Project report
Mini Car Game

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Introduction :

The projectis a C language program that implements a car game in console mode. The game takes place on a track, where the player controls a car and must avoid obstacles moving on the track.

The implementation includes features such as user authentication, a scoreboard, and a GUI using the Windows Terminal.

Code Structure Overview:

The code is structured into several sections, each with a specific function. Here are the main sections of the code:

1. Global Variables:

- `i` and `j`: Loop counters.
- `car_position`: Represents the position of the player's car.
- `obstacle_position`: Represents the position of the obstacle car.
- `gameover`: Flag indicating the end of game state.
- `ROWS` and `COLS`: Dimensions of the track.
- `track`: 2D table representing the game track.

2. Database/Linked List-File part:

- Implemented a linked list to store usernames and scores.

- Functions to: -create a new node
  - insert a node at the end of the linked list,
  - save the list in a file,
  - free memory are also provided.

- The file path is specified as "Z:\\Downloads\
\output\\Data_Base (Car_Game).txt".

3. Windows Terminal Functions:

- Various functions to manipulate the Windows terminal.
- Functions for: -delay,
  - hide the cursor,
  - define console colors,
  - print text in the middle of the screen.

4. Game-Related Features:

- Functions for: -initializing the game track,
  - print the track,
  - control the player's car.

- Functions to manage obstacles, collisions and the screen of game over.

- The game involves an increase in speed and difficulty to as the player progresses.

5. Menus:

- Function to display the main menu, with options for start the game, change the username, view the game settings, check the scoreboard and exit the game.

5. Main Function:

- Call the function `getUsername ` to get the username of the player.

- The ` functiongetUsername ` manages the validation of the entry of the user and calls up the main menu.

Conclusion :

Considering the improvement recommendations, the code provides a solid foundation for an interactive console game. With minor adjustments, it can be expanded to include additional features and provide a richer gaming experience.

Possible Improvements:

Adjustable Difficulty:

- Introduce an option allowing the user to choosethe level of difficulty of the game. This may include varying obstacle speeds or more complex tracks.

Improved Scoreboard:

- Modify the scoreboard consultation function to display users ranked according to their score,from highest to lowest . This will make the scoreboard more informative.

Error management :

- Implement robust error handling for file operations and memory allocations.

This will help avoid unexpected program crashes.

Settings Options in the Main Menu:

Add a section to the main menu called "Game Settings " where the user can adjust various settings such as game speed, difficulty level and other visual preferences such asLe graph.

Thank you!