ans:

A use case is a description of how a person who actually uses that process or system will accomplish a goal. It's typically associated with software systems, but can be used in reference to any process. For example, imagine you're a cook who has a goal of preparing a grilled cheese sandwich. The use case would describe through a series of written steps how the cook would go about preparing that sandwich. A use case helps you understand where errors could occur in the process and design features to resolve those errors.

Three elements that a use case must contain:

Actor, System, Goal.

### **11. How do managers and test engineers use a system requirements document?**

Ans:

The manager's requirements to understand what system is to be developed. And the test engineer's requirements to develop validation tests for the system.

### **12. What checks should be applied during requirements validation**

Ans:

- ❖ Validity checks
- ❖ Consistency checks
- ❖ Completeness checks
- ❖ Requirements error costs are high so validation is very important.
- ❖ Realism checks
- ❖ The verifiability of the requirements should be assessed.

### **13. List three requirements validation techniques?**

Ans:

- ❖ Requirements reviews
- ❖ Prototyping
- ❖ Test-case generation

### **14. What is requirements management?**

Ans:

The process of managing changes to requirements during requirements specification and after the system has gone into use.

### **15. What are the stages in the requirements change management process?**

Ans:

- ❖ Problem analysis and change specification
- ❖ Change analysis and costing
- ❖ Change implementation