Parul University

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PIET_Software Engineering_Course

FDP_SoftwareEngineering_Week1_Weekly Challenge

Attempt : 1
Total Mark : 10
Marks Obtained : 5.56

Section 1 : FDP_SoftwareEngineering_Week1_Weekly Challenge

1. Scenario:

A mall wants to install a Smart Parking System that shows real-time parking availability, allows booking parking spots in advance, and automates entry/exit using RFID. The goal is to reduce congestion and waiting time at the entrance.

Task:

Define the requirement engineering process you'd follow from client interaction to documentation. Develop a functional specification for the “Book Parking Slot” feature. Identify 3 functional and 3 non-functional requirements. What challenges may occur during requirement analysis in this case? Suggest strategies to resolve them.

Answer

1) Requirement Engineering Process (from Client Interaction to documentation)
a. Elicitation:Stakeholder Interviews: Meet mall management, parking attendants, and customers.Surveys/Questionaires: Collect input from regular mall visitors on parking pain points.Observation: Study current parking entry/exit flows to identify bottlenecks.Workshops/Brainstorming: Conduct joint sessions to refine ideas and explore tech feasibility.
b. Analysis:Organize and prioritize gathered requirements.Detect inconsistencies or conflicts between stakeholder needs.Create use case diagrams, activity flows, and scenarios.
c. Specification:Draft Software Requirement Specification(SRS) including:Functional RequirementsNon - Functional RequirementsSystem Interface DetailsUser stories and use cases
d. Validation & Verification:Conduct walkthroughts and requirements reviews.Validate requirements against business goals.Use prototypes or mackups for clarity.
e. Documentation:Finalize the SRS document.Include traceability matrix to link requirements to goals.Archive versions for change management.
2) Functional Specifications: "Book Parking Slot"
Feature Name: Book Parking Slot
Description: Allows users to view available parking slots in real time and book a slot in
inadvance through a mobile/web application.

Actors:Registered User(Customer)Parking Management System
Preconditions:User is logged into the system.User has a valid payment method (if prepayment is required)
Flow of Events:User opens the "Book Parking" section.System displays live parking availability by zone/level.User selects desired slot, date and time range.System checks slot availability and confirms reservation.User receives a booking confirmation with slot number and QR code/RFID tag mapping.
Preconditions: Slot is reserved.Entry/exit system recognize the reservation via RFID at entry time.
Alternate Flows:Slot becomes unavailable during booking -> show message and suggest alternatives.User cancels reservation -> Slot is released back into the available pool.
3) Requirements:
Functional Requirements:System shall allow users to view real - time availability of parking slots.System shall allow users to book a parking slot in advance via app/webiste.System shall automatically mark the slot as occupied during the booking period.
Non - Functional Requirements:System should respond to booking requests within 2 seconds.System shall support up to 1000 concurrent users.System

shall have 99.9% uptime during mall operating hours.
4) Challenges During Requirement Analysis & Solutions:
Challenge: Ambiguous Stakeholder Expections
Description: Different departments (security, management, it) may have conflicting needs.
Strategy to Resolve: Facilitate joint requirement workshops to align goals. Use clear documentation and visuals.
Challenge: Incomplete Requirements:
Description: Stakeholders may not express all needs initially.
Strategy to Resolve: User iterative elicitation, scenarios, and prototypes to uncover hidden requirements.
Challenge: Technical Feasibility Gaps
Description: Some desired features (like real - time RFID tracking) may face infrastructure or cost issues.
Strategy to Resolve: Involve technical architects early, Preform feasibility studies and cost - benefit analysis.

Status : -

Marks : 5.56/10