Project Guidelines

COSC 412 Software Engineering

Note : All the textbook references are to the Ian Somerville or Roger S Pressman textbook posted on Blackboard

Sprint 0-- Team Formation (5% of your project grade) Due date: September 5th, 2024

In this phase you will complete the survey provided at the google link below. The survey information will by the instructor to create the teams.

Sprint 1 – Project Proposal (20 % of your project grade) Due date: October 8th, 2024

Project Requirements

- Identify a problem that customers face and then design a project that solves this problem.
- Your project can be original or inspired by something that is existing. In the later case, it is expected that the team should include some feature that does not exist in the current product.

Technical Requirements

- You can choose to do a mobile or web application for this project.
- If you choose a Mobile application:
  - Android or IOS.
  - Must use database component and have features like creating, reading, updating and deleting a database.
- If you choose to do a web application:
  - You can use any web programming language.
  - Must be a dynamic website (it needs to have components that can react, like username/ password validation, inserting data from frontend to backend, etc.)
  - Must use database component and have features like creating, reading, updating and deleting a database.
- The project should include features of Artificial Intelligence or Machine Learning – You can use any supporting packages for this feature.

TASK 1: Planning and Scheduling (not for the whole project, just for this assignment)

- Choose a name for the team.
- Create a table and have every member's name, assigned task or tasks, etc.

Ex.:Work Breakdown Structure

Assignee Name	Email	Task	Duration (hours)	Dependency	Due date
John Doe	jdoe@students.towson.edu	Technical writing (getting the report ready) as described in the assignment	5 hours	Slack, GitHub, and the video (these have to be done first)	02/22/18

James Siemen (**coordinator**)	exmple@student.towson.edu	Creating the github repository as described in the assignment	2 hours	none	02/19/18
Michael Jorden	Mjorden@student.towson.edu	Did not do the assigned task	Did not do the assigned task	Did not do the assigned task	Did not do the assigned task
Alex Brian	exmple@student.towson.edu	Partial Contribution	0.30 minutes	none	02/20/18

TASK 2: Communication and Collaboration:

GitHub:

- Every teammate must have a GitHub ID.
- Create a repository for the project, which every team member should have access to it.
- Basic introduction to GitHub can be found here: https://guides.github.com/activities/hello-world/#intro
- Write the project title and the team members' names in Readme file under the Code Tab.
    - Submit a screenshot of your readme page.
- Create a new kanban project using the Project Tab and name it COSC412-SWE- group name. Use the: To do; In progress; and Done columns. Under these columns, create your own cards and have the assigned tasks and their status (in progress and done) written there as a list.
    - Submit a screenshot of your project page.

TASK 3: Project Topic:

- Discuss your project topic with the instructor and finalize the topic.
- Each project must adhere to the following constraints:
    - Project must be substantial enough to justify a group of seniors working for an entire semester: 3K-5K is expected.
- The project must be able to be installed, run, and tested by the instructor.
- The system must be easy to test; thus, interactive systems are required.

TASK 4: Problem Statement: (Overall Project Description, user requirements):

- First, read Ch4 page 102-105. [From Ian Somerville]
- What is your product, on a high level?
- Whom is it for?
- What problem does it solve?
- What alternatives are available?
- Why is this project compelling and worth developing?
- Describe the top-level objectives, differentiators, target customers, and scope
- of your product.
- What are the competitors and what is novel in your approach?
- Make it clear that the system can be built, making good use of the available resources and technology.
- What is interesting about this project from a technical point of view?

TASK 5: System Requirements:

- Describe at a very **high level the system's architecture**, identifying the components/modules that will interact.
    - Use context model.
    - See Ch5: Section 5.1 and Figures 5.1 [From Ian Somerville]

TASK 6: Submission instructions:

1. Report Format:
    - First page has (individual page): the project title, group name, members' names, semester, and year.
    - Font size 12, single space between lines.
    - All paragraphs must Text Justified.
    - Pages are numbered.
    - Diagrams and tables must be centered.
2. Report Sections: (remember to revise and refine your system)
    - Section 1
        i. Name of the project
        ii. Semester
        iii. Group Number
        iv. Team members
        v. Date of Submission
    - Section 2: Brief resumes
    - Scheduling and planning table – for the project for Sprint 2 – TASK 1
    - Problem Statement -- Answer all or most questions – TASK 4
    - System Requirements -- TASK 5.
    - Appendix: Have all the screen shots in this section. – Task 2
3. Submission:
    - Submit the report named a Team <Number>_Proposal.pdf to the blackboard folder.
    - Only one person from the team should submit the report.

Sprint 2 – Mid semester Progress (20 % of your project grade) Due Date: November 5th, 2024

TASK 1: Planning and Scheduling (not for the whole project, just for this assignment):

- Create a planning and scheduling table similar to the last sprint, for until the end of the semester.

TASK 2: Communication and Collaboration:

- Update your kanban board, based on the progress of your project tasks.
- Submit a screenshot of your kanban project.

TASK3: Revise and Refine your System:

- Based on the feedback and the additional topics covered in class, you are to revise, refine, complete your problem statement. Therefore, you will write an improved version of the Problem Statement you provided in Sprint 1.

TASK 4: System Requirements:

1. **Use Case**

List all the Use Cases that you have for the project. Each Use Case must follow the following format. Refer page 114 for more information, but only include the below components for documentation. [From Roger S Pressman]

Use Case no.: Use Case Name:
Actors: (Combine the primary and secondary actors)
Goal in context:
Alternate Path:
Pre-condition:

2. **Use case diagrams**

Choose 2 most important use cases in your project and create a use case diagram for them. Look into Figure 7.2 of the textbook. [From Roger S Pressman]

3. **Requirements**

In this section you will clearly mention the requirements for each use case you have. Therefore, if you have 12 use cases you should have 12 requirements in this section. The requirements must be written in the following format:

Requirement number: Use Case number:
Introduction:
Inputs:
Requirements Description:
Outputs:

TASK 5: System Modeling (Analysis)

1. **Class Diagrams (object Modeling, or structural modeling):**

Read (Ch8, 8.3.1, 8.3.2, 8.3.3) and look into Figure 8.3 and Figure 8.4 [From Roger S Pressman]

- Identify objects.
- What are the associations between them?
- What is their multiplicity?
- What are the attributes of the objects?
- What operations are defined on the objects?
- Create system class diagram.

2. **Database specification and analysis:**
   - Specify your system database tables (data attributes and their types) and relationship between them (Primary Keys and Foreign Keys)
   - Specify the type of database management system (MySQL, MS-SQL server, Oracle, etc.) you will use in your project.

Please use MS Visio for all UML diagrams: https://office.live.com/Start/visio.aspx
(any similar software will work as well)

TASK 6: Submission instructions

1. Report Format:
   - First page has (individual page): the project title, group name, members' names, semester, and year.
   - Font size 12, Font type is times new roman, single space between lines.
   - All paragraphs must Text Justified.
   - Pages are numbered.
   - Diagrams and tables must be centered.

2. Report Sections: (remember to revise and refine your system)
   - Planning and Scheduling. – Task 1
   - Problem Statement -- Task 3
   - Requirements – Task 4
     - User Requirements
     - Use Case diagrams.
     - System Requirements
   - System Modeling – Task 5
   - Appendix: Have all the screen shots in this section. – Task 2

3. Submission:
   a. Submit the report named a Team <Number>_Sprint2.pdf to the blackboard folder.
   b. Only one person from the team should submit the report.
   c. Zip file including the code worked on so far, and a readme file containing the instructions to install the necessary packages/software and running the code should be provided.

Sprint 3 – Final Submission (50% of your project grade) Due: December 5th, 2024

Following are going to be different components in your final submission.

Project Report (20 points)

1. **Final Problem Statement**
   - As part of this give your final problem statement by answering the questions that were asked about the problem statement in Proposal.
2. **Front end**
   - Give a Storyboard of how the front end looks for all the pages in the web/mobile application.
   - Mention the framework used for Front end development and why did you choose the fore-mentioned framework.
3. **Back end**
   - Give an ER diagram of your Schema (Database)
   - What was used for creating your database and why?
4. **API**
   - What was the API used to establish a connection or used as an interface between the front end and back end?
   - What are the different scenarios in which the front and back end communicate (Give 2 scenarios)
5. **Teamwork**
   - For the course project you were supposed to work as a team.
   - What were the difficult situations the team faced in terms of coordination or difference of opinion and how were these situations handled?
6. **Future work**

Project Presentation (20 points) (will happen on December 3th and 5th in class)

- Each team should prepare a presentation that lasts no longer than about 20 minutes.
- Every team member should be involved in the presentation, preferably, presenting the component that they contributed the most to.
- Following should be included in your presentation:
  - Introducing your project – what was the goal, who was the target audience and how did you do it (web/mobile)?
  - Go over the main use cases of your project / these may include features that can be used as selling points for your product.

- Show what technology you used:
  - What front end you used?
  - What APIs were used, to work with the AI/ML features and the Database features of your product?
  - Can this setup easily adjust to changes in the market? Why or why not?
- Demo – A quick demo of all the main/selling features of your product.

Code Documentation (10 points)

- You need to provide the entire code that was used in your project.
- A readme file including the following:
  - Instructions for installing the necessary software/ programs to run the project.
  - Instructions for installing the necessary packages to run the project.
  - Step by step instructions on how to run the entire code, including things like connecting to the server, etc.

Final Peer Evaluation (5% of your grade) Due: December 5th, 2024

- The instructor will provide form that needs to be filled out by each team member individually, where you will provide a evaluation of all your team members with a brief note.
- The average grade from your teammates scoring for you will be calculated

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