A Report on GAME HACKATHON 2024

Titled

"GameGen: Conquer Algorithmic Challenges in Gaming using Java"

Report Made by

S3K

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FYMCA Sem-II

Academic Year: 2023-24

ISE-2 (DAA and JAVA)

Under the Guidance of

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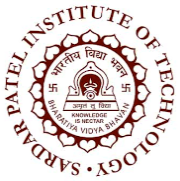

Master of Computer Applications Program

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Group Member Description along with Lates Photo

Group member Name	**Description of the person (Tell about yourself which best describes you as a person and as professional)**
Miss. Swati Gupta	Passionate about web development, having knowledge of HTML and CSS.
Miss. Samruddhi Kulkarni	Having interest in Data Science and front end.
Miss. Snehal Borji	I love Java Programming with a passion for web development, skilled in HTML, CSS, and JavaScript
Miss. Kalyani Bharsat	Passionate about Data Science, web development.

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Table of Contents

1. Description

Overview:

The Diamond Hunter Game is a two-player game where each player controls a character represented by a colored square on a grid. The objective of the game is to collect as many diamonds as possible while avoiding obstacles.

Gameplay:

- The game is played on a grid-based map with randomly placed diamonds and obstacles.
- Players take turns moving their characters using the arrow keys.
- Each player can move their character up, down, left, or right one cell at a time.
- When a player's character reaches a cell containing a diamond, the player earns a point, and the diamond disappears from the map.
- The game continues until all diamonds are collected or until one player decides to quit.

Winning Condition:The player with the highest score (total number of diamonds collected) wins the game.Alternatively, the game can be set to a time limit, and the player with the highest score when time runs out wins.

Visuals: The grid-based map is displayed on the screen, with each cell representing one unit of space.Diamonds are represented by red circles, and obstacles are represented by black squares. Each player's character is represented by a colored square, with Player 1's character colored blue and Player 2's character colored yellow.

Motivation:

1. **Competitive Gameplay**:The game offers a competitive multiplayer experience where two players can compete against each other to collect diamonds and outscore their opponent.Players can strategize their moves to collect diamonds efficiently while hindering their opponent's progress by blocking their path or collecting diamonds near their opponent's character.

2. **Skill Development:**The game requires players to utilize their spatial awareness and decision-making skills to navigate the grid-based map and avoid obstacles.Players need to plan their movements carefully to collect diamonds while minimizing the risk of encountering obstacles.

3. **Social Interaction:**The game encourages social interaction and friendly competition between players, making it an engaging activity for parties, gatherings, or casual gaming sessions.Players can enjoy the game together and engage in friendly banter as they compete to collect diamonds and outsmart each other.

4. **Replayability**:The random placement of diamonds and obstacles ensures that each game session is unique, providing replay value and keeping players engaged over multiple playthroughs.Players can experiment with different strategies and approaches to maximize their score and improve their performance in subsequent games.

Overall, the Diamond Hunter Game offers an entertaining and challenging multiplayer experience that combines strategy, skill, and social interaction, making it a compelling choice for players of all ages and skill levels.

2. Tool Used:-

a. Frontend

- **Java Swing:** Java Swing can be used for the frontend GUI components of the game, including the maze grid, player avatars, diamonds, and obstacles.

- **AWT Graphics:** Java's Abstract Window Toolkit (AWT) provides graphics capabilities for rendering shapes, images, and text within the game window.

- **Event Handling:** Java's event handling mechanism can be used to capture user input from keyboard events and update the game state accordingly.

- **JOptionPane:** Utilize JOptionPane for displaying messages, alerts, and notifications to the players during gameplay, such as winning messages or prompts for multiplayer sessions.

b. backend

- **Java:** Java can be used for the backend logic of the game, including maze generation, collision detection, scoring, and multiplayer functionality.

- **Data Serialization:** You can use Java's serialization/deserialization mechanism to transfer game state between the server and clients during multiplayer sessions.

3. Detail Innovation Description

The Diamond Hunter Game is a captivating maze exploration adventure that challenges players to navigate through intricate mazes, collect valuable diamonds, and outmaneuver obstacles.

1. **Multiplayer Capability:** Enhance the game to support multiplayer functionality, allowing two players to compete against each other in real-time. Players can take turns navigating the maze, collecting diamonds, and avoiding obstacles. You can implement networking protocols such as TCP/IP or WebSocket for communication between players.

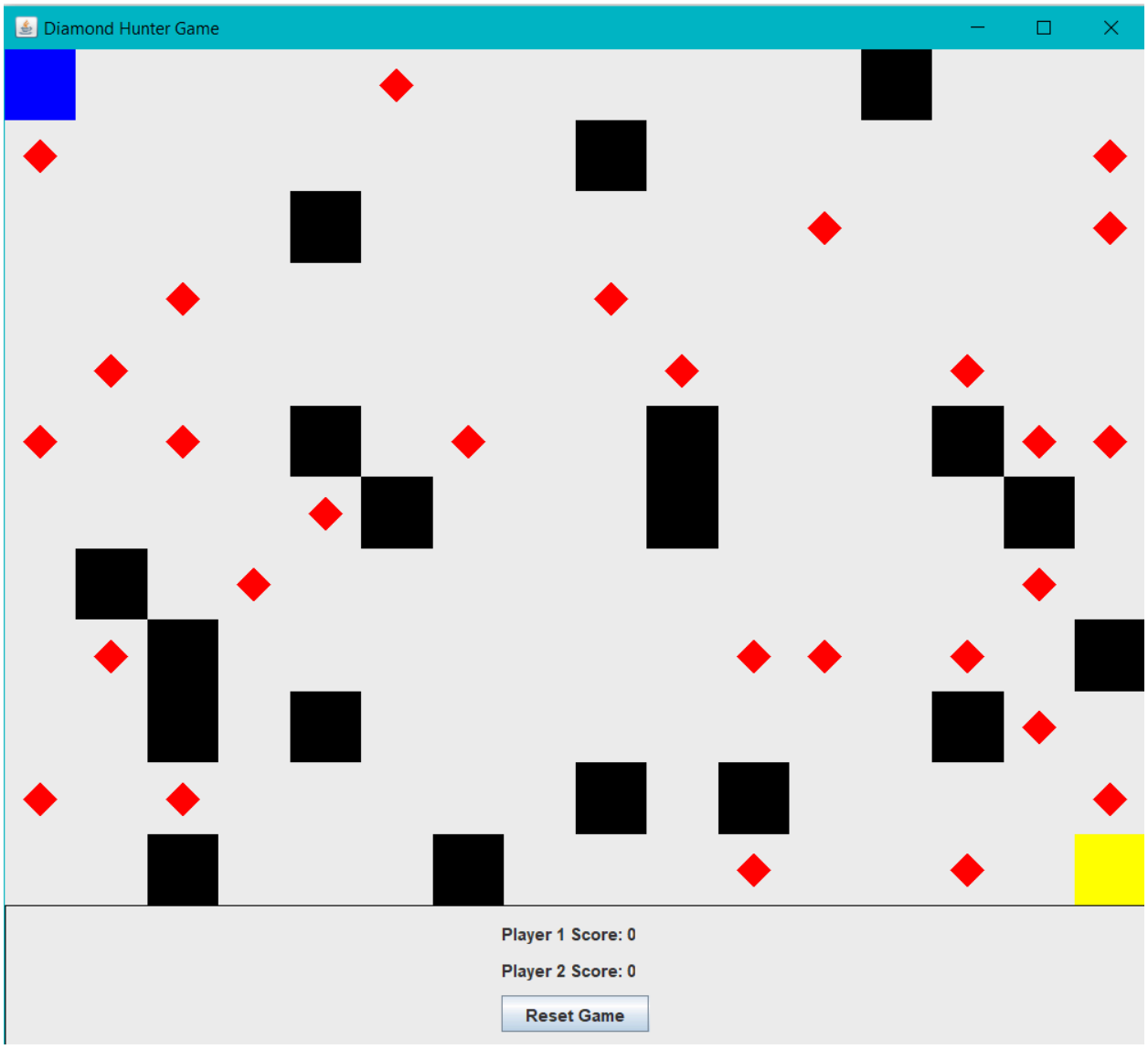
2. **Customizable Maze Generator:** Implement a customizable maze generator that allows players to specify the size and complexity of the maze. This feature adds replay value to the game by providing a variety of maze configurations for players to explore.

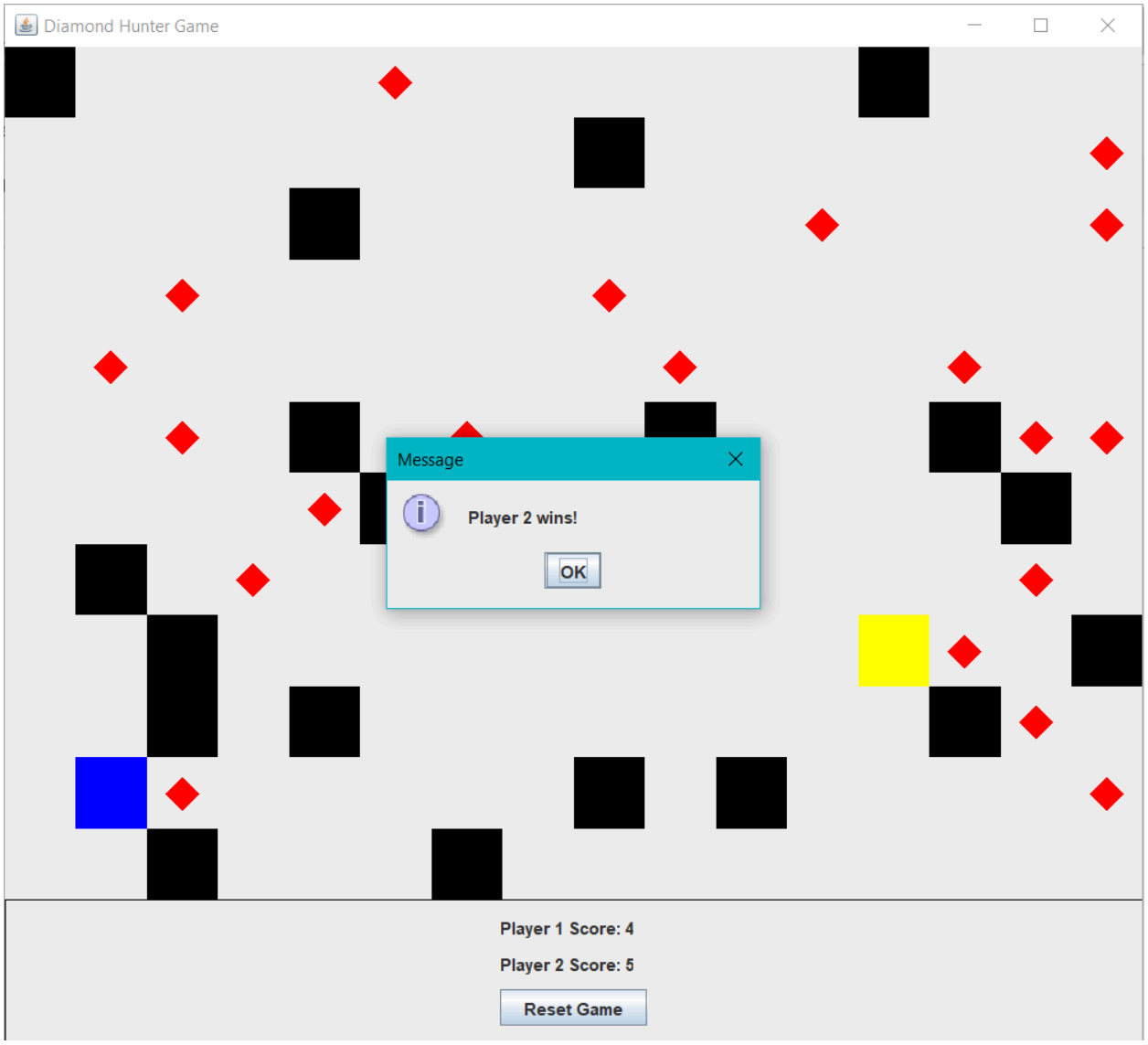
3. **Dynamic Obstacle Placement:** Introduce dynamic obstacle placement where obstacles appear and disappear randomly throughout the game. This feature adds an element of unpredictability and challenge, requiring players to adapt their strategies on the fly.

4. **Power-ups and Abilities:** Introduce power-ups and special abilities that players can collect within the maze. For example, a speed boost power-up could temporarily increase the player's movement speed, while a shield ability could provide temporary invincibility against obstacles.

5. **Leaderboards and Achievements:** Implement leaderboards and achievements to track players' progress and performance. Players can compete for high scores and unlock achievements by completing certain objectives, such as collecting a certain number of diamonds or completing the maze within a specified time limit.

4. Screenshot




Diamond Hunter Game
Message
Player 2 wins!
OK
Player 1 Score: 4
Player 2 Score: 5
Reset Game

5. References

- **https://www.javatpoint.com/breadth-first-search-algorithm**
- **https://www.javatpoint.com/data-structure-tutorial**
- **https://www.javatpoint.com/daa-tutorial**