**Teamwork III.**

**(Requirements analysis)**

**Team 7**

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1. **What is requirements analysis? Why do we need it?**

* Requirements analysis is the process of determining user expectations for a new or modified product. These features, called requirements, must be quantifiable, relevant and detailed. In software engineering, such requirements are often called functional specifications. Requirements analysis is an important aspect of project management.

Requirements analysis is a team effort that demands a combination of hardware, software and human factors engineering expertise as well as skills in dealing with people.

* We need it because it involves interaction between two parties, which makes sure the solution fit with customer’s needs.

1. **What are the main objectives of requirements analysis?**

The objectives are to specify software operational characteristics, such as function, data and performance, indicate software interface with other system elements and establish constraints that software must meet.

1. **What are the questions which should be clarified during requirements analysis?**

* What data does the system produce and consume?
* What functions must the system perform?
* What behavior does the system exhibit?
* What interfaces are defined and what constraints apply?
* What is the solution model?
* What is the specific approach for the problem?

1. **What are the challenges during requirements analysis?**
2. Customers don’t really know what they want
3. Requirements change during the course of the project
4. Customers have unreasonable timelines
5. Communication gaps exist between customers, engineers and project managers
6. The development team doesn’t understand the politics of the customer’s organization.
7. **What is the main concern in the definition phase of development process?**

Definition phase focus on understanding what the client is trying to achieve with the project, refining the vision into real goal. The definition phase produces document that we will build our project on.

1. **How do we verify our activities during the definition phase?**

By validating our activities against the analysis principles. For example: examining the information domain, using models, applying partition, reviewing the essential and implementation view of the software.

1. **How do we make sure mutual understanding with the customer?**

By eliciting requirements from the clients. This practice is known as collecting requirements of a system from the customers. This can be done in form of Question & Ask sessions, or through various technique such as facilitated application specification techniques (FAST), or quality function deployment (QFD).

1. **What does evaluation and synthesis mean? Give an example.**

It’s a process of analyzing various aspects of the project and giving general assumptions to them between analysts and customers.

Evaluation: evaluate the requirements, how feasible and logical they are

Synthesis: combine the requirements, to get the customers’ idea into real technical goals definition.

Example: table booking system in a restaurant. The analyst may find the problems with the current manual system may include:

* Struggle to obtain table details quickly
* Long postpone about table statuses.
* One customer may book more than one table.

The customers (managers of the restaurant) require reports about the booked tables and information of the bookers.

1. **What is the purpose of writing specification report?**

* It is a formal document used to describe in detail a product's intended capabilities, appearance and interactions with users.
* It acts a guideline, which includes schedule also, for the developers to write or build the application.
* It translates the client's requirements into the final construction.

1. **What are analysis principles? Explain each of them concretely**

They serve as the fundamental foundation of many modelling methods. They help to develop a variety of notations and corresponding sets of heuristics to overcome analysis problems.

* Principle 1 **The information domain of a problem must be represented and understood.** The Information domain encloses the data that flows into the system (from end users. other systems, or external devices), the data that flow out of the system (via the user Interface, network interfaces, reports, graphics, and other means), and the data stores that collect and organize persistent data objects (I.e., data that are maintained permanently).
* Principle 2 **The functions that the software performs must be defined.** Software functions provide direct benefit to end users and also provide internal support for those features that are user visible. Functions can be described at many different levels of abstraction, ranging from a general statement of purpose to a detailed description of the processing elements that must be invoked.
* Principle 3 **The behavior of the software as a consequence of external events must be represented.** The behavior of computer software is driven by Its Interaction with the external environment. Input provided by end users, control data provided by an external system, or monitoring data collected over a network all cause the software to behave in a specific way.
* Principle 4 **The models that depict information, function, and behavior must be partitioned in a manner that uncovers detail in a layered (or hierarchical) fashion.** It allows you to better understand the problem and establishes a basis for the solution. A large, complex problem is divided into sub-problems until each sub-problem is relatively easy to understand. This concept is called partitioning or separation of concerns, and It Is a key strategy in requirements modeling.
* Principle 5 **The analysis task should move from essential information toward implementation detail**. Requirements modeling begins by describing the problem from the end-user’s perspective. The "essence'' of the problem is described without any consideration of how a solution will be implemented.