Domain: Digital Marketplace for services (non-retail)

Problem Statement: On-Demand Service Scheduling & Fulfilment System

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1. Preface

1. Document Purpose

The purpose of this Software Requirements Specification (SRS) document is to clearly define and describe the functional and non-functional requirements of the On-Demand Service Scheduling & Fulfilment System, a digital marketplace designed for non-retail services. This document serves as a formal reference that outlines the expected behavior, constraints, and scope of the system to ensure a common understanding among all stakeholders.

The system aims to provide a unified platform that connects service providers with service consumers, enabling seamless service discovery, scheduling, booking, and fulfilment. By digitizing and automating the end-to-end service lifecycle—from service listing and appointment scheduling to service execution and feedback—the platform seeks to reduce manual coordination, improve service accessibility, and enhance operational efficiency.

This SRS is intended to guide system developers, designers, testers, project managers, and stakeholders throughout the software development lifecycle. It acts as a contractual and technical baseline for system implementation, validation, and future enhancements, ensuring that the developed solution aligns with user needs, business objectives, and quality standards.

2. Intended Audience

This Software Requirements Specification (SRS) document is intended for the following stakeholders involved in the development, deployment, and use of the On-Demand Service Scheduling & Fulfilment System:

- **Project Stakeholders and Clients**
  To understand the overall system objectives, scope, and key requirements, and to ensure that business goals and user expectations are accurately captured.
- **System Analysts and Software Architects**
  To use the documented requirements as a basis for system modelling, architectural design, and technology selection.
- **Software Developers**
  To gain a detailed understanding of functional behaviours, system constraints, and interfaces required for implementation.
- **Quality Assurance and Testing Teams**
  To derive test cases, validation criteria, and acceptance tests based on the specified functional and non-functional requirements.
- **Project Managers**
  To support project planning, effort estimation, scheduling, and progress tracking throughout the development lifecycle.

2. Introduction

1. Purpose

The purpose of this document is to specify the software requirements of the **On-Demand Service Scheduling & Fulfilment System**; a digital marketplace developed for non-retail service offerings. This SRS provides a detailed description of the system's functional and non-functional requirements to ensure a shared understanding among stakeholders and to serve as a baseline for system design, development, testing, and deployment.

2. Scope

The On-Demand Service Scheduling & Fulfilment System aims to provide a centralized digital platform that connects service providers with service

consumers. The system enables users to discover services, schedule appointments, place service requests, and track service fulfilment in real time. Service providers can list services, manage availability, and complete service delivery through the platform.
The system focuses on non-retail services such as professional, technical, and personal services, excluding the sale of physical goods. It aims to improve service accessibility, reduce manual coordination, and streamline the end-to-end service management process. The platform is designed to be scalable, secure, and adaptable to future enhancements such as analytics, dynamic pricing, and third-party integrations.

3. Overview

This SRS document presents an overview of the system architecture, user roles, operating environment, and constraints. It outlines both functional requirements—such as service booking, scheduling, and fulfilment—and non-functional requirements, including performance, security, and usability. Subsequent sections of this document provide a detailed description of the system features, user interactions, external interfaces, and quality attributes. This structure ensures clarity, traceability, and consistency throughout the software development lifecycle.

3. User Requirement Definition

1. User Classes

The On-Demand Service Scheduling & Fulfilment System supports multiple user classes, each with specific roles and responsibilities:

- **Customer**
  An end user who browses available services, books instant or scheduled services, manages personal profiles, and provides ratings and reviews after service completion.
- **Service Provider**
  A user who offers services through the platform. Service providers

manage their profiles, define service offerings, set availability using a work calendar, and fulfil customer service requests.

- **Manager**
  A supervisory user responsible for overseeing service operations. The manager monitors service completion, manages service providers, handles customer issues, and generates revenue and performance reports.
- **System (Automated Services)**
  The system is responsible for orchestrating all automated backend processes, ensuring consistency, reliability, and continuity across the entire service booking and fulfilment lifecycle.

2. User Services

The system provides the following core services to its users:

- User registration, authentication, and profile management
- Service discovery and on-demand or scheduled booking
- Real-time service tracking and status updates
- Ratings, reviews, and feedback management
- Issue handling, rescheduling, and cancellation support
- Administrative monitoring and reporting

3. System Features

The major system features are organized based on user roles, as represented in the use case diagram.

Customer Features

- Browse and select available services
- Book instant or scheduled services
- Manage personal profile information
- Track service status and completion
- Rate and review completed services

Service Provider Features

- Create and manage service provider profile

- Define and update service offerings
- Manage work calendar and availability
- Accept, perform, and complete service requests

Manager Features

- Monitor daily service completion and performance
- Manage registered service providers
- Handle service scheduling failures and rescheduling
- Manage customer-related issues and disputes
- Generate and analyse revenue and operational reports

System Features

- Track service lifecycle from booking to completion
- Handle scheduling conflicts and automated reassignment
- Maintain service records and system logs
- Ensure system reliability and data consistency

4. System Requirements Specification

4.1 Functional Requirements

4.1.1 Customer Functional Requirements

FR-1: The system shall allow a customer to book a service either instantly or for a scheduled date and time.
FR-2: The system shall allow the customer to provide service details including service type and service location.
FR-3: The system shall allow the customer to select from system-generated available service slots.
FR-4: The system shall allow the customer to make payment for a service booking.
FR-5: The system shall confirm the booking after successful payment.
FR-6: The system shall notify the customer about service provider assignment and schedule details.

FR-7: The system shall allow the customer to submit feedback and ratings after service completion.

4.1.2 Service Provider Functional Requirements

FR-8: The system shall allow service providers to manage their profile information.
FR-9: The system shall allow service providers to view and manage their assigned service calendar.
FR-10: The system shall automatically assign service requests to service providers without requiring provider approval.
FR-11: The system shall allow service providers to update service execution status after performing a service.

4.1.3 Fulfillment & Scheduling Functional Requirements

FR-12: The system shall dynamically generate available service slots based on service duration, provider availability, and regional capacity.
FR-13: The system shall validate selected service slots to prevent time overlaps, double bookings, and capacity conflicts.
FR-14: The system shall lock the selected service slot after successful payment to prevent race conditions.
FR-15: The system shall create a service request entity upon booking confirmation containing service, slot, location, and customer details.

4.1.4 Provider Discovery & Assignment Functional Requirements

FR-16: The system shall automatically analyze required skills for each service request.
FR-17: The system shall identify eligible service providers based on skill match, location proximity, availability, and workload.
FR-18: The system shall rank and assign eligible service providers using system-defined prioritization metrics such as ratings and reliability.
FR-19: The system shall lock the provider assignment and prevent overrides except by authorized administrators.

4.1.5 Delivery & Execution Functional Requirements

FR-20: The system shall transfer execution responsibility to the delivery team after provider assignment.
FR-21: The system shall track service execution states including Assigned, In-Progress, Completed, Failed, or Cancelled.
FR-22: The system shall allow service providers to update service completion status upon execution.

4.1.6 Failure Handling & Recovery Functional Requirements

FR-23: The system shall detect scheduling failures such as provider unavailability, delay, or no-show.
FR-24: The system shall attempt automatic reassignment to an alternate eligible provider within a defined fallback window.
FR-25: The system shall reschedule the service or cancel the booking if reassignment is not possible.
FR-26: The system shall notify the customer about reassignment, rescheduling, or cancellation events.

4.1.7 Manager Functional Requirements

FR-27: The system shall allow the Manager to manage Service Providers' skill sets.
FR-28: The system shall allow the manager to view and analyze revenue and performance reports.

4.2 Non-Functional Requirements

4.2.1 Performance Requirements

NFR-1: The system shall process service booking requests within an acceptable response time.
NFR-2: The system shall complete provider assignment within a short duration after booking confirmation.

4.2.2 Reliability & Availability Requirements

NFR-3: The system shall be available at all times except during scheduled maintenance periods.

NFR-4: The system shall reliably handle scheduling failures and recovery scenarios without data loss.

4.2.3 Consistency & Concurrency Requirements

NFR-5: The system shall ensure transactional consistency between slot locking, payment processing, and provider assignment.
NFR-6: The system shall prevent race conditions during slot selection and booking confirmation.

4.2.4 Security Requirements

NFR-7: The system shall ensure secure storage and transmission of user data and payment information.
NFR-8: The system shall restrict administrative and managerial functionalities to authorized users only.

4.2.5 Usability Requirements

NFR-9: The system shall provide a user-friendly interface for customers, service providers, and managers.
NFR-10: The system shall ensure that booking and scheduling workflows are simple and easy to understand.

4.2.6 Scalability Requirements

NFR-11: The system shall support growth in the number of users, service providers, and concurrent service requests.

4.2.7 Observability & Maintainability Requirements

NFR-12: The system shall log fulfilment decisions including provider ranking and assignment outcomes.
NFR-13: The system shall be designed to allow easy updates and maintenance without impacting core functionality.

5. System Models

5.1 Use Case Diagram

The use case diagram includes the following actors: **Customer, Service Provider, Admin, and Manager**. The use cases represented in the diagram are explained below:

Customer Perspective :

- **Book Instant or Scheduled Service:** Allows the customer to request a service either immediately or by scheduling it for a future date and time based on service availability.

- **Rate and Review Service:** Enables the customer to provide feedback and ratings for a completed service, helping maintain service quality and accountability.

Service Provider Perspective :

- **Profile Management:** Allows the service provider to manage personal and professional information, including service details, availability preferences, and required documents.

- **Manage Work Calendar:** Enables the service provider to manage their availability by marking time slots as unavailable, ensuring accurate service assignment based on their schedule.

Manager Perspective :

- **Manage Service Providers:** The system manages service provider onboarding, intelligently assigns providers to customer requests, updates work calendars in real time, and allows approval or suspension of providers.

- **Handle Schedule Failure / Reassignment:** Allows the admin to handle service failures, cancellations, or unavailability by reassigning services to other available providers.

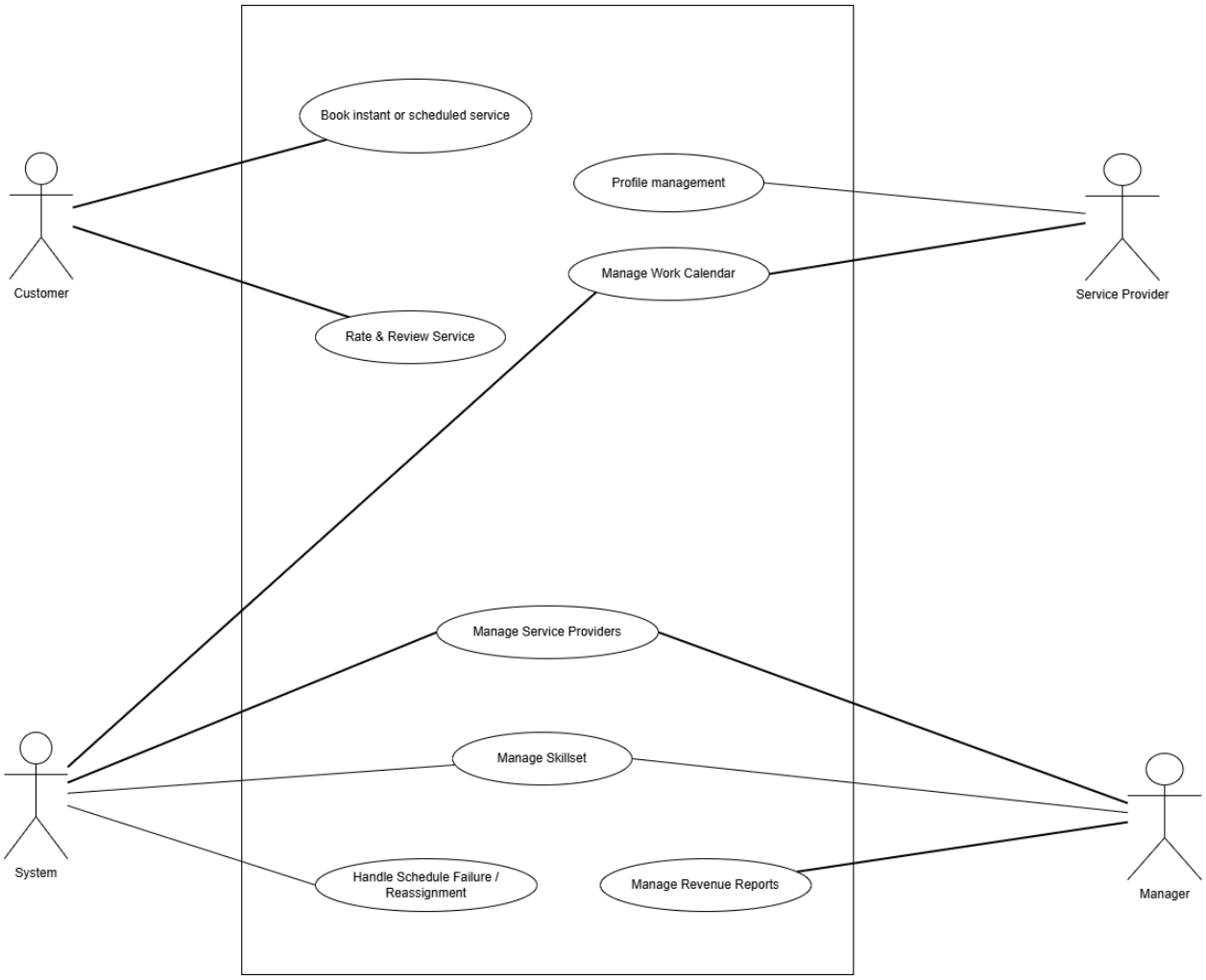
- **Manage Skillset:** Enables the collective manager to manage and maintain the skill categories and service types offered on the platform.

- **Manage Revenue Reports:** Allows the collective manager to generate and analyze revenue-related reports, including financial summaries.

These use cases collectively define the interactions between different actors and the **on-demand service platform**, ensuring efficient service booking, provider management, scheduling, and revenue tracking.

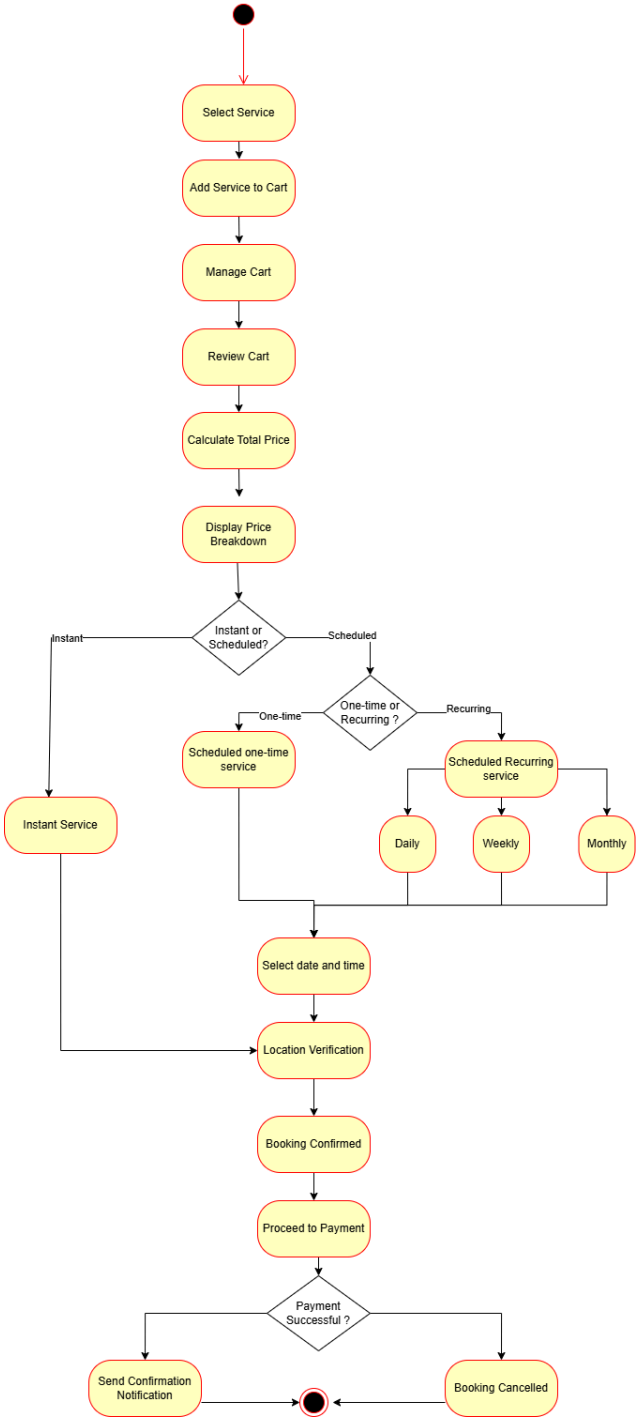
UML DIAGRAMS :

USE-CASE :

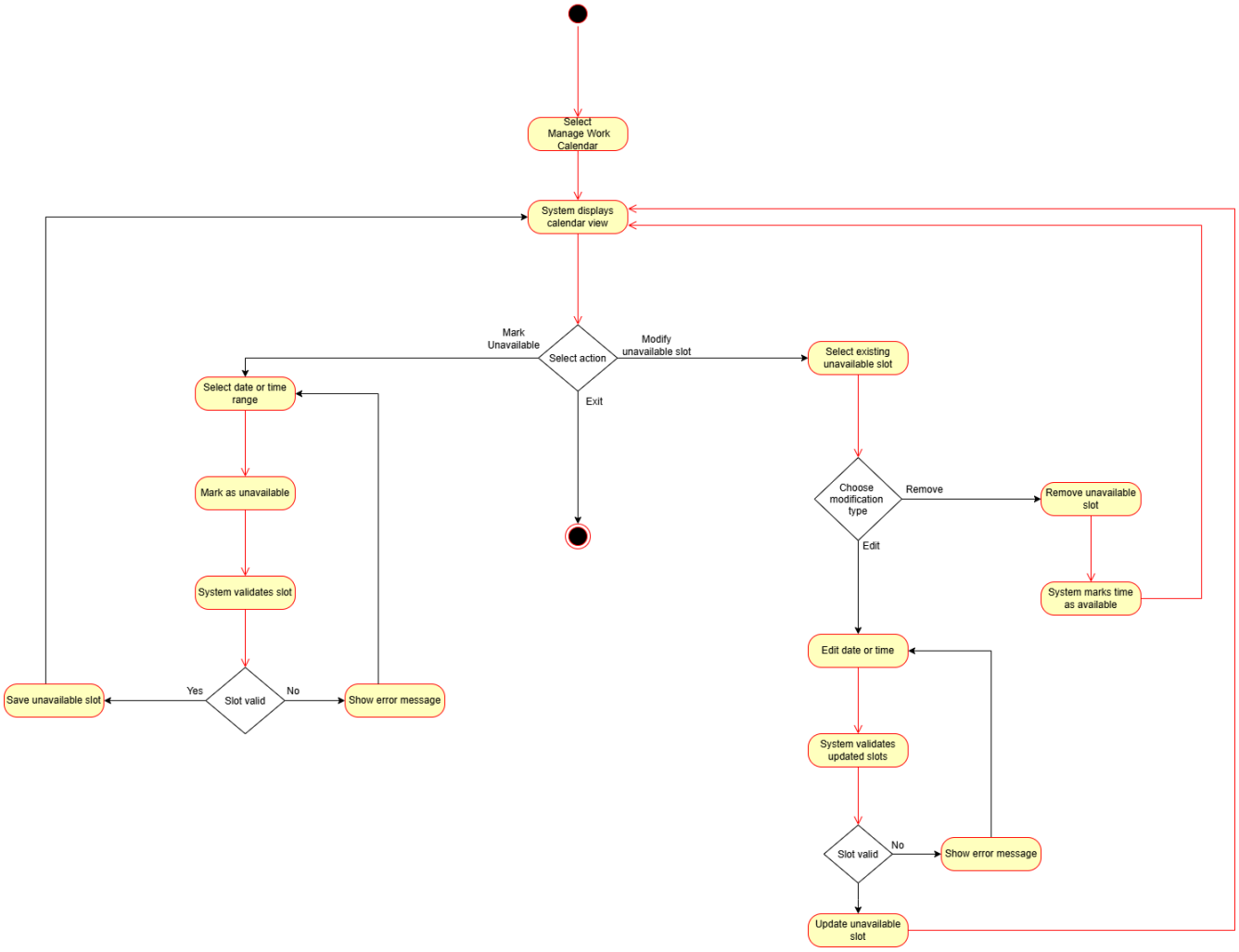


Activity :

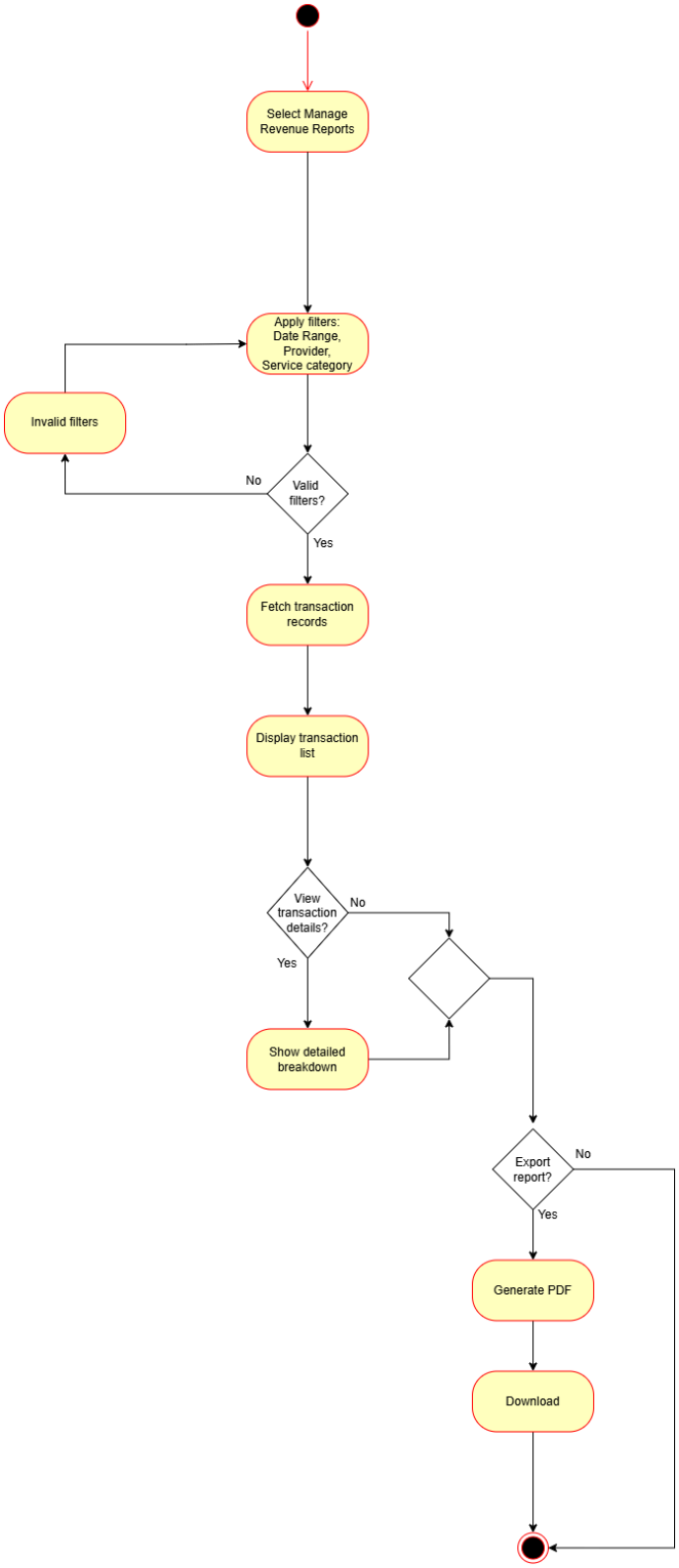
Book Instant or Scheduled Service :



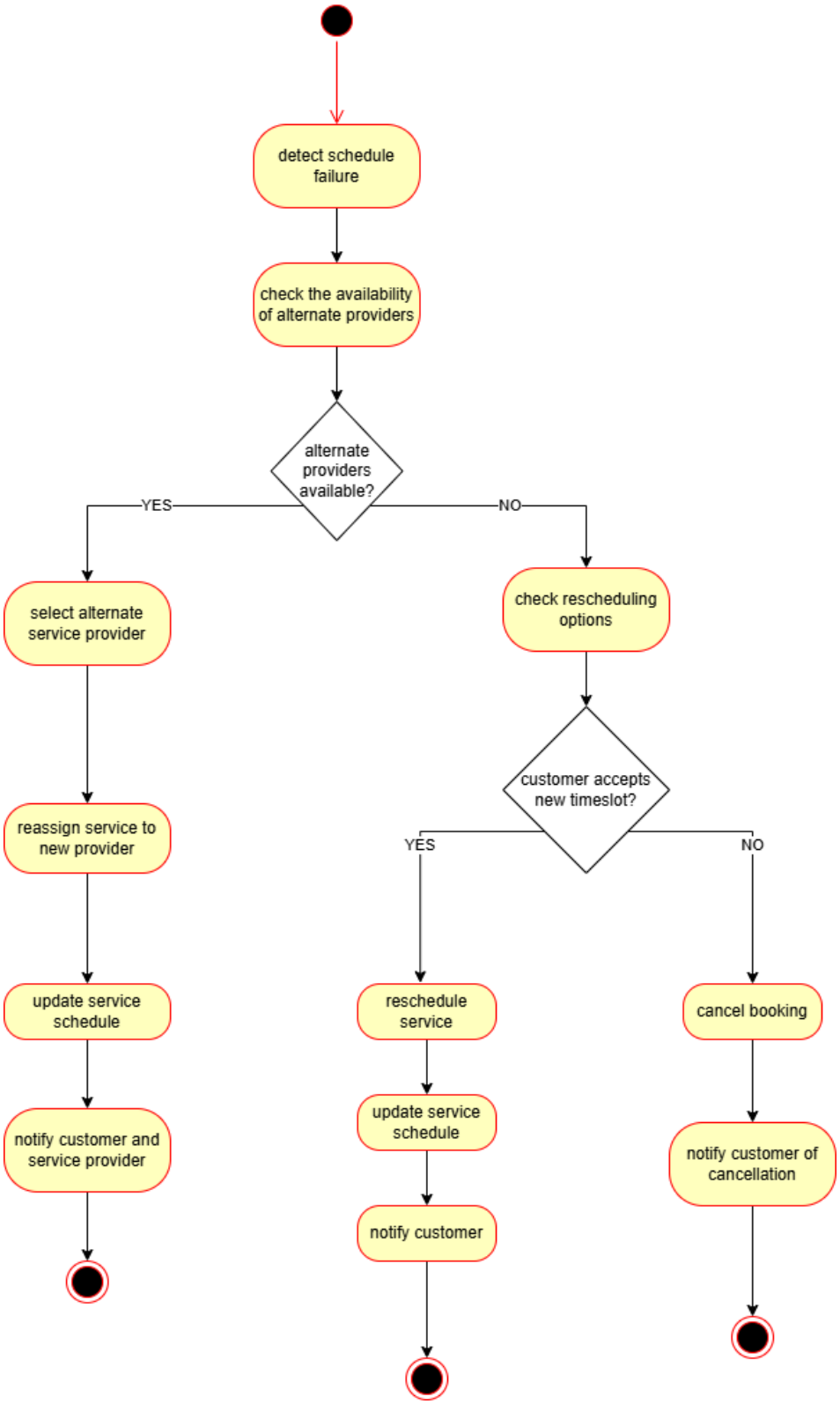
Manage Work Calender :



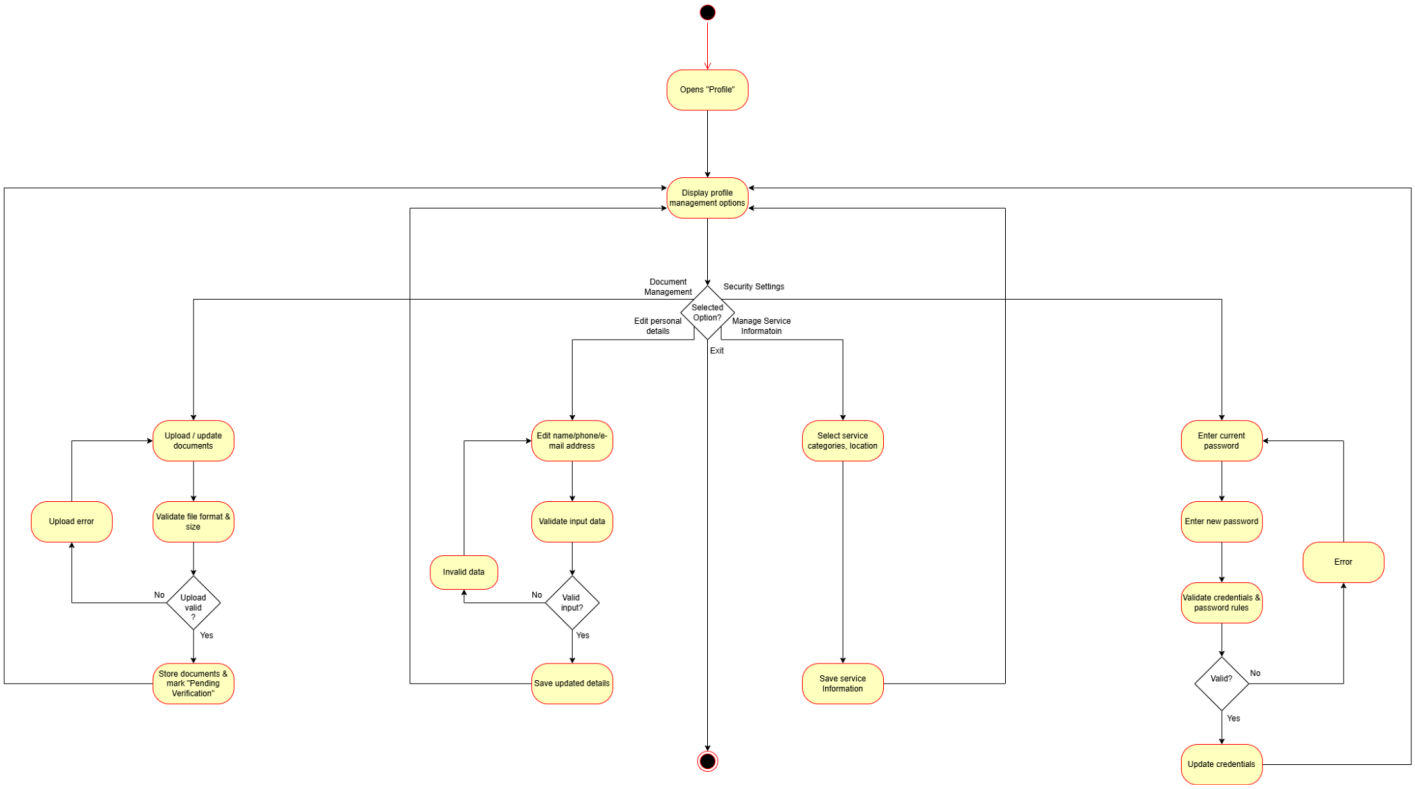
Manage Revenue Report :



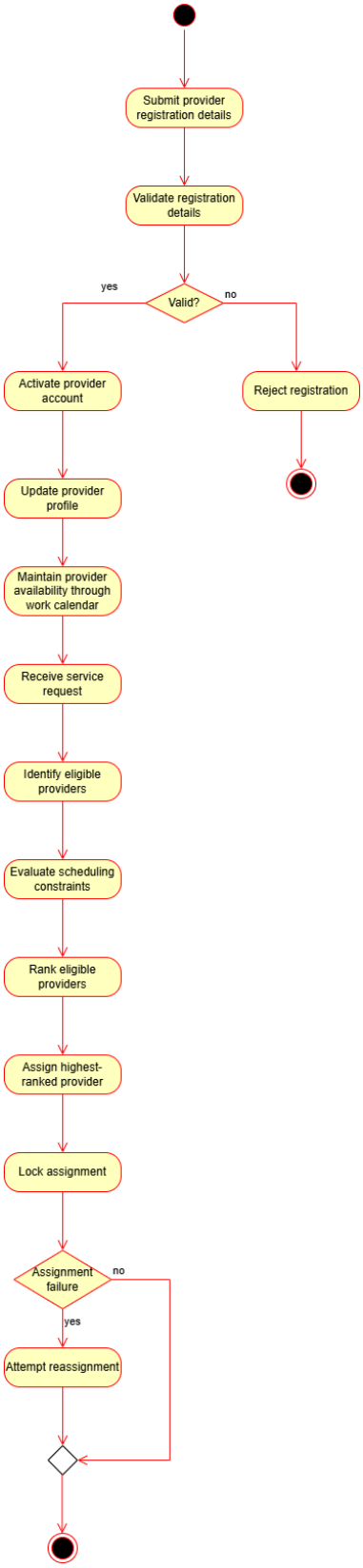
Handle Schedule Failure and Reassignment :



Profile Management :



Manage service Provider :



Sequence Diagram :