Project Proposal Instruction

BSAI301 – Software Engineering and Project Management

The project proposal is the first formal deliverable of your group project. Its purpose is to clearly define **what system you plan to build, why it is needed, and how it will be developed over the semester**.

By completing this proposal, your group should demonstrate the ability to:

- Translate a real-world problem into well-defined business goals and software requirements.
- Apply requirements engineering techniques to systematically identify and structure requirements.
- Analyze the feasibility of a software project under realistic technical and organizational constraints.
- Plan and manage a team-based software project in a structured and professional manner.

General Expectations. The project proposal should be written in a **clear, well-structured, and professional manner**, demonstrating appropriate use of concepts and terminology introduced in the lectures. Students should focus on clarity, consistency, and feasibility rather than excessive length or unnecessary detail. **Diagrams and figures are encouraged when they help improve understanding.** The proposal should reflect collaboration among all group members and present a realistic and coherent plan for completing the project within the course constraints.

Submission Instructions:

- The project proposal must be submitted to **Moodle** before the specified deadline.
- Each team must submit **one proposal only**. The submission should be uploaded by **one team member** on behalf of the entire group.
- Proposal templates are provided in both **Word** and **LaTeX** formats. Teams may choose either format, but LaTeX is strongly recommended. Students may adjust the structure or visual style of the proposal (e.g., layout, tables, figures), but all designated sections and required content must be included and clearly identifiable.
- **Please be cautious when preparing your project proposal**, as the final product, progress report, and final report will be evaluated against it; any subsequent changes to design and implementation will be clearly explained and justified.
- **Length Requirement.** The project proposal should be approximately **2000 words** in total (excluding references and appendices). Proposals that are significantly shorter may lack sufficient depth, while excessively long proposals may be unnecessarily verbose.
- **The project proposal must be submitted in PDF format.** Please name your file using the following naming convention: *<Section>-<Team ID> Project Proposal.pdf*. For example, if your team is Team-1 in Section EX1, your submitted file should be named: *EX1-Team-1 Project Proposal.pdf*

Your project proposal must contain the following sections.

1 Project Overview (20 Points)

Project Purpose (Product Description)

Provide a concise, high-level description of the software system or product your group intends to develop. This description should be written in natural language and be understandable to non-technical stakeholders. Clearly describe:

- The type of system being developed
- The intended users
- The problem the system aims to solve

Motivation and Goals (Business Requirements)

Explain the motivation behind the project and why it is worth developing. This section should focus on business or user-level goals rather than technical implementation details. Describe:

- The real-world problem or opportunity motivating the project
- The stakeholders who will benefit from the system
- The overall goals the system is expected to achieve

2 Requirements Engineering (30 Points)

User Requirements

Start with user requirements expressed as high-level statements in natural language. These requirements should describe what users need from the system without referencing implementation details. User requirements should be understandable by end users and other stakeholders. **You are not required to provide a complete list; focus on the major and core requirements.**

System Requirements

Based on the user requirements, derive system requirements that specify what the system must do and how it should behave. System requirements include both functional and non-functional requirements:

- **Functional Requirements.** Functional requirements specify the system's functions and behaviors. Each functional requirement should: (1) be clear and unambiguous; (2) describe observable system behavior; and (3) be testable.
- **Non-Functional Requirements.** Non-functional requirements specify quality attributes and constraints of the system, such as performance, usability, security, reliability, and scalability. Each non-functional requirement should be clearly stated and include measurable or verifiable criteria where possible.

3 Scenario or Use Case Description (10 Points)

Provide at least one scenario or use case that demonstrates how the system will be used in practice. This section should clearly illustrate the system workflow and help validate the stated requirements. The scenario should include:

- Assumptions or preconditions

- Normal execution flow
- Exception or error handling flow
- Concurrent activities, if applicable
- End state of the system

4 Feasibility Study (10 Points)

Analyze whether the proposed project is realistically achievable within the course constraints. Your feasibility study should address:

- Required technical skills and team capability
- Availability of required data, if applicable
- Time constraints and workload feasibility
- Computing resources (hardware, software, cloud services)
- Budget considerations, if applicable

5 System Structure (15 Points)

Describe the overall structure of the system at a high level. **A high-level system diagram is required.** This section should describe the major system components or subsystems, the responsibilities of each, and the interactions between them. Low-level implementation details are not required.

Important: System architecture diagrams must be produced using appropriate diagramming tools (*e.g.*, Microsoft PowerPoint, Keynote, draw.io, or TikZ). Diagrams must be clear and professional. **Hand-drawn or scanned diagrams will not be accepted.**

6 Project Plan and Risk Analysis (15 Points)

Project Plan. Provide a project plan that includes: (1) major milestones and deliverables; (2) estimated timeline and schedule; (3) task breakdown; and (4) assignment of responsibilities among team members. The plan should reflect realistic workload distribution and collaborative development.

Risk Identification and Mitigation. Identify potential risks that could affect project success, such as technical challenges, time constraints, or team coordination issues. For each major risk, briefly describe its potential impact and the mitigation strategy your team will adopt.