Master of Applied Computing
COMP-8117 – Summer 2022
Advanced Software Engineering Topics

School of Computer Science
https://cs.uwindsor.ca

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Lab/Assignment 1: Specification and Design

Marks = 4%
Due Date = Friday of Week 5 (June 10, 2022, by Midnight)
Submission = Only via blackboard
One submission per group
Only one attempt
Submission Format = MS Word + the Video in MP4 Format

Scenario

For this scenario, let us consider two companies: The TechGiants (TG) and The PersonalMentor (PM). The former is a software development company, and the latter provides mentoring services to their customers. A new service offered by PM to its customers is named as 'stay fit' in which the customers can be connected with the fitness experts. Any PM customer can register for this service and become a member of PM which then results in connecting this member to a dedicated fitness expert. These experts mandate their customers to maintain a log of their daily physical activities (ex. the daily walk) on a dated paper. The experts then check these papers whenever they meet with the customers to suggest any needed changes to the daily activities. However, after receiving several concerns from the experts, the top management of PM feels that this paper-based activity is hard to manage, track, and analyze to propose any useful recommendations to users. Moreover, this paper-trail is often incomplete lacking the timeline and frequency of a customer's daily activities. As a result, the management of PM decides to hire TG to build a software application for their customers and experts to efficiently track their daily physical activities and perform some useful analysis.

Your Tasks

Your task is to perform the specifications and designing for the above scenario. Specifically, you should complete the following tasks:

- Complete the below given Problem and Vision Statement and Product Statement Tables. A filled example is already provided in the tables (highlighted in red). You may adjust the width of the columns and rows according to your answers.

- Complete the Elicitation and Requirement Section by filling the given Tables. A filled example each is already provided in the tables (highlighted in red). You may adjust the width of the columns and rows according to your answers. Additional rows should also be added.

- Make a use case diagram with all the objects, their attributes, and the relationships.

- Create low-level class and sequence diagrams to present the design of your software application.

- Prepare a small video (3 to 5 minutes) in which you will present the difference between the specifications and the design to new undergrad students assuming that these students have '0' knowledge about specification and design. In this video, the group members can talk and explain the difference or this video can also be self-explanatory with text, background music, and necessary animations.

Start Your Answers here

Problem Statement and Product Statement Tables to be Filled:

Table 1: Problem and vision statement table

We are addressing the problem of	Paper-based activity logs
Affecting the	- PM Registered members daily physical activities. - Fitness expert ability to evaluate paper-based logs, which in turn affecting stay fit service and PM reputation
Due to which	PM's top management believes that this paper-based activity is difficult to manage, measure, and evaluate to provide users with valuable recommendations.
A proposed solution would be to	- Hire TG to build a software application for their customers and experts. - Software application should efficiently track their daily physical activities. - Application should track the data effectively to perform some analysis and provide some insights.

Table 2: Product statement table

For	PM's customers turned members
Who want to	Connect with the fitness experts to get dedicated fitness recommendations from experts.
The product by TechGiants is a	Tracking and Mentoring services" Stay Fit" software application for PM customers turned members and experts
That	- Acts as an intermediatory between the customer and expert replacing the dated paper - daily tracks, monitors the user data intelligently and provide the user fitness logs to experts for evaluation and recommendations
Unlike	Dated paper - which is exhausting for user to remember tracking their activities daily. - the experts need to validate and analyze the dated papers with many difficulties such as incomplete data, inaccurate tracking etc. - in an event of loss of paper on a day, the user's complete activity is lost and can never be recovered

Our product	
	Mobile application • which connects fitness experts and customers virtually • performs timely reminders for customers to log the data and send reports to experts. • maintains an easy and efficient UI for the users and experts • secures user data provides effective dashboards and insights to users • provides ranking or badges and create a competitive fitness goal with peer participants

Elicitation and Requirement Tables to be Filled:
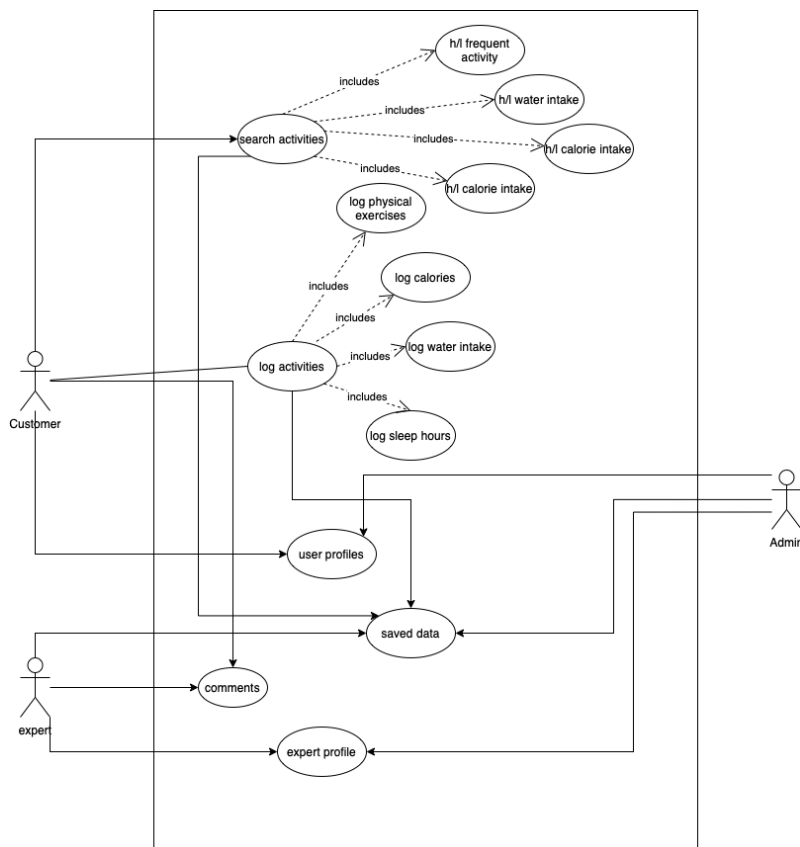
Table 3: Elicitation and Analysis table

Kind of stakeholder	Explanation/description	Responsibilities related to product	Responsibilities related to project
Members	These are customers who became members by registering with the 'stay fit' service	Maintain a log of daily physical activities Share this log with experts each time the members meet with the experts	Feedback to SW engineers and designers through questionnaires, surveys, interviews, feedback, etc.
Experts	• These are employees of PM group for "Stay Fit" program to guide customers	• Analyze the activities reported by user and provide necessary recommendations and changes daily activities	• Feedback to SW engineers and designers and PM management through questionnaires, surveys, interviews, feedback, etc.
PM top management	• These are high level Executives who are responsible for "PersonalMentor" company	• Analysis of product requirements. Developing business model foe application. Perform market analysis for current business and further expand product.	• Collects the feedback from members, experts and analyze the feedback and make decisions on product/features improvement or new features.
TechGiants (TG)	• These are the ones who are building the software application for PM management.	• Responsible to build efficient application as suggested by PM management. • Provide best solutions and user-friendly application to easily track and analyze daily activity.	• Able to gather requirements from the product owner. • deliver features on time.

Table *4*: A table with needs/requirements

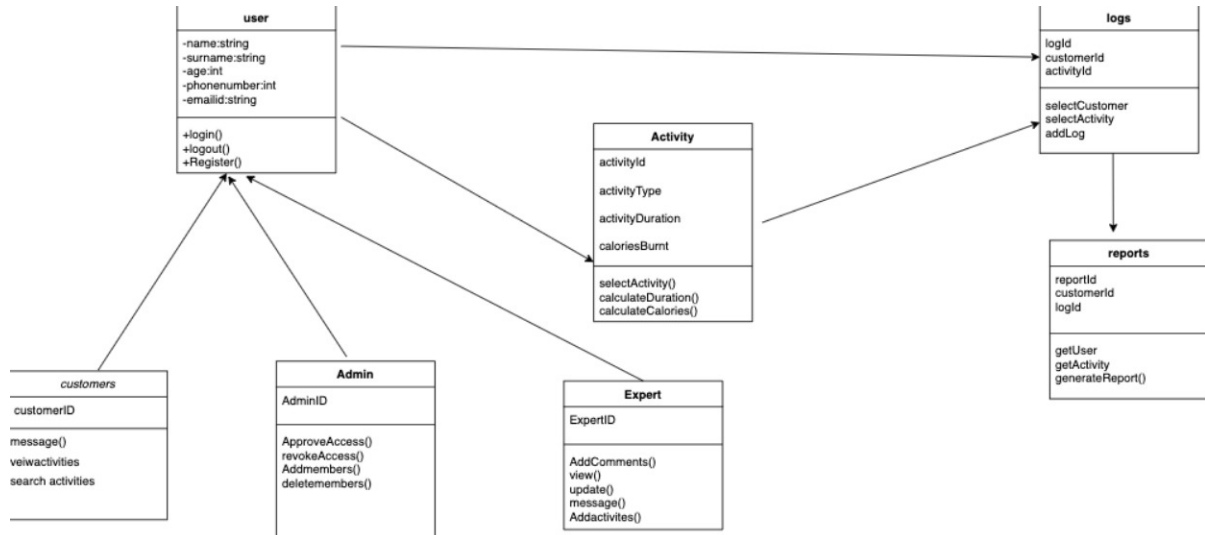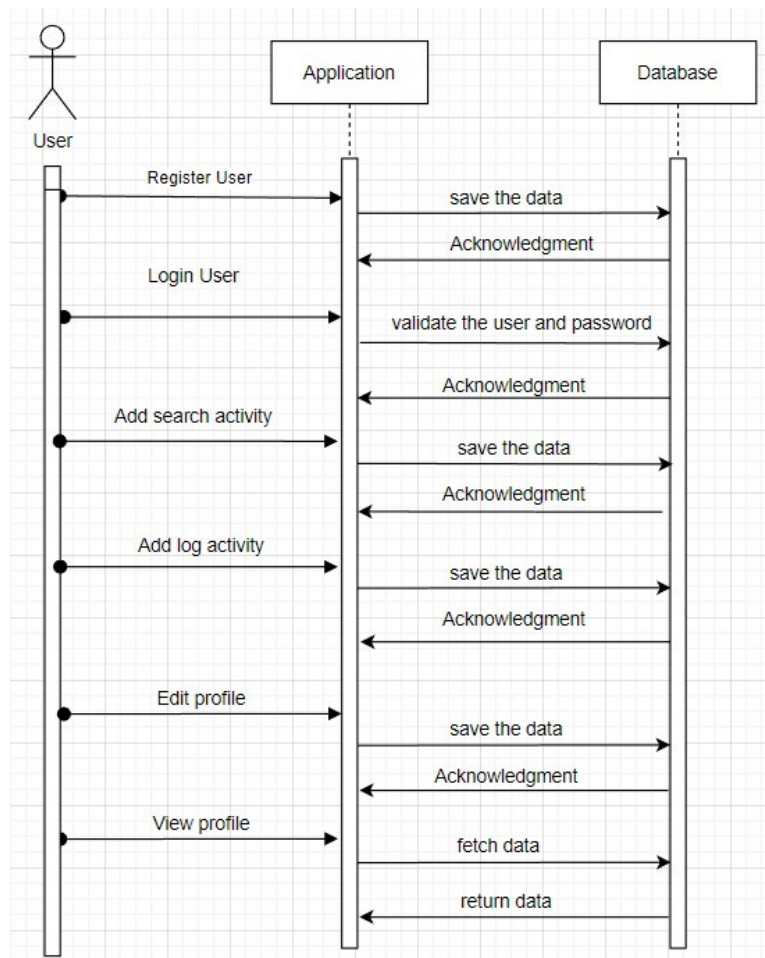| S#	Need/Requirement	Feature	Priority
1	Searching people's daily activities	Search for the most frequent daily activity by name	High
		Search for highest calorie intake by name	High
		Search for water intake trends	High
		Search for longest/shortest activity duration	High
2	Log Activities by user	Log calorie intake taken by users	High
		log water intake	High
		Log physical activity metrics	High
		Log daily exercise activities performed	High
		Reminder notifications for logging data	Moderate
3	Analysis per user	View user logged data overview	High
		Comments sections for experts to post user feedback	Moderate
		Provide basic reports to experts from data collected	High
		Show best customer performing under their wing	Low
		Expert rankings/rating	Low
4	User details	Create, read, update, delete operations on customer details	High
		Create, read, update, delete operations on expert details	High
		Create, read, update, delete operations on admin details	High

Use Case Diagram:

Class and Sequence Diagrams:
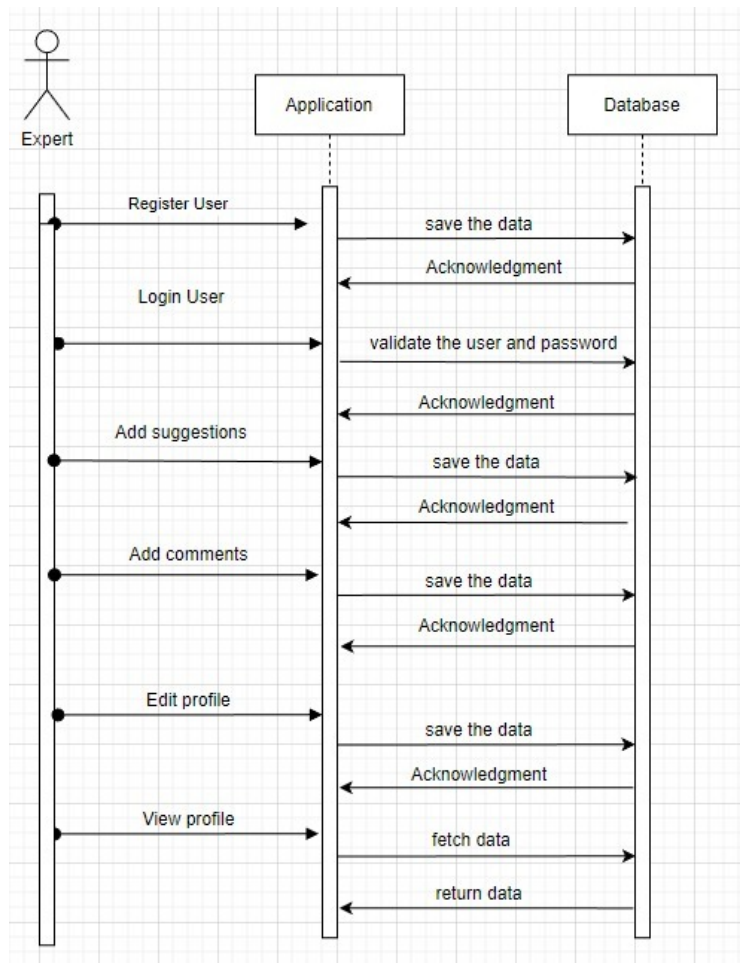
Class diagram:

Sequence Diagram for User:

Sequence Diagram for Expert:

MP4 Video:
Must be prepared in MP4 format and uploaded on BB