GOVERNMENT OF ANDHRA PRADESH

COMMISSIONERATE OF COLLEGIATE EDUCATION

REQUIREMENT ENGINEERING TASKS

Software Engineering

Computer Science

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Objectives

- Describe the requirements.
- Understand the requirement engineering process.
- Describe requirement engineering tasks.
- Recognize the software requirement specification.

What is Requirement

- Descriptions of system services.
- Constraints imposed on software project.
- Focus is on **“What”** not ***“How”*.**

Types of requirements:

- User requirements
- System requirements

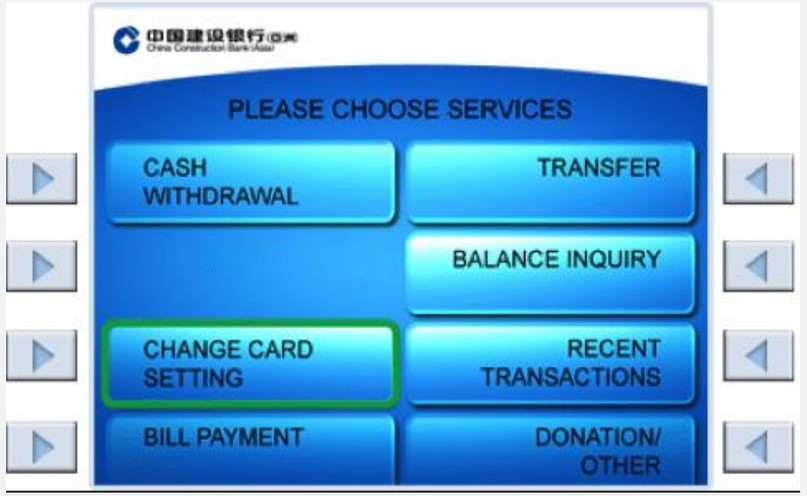

Fig: ATM Services

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Requirement Engineering

- Process of establishing system services and constraints under which it is operates, when it is being developed.
- Set of tasks and techniques that leads to better understanding of the system needs.
- Foundation to design and development activities.

Seven Activities in Requirement engineering

- Understanding needs of the customer.
- Analyzing the customer needs.
- Assessing feasibility.
- Negotiating a reasonable solution
- Specifying the solution unambiguously
- Validating the requirement specification
- Managing the requirements

Requirement Engineering Tasks

- Inception
- Elicitation
- Elaboration
- Negotiation
- Specification
- Validation
- Requirement Management

Inception

- Basic understanding of problem and solution.
- Communication and collaboration among stakeholders.
- Identification of scope.
- Having sufficient discussion.

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Inception

- The requirement engineer asks several sets of questions to customers and stake holders.
  - Who is behind the request for this work?
  - Who will use the solution?
  - What will be the economic benefit of a successful solution?
  - Is there another source for the solution that you need?
  - How would you characterize "good" output?
  - What problem(s) will this solution address?
  - Can you show me (or describe) the business environment in which the solution will be used?
- Requirement engineer will gain better understanding of the problem.

Elicitation

- Process of discovering requirements.
- Problems encountered during elicitation:
  1. Problem Scope: no clarity of the overall system objective.
  2. Problem of understanding: Not sure of what is needed.
  3. Problem of volatility: Changing nature of requirement gets troubled.
- During elicitation we can identify the problem, propose elements of solution, and specify a preliminary set of solution requirements.

Elaboration

- Information obtained is expanded and refined.
- Development of requirement model of features, functions and constraints.
- During analysis modeling
  - Development of use cases
  - Identification of domain classes
  - State machine diagrams depicts life of an object

Developing Usecases

- Describe functionality of system from user perspective.
- Define actors who will be involved in the scenario.
  - An actor is some thing that interact with the system ex: user, database etc.
- Develop usecases by examining the main tasks performed by actor.
- For example, withdraw money, Deposit money are the usecases in ATM system.

Negotiation

- Process of reconciling conflict requirements.
- Rank the requirements.
- Resolve conflicts based on priority.
- Each party gets some measure of satisfaction.

Specification

- Final work product produced by the requirement engineer.
- It is in the form of SRS.
- It acts as a base for further software engineering activities.
- It consist of system functions and constants imposed on it.
- Requirements are formalized both in graphical and textual manner.

Sample SRS

- Requirement
  - Requirements related to functions and objectives.
  - External interface requirements
  - Internal interface requirements
  - Internal data requirements.
  - Other software requirements-security, privacy etc.
  - Design and implementation constraints.
- Provision to ensure each requirement has been met
  - Demonstration
  - Test
  - Analysis
  - Inspection

Validation

- Quality of work product is assessed.
- Ensure that requirements are stated unambiguously.
- Cheick weather work product conforms to standards.
- Formal technical review is primary validation mechanism.

Management

- Set of activities to identify, control, track requirements.
- Keep track changes to requirements.
- ensures that specification is modifiable to incorporate changes in requirements.

Summary

- Scope and objectives are identified.
- Requirements are gathered.
- Requirement model is constructed.
- Conflicts in requirements are resolved.
- Requirements are formulated in a document.
- Requirements are validated.
- Keep track changes in requirements.

References

Text Books:

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Thank You

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