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Project Documentation



Introduction:

Project Name: Matrix Quest

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Project Overview:

The Hidden Points Game is an interactive multiplayer game played on a 5x5 grid. Players take turns guessing positions to find hidden points randomly placed in the grid.

Purpose:

This project was chosen to explore programming concepts such as Arrays, error handling, file handling and user input validation in an engaging, practical scenario.

Objectives:

1. To practice the implementation of arrays, loops, and conditions in a real-world application.
2. To enhance error handling and input validation skills in C++ programming.
3. To create an interactive game that involves randomness and decision-making.

Tools and Technologies:

Programming Language: C++

Software Used: Dev-C++

Project Design:

Algorithm:

1. Start
2. Initialize the game grid and place hidden points
3. Display the 5x5 grid positions.

4. Accept the number of players (2–4) and their names.

5. For each round:

- Players take turns guessing positions.
- Update scores if a hidden point is found.

6. After 3 rounds, check for a winner or tie.

7. Log the winner's name (if any) to a file.

8. Ask players if they want to play another round.

9. End

Implementation:

This game is implemented in C++ using fundamental programming concepts such as:

Functions: For modularizing tasks (e.g., initializing the grid, playing turns, logging results).

Random Number Generation: To randomly place hidden points in the grid.

Input Validation: To ensure valid player inputs and handle errors gracefully.

Loops and Conditions: For game flow control and decision-making.

The game supports up to 4 players and dynamically tracks scores and rounds.

Testing:

Input	Expected Output	Actual Output
Player guesses 5	“Congratulations, you found a point.”	“Congratulations, you found a point.”
Player guesses 27	“Out of range!”	“Out of range!”
Non-numeric input (abc)	“Invalid Input!”	“Invalid Input!”
Replay prompt: yes	Restarts the game	Restarts the game

Results:

The Hidden Points Game achieves the following:

1. A fully functional 5x5 multiplayer game.
2. Proper error handling for invalid inputs.

3. Random placement of hidden points to ensure a unique game experience.

4. Dynamic score tracking and winner determination.

Conclusion:

This project provided hands-on experience with:

Random number generation.

Handling user inputs and exceptions in C++.

Using modular functions to organize code effectively.

Implementing a real-world game scenario that integrates programming fundamentals.