

## **TIC-TAC-TOE:**

### **Project Timeline**

This timeline will cover the planning aspect of all tasks within the TIC-TAC-TOE branch. Each member is expected to contribute  $3 \times 45$  minutes per week.

### **Planning and Design**

#### **Create planning documents for TIC-TAC-TOE branch**

- Define scope and features of the Tic-Tac-Toe game.
- Create an outline and rough deadlines for task completion.
- **Deadline:** March 5, 2025

#### **Design use case diagrams**

- Draft initial use case diagrams, then refine to final versions.
- **Deadline:** March 6, 2025

#### **Design class structure diagrams**

- Create a class structure diagram detailing interactions of key components (tictactoeBoard.java, tictactoeGame.java, etc.).
- **Deadline:** March 6, 2025

#### **Create use case descriptions document**

- Identify and provide details of different game scenarios (e.g., player move, win condition, tie detection, reset game).
- **Deadline:** March 6, 2025

#### **Review and submit documents for iteration 1**

- Team review, spell-checking, formatting, proofreading, and final submission to D2L Dropbox.
- **Deadline:** March 6, 2025

### **Milestones:**

- team 2 : : iteration 1 Submission: March 7, 2025 (can be seen on Csgit under milestones tab)

## **Risk Assessment & Mitigation Planning:**

Types of issues that can be encountered:

- **Integration Issues:** Different components of the OMG platform may not work together e.g. networking or matchmaking
  - **Solution:** Conduct early integration testing and use stubs to simulate API interactions.
- **Networking failures:** Multiplayer connection issues
  - **Solution:** Implementing extensive unit testing for robust error handling and reconnection fail safes in place.
- **Time constraints:** Team members fail to deliver on schedule
  - **Solution:** Weekly scrum sessions to track progress and task realignment if necessary
- **Game logic bugs:** Unexpected errors or edge cases
  - **Solution:** implementing unit tests and code reviewing.

## **Development and Implementation**

### **Objective:**

Develop and implement a **Tic-Tac-Toe** game with multiplayer support, AI opponent, and game state tracking.

### **Duration:**

- **March 8, 2025 - April 11, 2025** (*Post-iteration 1 to iteration 3 deadline*)

### **Key Features:**

#### **Game Logic:**

- Implement Tic-Tac-Toe rules (win conditions, draw conditions, and valid moves).
- Validate user inputs and game state updates.

#### **Multiplayer Support:**

- Allow two players to play online via networking.
- Support matchmaking and turn-based interactions.

#### **AI Opponent (Optional):**

- Implement a basic AI opponent using Minimax algorithm.

### **User Interface:**

- Build a simple, interactive GUI for the game.
- Display game board, player moves, and end-game messages.

### **Integration with OMG Platform:**

- Ensure Tic-Tac-Toe works within the Online Multiplayer Board Game (OMG) platform.
- Interface with authentication, matchmaking, and leaderboard components.

### **Phase 1: Setup**

**Duration:** March 8, 2025 - March 12, 2025

**Goal:** Establish project structure and finalize design.

#### **Task List:**

- Setup **Git Repository** and branch for Tic-Tac-Toe. *(March 8, 2025 - March 8, 2025)*
- Finalize class structure design. *(March 9, 2025 - March 10, 2025)*
- Stub networking interface. *(March 10, 2025 - March 11, 2025)*
- Plan GUI: Create a sketch for the Tic-Tac-Toe interface. *(March 11, 2025 - March 12, 2025)*

**Milestones:** Setup complete: **March 12, 2025**

### **Phase 2: Core Development**

**Duration:** March 13, 2025 - March 25, 2025

**Goal:** Implement core systems for Tic-Tac-Toe.

#### **Task List:**

- Implement a class to handle game logic and player moves. *(March 13, 2025 - March 16, 2025)*
- Implement win/loss/tie detection logic. *(March 16, 2025 - March 18, 2025)*
- Implement multiplayer communication using networking components. *(March 18, 2025 - March 21, 2025)*
- Develop GUI interactions. *(March 21, 2025 - March 25, 2025)*

**Milestones:** Core mechanics implemented: **March 25, 2025**

### **Phase 3: Integration**

**Duration:** March 26, 2025 – April 1, 2025

**Goal:** Connect Tic-Tac-Toe with the OMG platform.

**Task List:**

- Integrate with authentication and matchmaking systems. *(March 26, 2025 - March 28, 2025)*
- Connect Tic-Tac-Toe with the leaderboard for win/loss tracking. *(March 28, 2025 - March 29, 2025)*
- Implement error handling and logging. *(March 29, 2025 - March 31, 2025)*

**Milestones:** Integration complete: **March 31, 2025**

**Phase 4: Testing**

**Duration:** April 2, 2025 – April 8, 2025

**Goal:** Test all features and fix bugs.

**Task List:**

- Conduct **unit tests** on game logic. *(April 1, 2025 - April 3, 2025)*
- Perform **network tests** to ensure smooth multiplayer gameplay. *(April 3, 2025 - April 5, 2025)*
- GUI **usability testing**. *(April 5, 2025 - April 7, 2025)*

**Milestones:** All tests passed: **April 8, 2025**

**Phase 5: Review**

**Duration:** April 9, 2025 - April 11, 2025

**Goal:** Final refinements and submission.

**Task List:**

- Perform **final code review** and documentation updates. *(April 8, 2025 - April 9, 2025)*
- Prepare **presentation materials** for the project. *(April 9, 2025 - April 10, 2025)*
- Submit Tic-Tac-Toe module for **final integration into OMG platform**. *(April 10, 2025 - April 11, 2025)*

**Milestones:** Project ready for submission: **April 11, 2025**

**Final Notes:**

- Start coding on **March 8, 2025** – the earlier, the better!

- Hold **weekly meetings** with other team leaders to coordinate efforts.
- Conduct **scrum meetings** within the Tic-Tac-Toe team.
- **Branch early, commit often, and document everything** in GitLab.