

# Project Proposal: Word Scramble Game

## 1. Title

### Word Scramble Game: An Interactive Word Puzzle Using Java and OOP

## 2. Purpose & Problem Statement

- This project aims to develop an interactive Word Scramble Game where players are presented with scrambled words and must guess the correct word within a time limit.
- The game enhances vocabulary, improves spelling skills, and provides fun learning for all ages.
- The problem it aims to solve is the lack of simple, engaging educational games that help users practice and improve their language skills in a playful way.
- The use of Object-Oriented Programming (OOP) is important to maintain structure, reusability, and scalability in the game development process.

## 3. Main Goals & Key Functionalities

- Create a user-friendly console-based game.
- Randomly scramble and present words to the player.
- Take user input and verify correctness.
- Implement scoring system and levels.
- Include a timer for each word to make it challenging.
- Provide hints (optional) and feedback on answers.
- Display final score after game ends.

## 4. Programming Stack

- Programming Language: Java
- Frameworks or Libraries: None (Core Java will be used)
- Database: Not required at this stage (can be extended to store high scores)

## 5. OOP Principles to Be Used

- **Encapsulation:** Use of private data members and public getter/setter methods for player and word details.
- **Inheritance:** Base class Game can be inherited by EasyGame, HardGame, etc.
- **Polymorphism:** Method overloading for scrambleWord() and overriding startGame() based on game type.
- **Abstraction:** Core logic like scoring and word checking will be hidden from direct user interaction.

## 6. Project Phases with Estimated Timeline

- Phase 1: Word list creation and planning (1 day)
- Phase 2: Game interface and basic gameplay logic (2 days)
- Phase 3: Add scoring, timer, hints (1 day)

- Phase 4: Testing, bug fixing (2 day)
- Phase 5: Final documentation and GitHub upload (1 day)

## **7. Final Product Outcomes & User Benefit**

- Engaging console game that strengthens vocabulary.
- Simple UI ensures easy accessibility for all age groups.
- Encourages learning in a fun and interactive manner.

## **8. Summary & Project Impact**

- This project helps bridge the gap between learning and entertainment through a fun and educational word puzzle game.
- It also demonstrates the effective use of OOP concepts in building a maintainable Java application.

## **9. References**

- Oracle Java Documentation
- Stack Overflow
- GeeksforGeeks Java Tutorials
- W3Schools Java Reference