**Capstone Project: Part I**

**Task 1: Establish a Realistic Situation**

Goal: Create a plausible context for the project to ensure the application of course materials is grounded in a realistic scenario. This will help to visualize how theoretical knowledge can be applied to real-world problems.

**Online Tutoring Platform**

**Problem**: Students struggle to find reliable and affordable tutors for various subjects. Current platforms lack personalized matching and interactive features.

**Solution**: Develop an online tutoring platform connecting students with qualified tutors. Features include personalized matching, interactive video sessions, and progress tracking.

**Task 2: Product Requirements Document (PRD)**

Goal: Develop a comprehensive PRD to communicate the essential capabilities and features of the product to the development and testing teams. This document ensures that everyone involved in the project understands what needs to be built, including the objective, release plan, features, user flow, analytics, and future work.

Objective: Create a user-friendly online tutoring platform that connects students with qualified tutors for personalized learning experiences.

Release: Version 1.0

Features:

1. User Authentication: Secure login for students and tutors.
2. Profile Creation: Detailed profiles for tutors and students.
3. Matching Algorithm: Personalized tutor-student matching.
4. Interactive Sessions: Video conferencing, chat, and whiteboard tools.
5. Payment Integration: Secure payment processing for sessions.
6. Review System: Ratings and feedback for tutors.

User Flow and Design:

* Student Registration: Sign up, create a profile, search for tutors.
* Tutor Registration: Sign up, create a profile, list subjects and availability.
* Session Booking: Students book sessions, receive reminders.
* Interactive Session: Conduct sessions using integrated tools.
* Feedback: Post-session reviews and ratings.

Analytics:

* Track session bookings, user engagement, and feedback.
* Monitor tutor performance and student progress.

Future Work:

* Mobile app development.
* Group tutoring sessions.
* AI-based study recommendations.

**Task 3: Initial Design**

Goal: Create initial UML diagrams (use case, class, and sequence diagrams) to model the proposed solution. These diagrams will help visualize the system's structure and behavior, ensuring the design includes established design patterns and proper connections to both the presentation and data management layers. This task sets the foundation for developing a multi-tiered Java application.

**UML Use Case Diagram**

* Actors: Student, Tutor, Admin
* Use Cases: Register, Login, Search Tutors, Book Session, Conduct Session, Give Feedback, Manage Profile

**UML Class Diagram**

Classes and Attributes:

* User
  + ID
  + Name
  + Email
  + Password
* Student (inherits User)
  + Profile
  + History
* Tutor (inherits User)
  + Profile
  + Subjects
  + Availability
* Session
  + ID
  + Date
  + Time
  + StudentID
  + TutorID
* Payment
  + ID
  + Amount
  + Date
* Feedback
  + ID
  + Rating
  + Comment
  + SessionID

**UML Sequence Diagram**

**Scenario: Booking a Session**

1. Student logs in
2. Student searches for tutors
3. Student selects a tutor and books a session
4. Payment is processed
5. Confirmation sent to student and tutor
6. Session conducted
7. Feedback provided

**Submission** **Requirements**:

1. Context Overview Document
   * A realistic situation idea expressed in no more than one page that clearly states the problem to solve and the proposed solution to it.
2. Product Requirements Document (PRD)
   * A description of the entire product that can be expressed in terms of the "Product Hunt" template.
3. MVP Initial Design Document
   * A set of UML diagrams that includes: use case diagrams, class diagrams, and sequence diagrams.