

# Project with Roles

Python: Tic-Tac-Toe

## Project Overview: Tic-Tac-Toe Game

- **Objective:** Develop a Tic-Tac-Toe game that can be played in the console or a Jupyter notebook.
- **Language:** Python
- **Difficulty:** Intermediate

## Team Roles and Responsibilities

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|----|--|
| 1. | <b>Project Manager (PM)</b>  |
|    | <ul style="list-style-type: none"><li>• <b>Responsibilities:</b><ul style="list-style-type: none"><li>• Oversee project progress.</li><li>• Coordinate team meetings.</li><li>• Ensure deadlines are met.</li></ul></li><li>• <b>Key Deliverables:</b><ul style="list-style-type: none"><li>• Project plan and timeline.</li><li>• Regular progress reports.</li></ul></li></ul> |
| 2. | <b>Lead Developer (LD)</b>   |
|    | <ul style="list-style-type: none"><li>• <b>Responsibilities:</b><ul style="list-style-type: none"><li>• Write core game logic.</li><li>• Ensure code quality and efficiency.</li></ul></li><li>• <b>Key Deliverables:</b><ul style="list-style-type: none"><li>• Core game logic and algorithms.</li><li>• Code documentation.</li></ul></li></ul>                               |
| 3. | <b>Interface Designer (ID)</b>   |
|    | <ul style="list-style-type: none"><li>• <b>Responsibilities:</b><ul style="list-style-type: none"><li>• Design user interface for the game.</li><li>• Implement input/output in console or Jupyter notebook.</li></ul></li><li>• <b>Key Deliverables:</b><ul style="list-style-type: none"><li>• User interface code.</li><li>• User experience report.</li></ul></li></ul>      |
| 4. | <b>Quality Assurance (QA)</b>  |
|    | <ul style="list-style-type: none"><li>• <b>Responsibilities:</b><ul style="list-style-type: none"><li>• Test the game for bugs and issues.</li><li>• Document and report any issues to the LD.</li></ul></li><li>• <b>Key Deliverables:</b><ul style="list-style-type: none"><li>• Test cases and results.</li><li>• Bug reports.</li></ul></li></ul>                            |

## Project Phases

### 1. Planning (Week 1)

- Brainstorming session.
- Finalize project scope.
- Assign roles.

### 2. Development (Weeks 2-3)

- LD develops the game logic.
- ID works on user interface.
- PM coordinates the work.

### 3. Integration and Testing (Week 4)

- Combine code from LD and ID.
- QA tests the game.
- Bug fixing.

### 4. Presentation and Review (Week 5)

- Prepare a presentation of the project.
- Conduct a code review session.
- Reflect on learning and project experience.

## Self-Study Python Package: `numpy`

- **Purpose:** Understanding array manipulations which can be useful for the game board.
- **Task:** Each member should create a small example using `numpy` to manipulate a 2D array.

## Code Presentation and Review

- **Presentation:** Each team member explains their part of the project, focusing on code and design choices.
- **Review:** The team collectively reviews the code for readability, efficiency, and Python best practices.

## Documentation

- **Project Plan:** Outline of the project, timeline, and roles.
- **Code Documentation:** Comments and explanations within the code.
- **Final Report:** Overview of the project, challenges faced, learning outcomes, and potential improvements.

## Final Deliverables

1. Working Tic-Tac-Toe game.
2. Project documentation.
3. Presentation and review materials.

## Tools

- Python (3.x version)
- Jupyter Notebook (for development and testing)
- GitHub (for code sharing and version control)

## Conclusion

This project is structured to ensure balanced participation from each team member, with clearly defined roles and responsibilities. The inclusion of a self-study component and a focus on code presentation and review encourages learning and collaboration. The project aims to provide a comprehensive learning experience in Python programming, problem-solving, and team collaboration.

P.S. – Refer to this [GitHub discussion link](#) for elaborated project details.