Project Report

Roshambo Game

A Mini Project Report Submitted to UIT

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1. Abstract

The Roshambo game, commonly known as Rock-Paper-Scissors, is a simple yet strategic hand game played by two participants. Each player simultaneously forms one of three possible shapes—rock, paper, or scissors—with their hand. The game follows a cyclical rule system where rock crushes scissors, scissors cut paper, and paper covers rock. If both players select the same gesture, the round ends in a tie.

While the game appears purely random, there are underlying psychological and strategic elements that experienced players can exploit. These include pattern recognition, predicting an opponent's next move, and deliberately randomizing one's own choices to avoid predictability. Roshambo has roots in ancient China and has evolved into a global phenomenon, with professional tournaments, digital adaptations, and numerous variations. The game is often used as a decision-making tool in informal settings and continues to be enjoyed as a simple, universally understood contest of chance and strategy.

2. Introduction

Roshambo or the better known as Rock-Paper-Scissors is a simple and very popular hand game that can be played by two persons. In this game, players simultaneously form one of three possible shapes with their hand: which is also played by many people worldwide with the name of the Scissors Paper Stone game. Last but not least, it goes without mentioning that the game is rather simple since it contains quite basic rules which defined that one of the shapes defeats another shape but loses to the third one. However, the game is suggesting that it is completely a game of luck and yet it involves strategical luck, psychological and patzer recognition and hence enjoyable and challenging.

Roshambo is familiar to every individual, no matter what generation or nationality they belong to; as a hobby, or a way to arrive at a decision, or as a highly professional scientific contest, which keeps people interested in the interaction of the concept's elements – simple and strategic.

3. Objectives of the Project

The main goal of this work is to create an operating vide game Roshambo in Java language which is an implementation of the Rock-Paper-Scissors game. The project aims to:

Implement Core Game Mechanics: This concept involves designing and writing the simple structure of the game in which players can select one of the three options: rock, paper or scissors, and find out who has won the game according to the rules of the game.

Provide an Interactive User Experience: Create a GUI that would enable the players to choose their moves and get the direct outcome of each round of the game either the players win, they lose or it ends in a draw.

Enhance Programming Skills: Use of OOP concepts and java concepts including, classes, methods, conditional statements, loops, and inputs.

Incorporate Randomization for AI Play: Add a computerised opponent that chooses random moves to give the impression of being checked by another person and thereby making it possible to play the game alone.

This project is set up as a practical application assignment, which helps to review and consolidate knowledge of working with Java and at the same time showcase the ability to develop a simple game with basic logic and user interaction.

4. Modules

1. Main Game Loop:

purpose: This is the main entrance of the program, creating the game as well as controlling the overall game cycle.
Functions:
Starting the game
It presents the main menu
It invokes other such sub-components as the module for a player as well as the game logic
It controls user's inputs and outputs
It ends or restarts the game based on the user's input.

2. Player Module:

Purpose: Represents a player (either human or computer).
Functions:
Store player attributes like name and score.
Handle user input (for human players) or randomly generate input (for computer players).
Validate inputs.

3. Game Logic Module:

Purpose: Contains the logic for determining the outcome of the game.
Functions:
Compare the choices of two players.
Determine and return the winner.
Update scores.

4. Input/Output Module:

Purpose: Handle all input and output operations (like reading input from the console and printing Result)
Display prompts.
Get user input from the console.
Display the winner and score updates.

5. Computer Player Module:

Purpose: Represents the computer's choices in the game.
Functions:
Randomly generate a choice between Rock, Paper, or Scissors

5. Benefits

The Roshambo game (Rock, Paper, Scissors) in java has several benefits, ranging from entertainment to educational and cognitive development. Here are some of its key advantages:

1. Quick and Simple Decision-Making Tool:

   Benefit: It provides a quick, unbiased way to make decisions or resolve disputes between two people.

2. Enhances Strategic Thinking:

   Benefit: Though the game involves chance, players can develop strategies by observing patterns in their opponent's choices. Over time, people tend to fall into predictable patterns, and recognizing these patterns helps improve strategic thinking

3. Cognitive and Mental Skills Development:

   Benefit: It requires quick thinking, analysis, and adaptability. As the game progresses, players must adjust their strategies and make snap decisions

4. Cross-Platform Compatibility:

   Java is platform-independent due to the Java Virtual Machine (JVM). Once you compile your Roshambo game, it can run on any platform that supports JVM (Windows, macOS, Linux), ensuring broad compatibility

5. Educational Tool:

   The game can be used to teach beginners fundamental Java concepts. It’s a fun and engaging way to introduce concepts like loops, conditionals, user input, and object-oriented design.

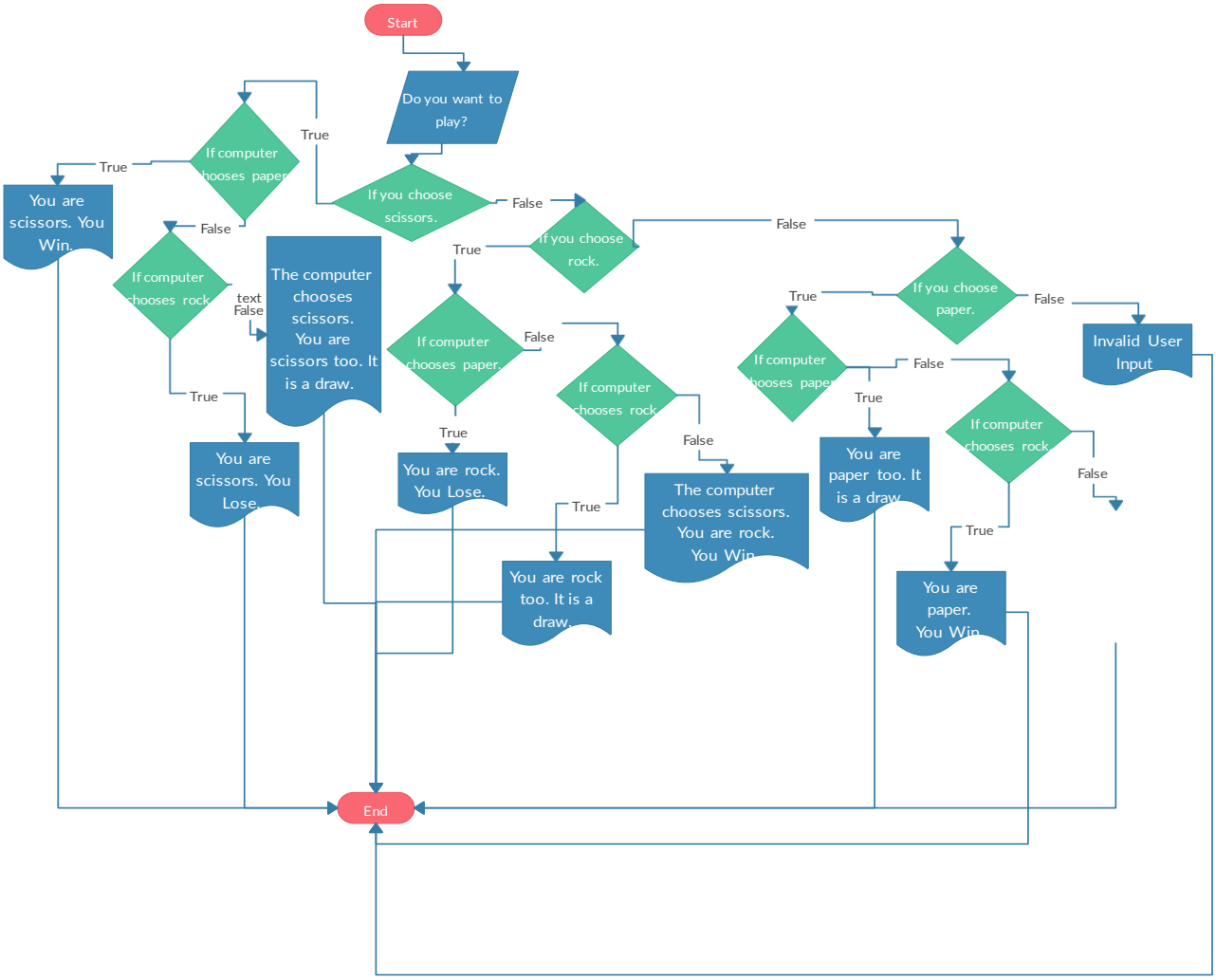
6. Hardware and Software Requirements

• Software Requirement
• Operating System –
➢ Windows O.S
➢ Linux O.S
➢ Mac O.S

• Programming Language-
➢ Java

• Hardware Requirement –
➢ Ram: 200 MB
➢ Secondary Storage: 400 MB

7. Data Flow Diagrams



10. Conclusion

1. Mastered Key Java Concepts
   Developing the Roshambo game provided hands-on experience with essential Java features like object-oriented programming (OOP), control structures, input/output handling, and randomization

2. Enhanced Problem-Solving Skills
   Designing and implementing the game required breaking down problems into smaller components, creating efficient game logic, and ensuring smooth data flow between modules.

3. Reinforced Modular Design
   The project emphasized the importance of modular code, where components such as player input, game logic, and score management were separated for better maintainability and scalability.

4. Practical Application of OOP Principles
   By using classes for players, game logic, and scoreboards, we implemented core OOP principles like encapsulation, inheritance, and polymorphism, making the game more flexible and reusable.

5. Foundation for Future Projects
   The simplicity of the Roshambo game makes it a strong foundation for future development. The game can be expanded with new features such as graphical user interfaces, multiplayer modes, or custom game rules.

6. Cross-Platform Compatibility
   Leveraging Java's platform independence, the game can run on any system that supports the Java Virtual Machine (JVM), demonstrating the strength and flexibility of Java as a programming language.

7. Lightweight, Fun, and Engaging Project
   The Roshambo game serves as a fun and educational project for beginners, providing instant feedback while reinforcing programming concepts in a lightweight and straightforward manner.

11. Bibliography

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