Submitted To: Mam Aasma Khan

Submitted By: Syed Muhammad Ali

ID: 14258

Course & Semester: BS(SE) – 5th

Subject: Software Requirement Specification

Question No: 01

Define requirements and define what the system (take example of any system) is required to do and what are the features and constraints under which it operates.

ANSWER

Requirement:

Requirements engineering (RE) is the process of defining, documenting, and maintaining requirements in the engineering design process. It is a common role in systems engineering and software engineering. ... In the waterfall model, requirements engineering is presented as the first phase of the development process.

Or

A requirement is a quality or qualification that you must have in order to be allowed to do something or to be suitable for something. Its products met all legal requirements.

There are two types of requirements.

1) User requirement

2) System requirement

SYSTEM

Library System

- The system shall maintain records of all library materials including books, serials, newspapers and magazines, video and audio tapes, reports, collections of transparencies, computer disks and CD-ROMs.
- If someone takes the book the data will be stored in the system.
- If requirements are not satisfied then the system may be unworkable.

Features

- Provide you membership.
- The system shall allow users to search for an item by title, author, or by ISBN
- All the names and verity of books are available.
- It provide knowledge and aware about books.
- Easy to use, search books.

Constraints

- Renewal of membership after 6 months.
- Limit on assigning book.
- There is limit on the time of assigning a book (1 to 2 months)
- If the book is damage or misplaced in this case the librarian is legible to give ticket or he can cancel your membership.
- Silence is the primary key of library rules

Question No: 02

Explain software requirements types.

ANSWER

A software requirement can be of 3 types:

- Functional requirements
- Non-functional requirements
- Domain requirements

Functional Requirements:

These are the requirements that the end user specifically demands as basic facilities that the system should offer. All these functionalities need to be necessarily incorporated into the system as a part of the contract. These are represented or stated in the form of input to be given to the system, the operation performed and the output expected. They are basically the requirements stated by the user which one can see directly in the final product, unlike the non-functional requirements.

For example, in a hospital management system, a doctor should be able to retrieve the information of his patients. Each high-level functional requirement may involve several interactions or dialogues between the system and the outside world. In order to accurately describe the functional requirements, all scenarios must be enumerated.

There are many ways of expressing functional requirements e.g., natural language, a structured or formatted language with no rigorous syntax and formal specification language with proper syntax.

Non-functional requirements:

These are basically the quality constraints that the system must satisfy according to the project contract. The priority or extent to which these factors are implemented varies from one project to other. They are also called non-behavioral requirements.
They basically deal with issues like:

- Portability
- Security
- Maintainability
- Reliability
- Scalability
- Performance
- Reusability
- Flexibility

NFR’s are classified into following types:

- Interface constraints
- Performance constraints: response time, security, storage space, etc.
- Operating constraints
- Life cycle constraints: maintainability, portability, etc.
- Economic constraints

The process of specifying non-functional requirements requires the knowledge of the functionality of the system, as well as the knowledge of the context within which the system will operate.

Domain requirements:

Domain requirements are the requirements which are characteristic of a particular category or domain of projects. The basic functions that a system of a specific domain must necessarily exhibit come under this category. For instance, in academic software that maintains records of a school or college, the functionality of being able to access the list of faculty and list of students of each grade is a domain requirement. These requirements are therefore identified from that domain model and are not user specific.
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Question No: 03

State difference between system requirement engineering and software requirement engineering

ANSWER

System Requirement Engineering:

System requirements are the configuration that a system must have in order for a hardware or software application to run smoothly and efficiently. Failure to meet these requirements can result in installation problems or performance problems. ... System requirements are also known as minimum system requirements. System requirements are all of the requirements at the system level that describe the functions which the

system as a whole should fulfill to satisfy the stakeholder needs and requirements, and are expressed in an appropriate combination of textual statements, views, and non-functional requirements; the latter expressing the levels of safety, security, reliability, etc., that will be necessary.

System requirements play major roles in systems engineering, as they:

- Form the basis of system architecture and design activities.
- Form the basis of system integration and verification activities.
- Act as reference for validation and stakeholder acceptance.
- Provide a means of communication between the various technical staff that interact throughout the project.

Software Requirement Engineering:

Software specification or requirements engineering is the process of understanding and defining what services are required and identifying the constraints on these services. Requirements engineering processes ensures your software will meet the user expectations, and ending up with a high-quality software.

Software Requirement Engineering is perhaps the most difficult, most error-prone and most communication intensive software development. It can be successful only through an effective customer-developer partnership. It is needed to know what the users really need.

There are a number of requirements elicitation methods. Few of them are listed below –

1. Interviews
2. Brainstorming Sessions

3. Facilitated Application Specification Technique (FAST)

4. Quality Function Deployment (QFD)

5. Use Case Approach

Difference:

Difference B/W Software Requirement Engineering & System Requirement Engineering:

(System Requirements Specification) This is the high-level engineering document that enumerates the requirements on how the system is to function. A system requirements specification collects information on the requirements for a system. While (Software Requirements Specification). This is a complete description of the requirements of a single software component. A software requirements specification (SRS) includes in-depth descriptions of the software that will be developed

Question No 04:

Give five reasons why requirements negotiation is needed in software engineering

ANSWER

Following are the requirements needed for negotiation in software engineering

- Software development especially large and complex system, usually have many stakeholders and they are bound to have conflicting requirements. Negotiations are never simply conducted and requirements tend to change throughout software development life cycle. Therefore, negotiation process is thought as a spiral model where each cycle starts with identifying conflicts and end up with evaluating and analysing agreements

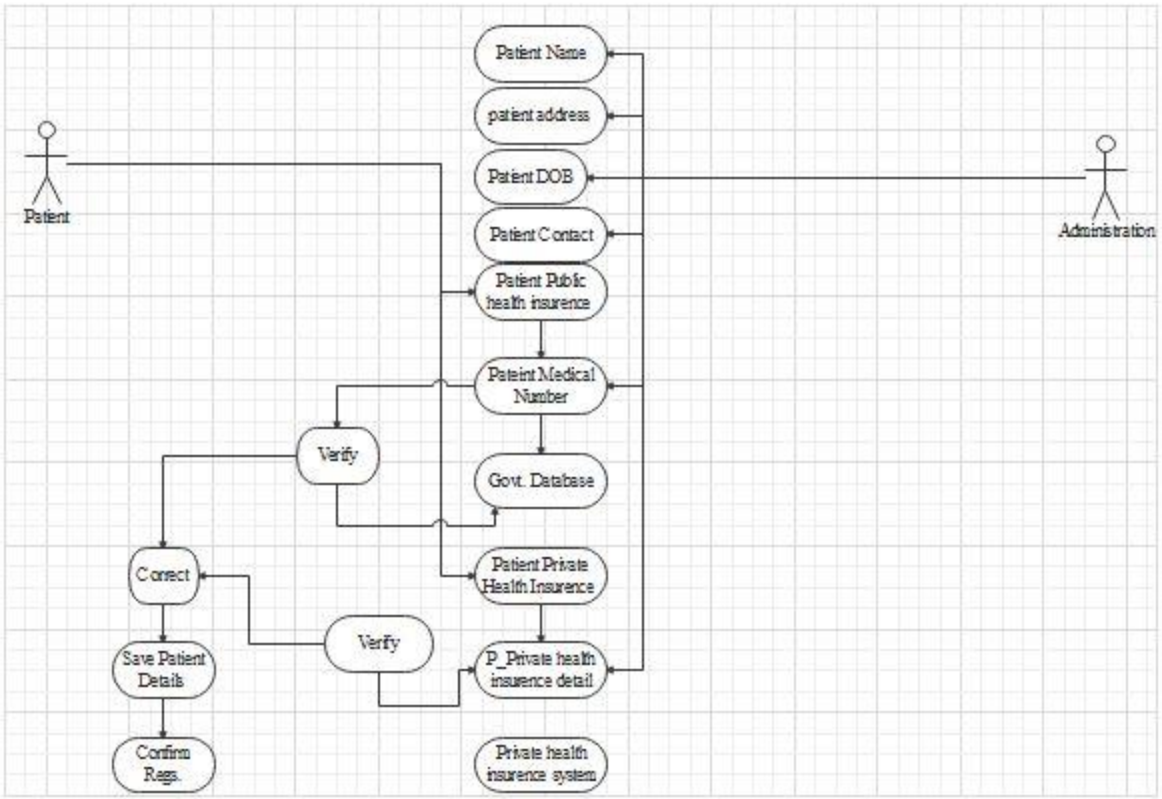
- Requirement engineering is a fundamental part of the software engineering process, when the stake holders of software project disagree on requirements, requirement negotiation method can be used to reach that agreement , this avoids rework and extra costs
- Stake holder are not force to agree
- Negotiations helps to discuss requirements to avoid conflicts between consumers and developers
- Requirements negotiation is an iterative process through which stakeholders make tradeoffs between
    - the cost
    - the delivery schedule
    - requested system functions
    - the capabilities of existing or envisioned technology

Question No 05:

Identify the **actors** and the **objects** in the following scenario to register a patient in a hospital management system and draw a **use case diagram**:

The administrator enters the patient's name, address, date of birth and emergency contact detailsinto the system. If the patient has only public health insurance, the administrator enters the patient'smedicare number, and the system verifies this with government health database. If the patient alsohas private health insurance, then the administrator enters also the patient's private healthinsurance details, and the system verifies these details with the private health insurance system.When these details are verified as correct, the system saves the patient's details and confirms theregistration.

ANSWER


Patient Name
patient address
Patient DOB
Patient Contact
Patient Public health insurence
Pateint Medical Number
Govt. Database
Patient Private Health Insurence
P_Private health insurence detail
Private health insurence system
Patient
Administration
Verify
Connect
Verify
Save Patient Details
Confirm Regs.