Project Proposal : Shmup Game

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Introduction:

We propose the development of a shoot 'em up (shmup) game using C++. The game will offer an immersive experience for players who enjoy intense battles, and visually appealing graphics. This proposal outlines the key features, target audience, development timeline, and expected outcomes of the project.

Key Features:

1. Input Handling: The game will implement robust input handling to capture player actions, such as keyboard or controller inputs. This will involve using appropriate programming constructs to detect and interpret user input, allowing for responsive and precise controls.

2. Game Loop: The game will employ a game loop that continuously updates the game state and renders the graphics on the screen. The game loop will be implemented using programming concepts such as loops and conditional statements to ensure smooth and consistent gameplay.

3. Collision Detection: The game will incorporate collision detection algorithms to determine if game entities, such as the player's spaceship and enemy objects, intersect or collide with each other. This will involve utilizing mathematical calculations and data structures to efficiently detect collisions and trigger appropriate game events or actions.

4. Game Physics: The game will simulate basic physics principles, such as object movement, acceleration, and gravity. This will require implementing mathematical formulas and algorithms to calculate and update object positions, velocities, and accelerations based on predetermined rules.

5. Power-up System: The game will feature a power-up system that allows players to collect and utilize special abilities or enhancements. This system will involve managing power-up states, durations, and effects through appropriate programming techniques, such as using data structures to store power-up attributes and applying them to the player's spaceship.

6. Enemy AI: The game will employ artificial intelligence (AI) algorithms to control the behavior of enemy entities. This will include implementing decision-making processes, pathfinding algorithms, and attack patterns to create challenging and dynamic enemy movements. Programming concepts such as conditionals, loops, and data structures will be utilized to create intelligent enemy behaviors.

7. Level Design: The game will incorporate well-designed levels with varied challenges and enemy configurations. Level design will involve using programming constructs to define and structure the layout of game elements, enemy spawn patterns, and overall gameplay progression.

8. User Interface: The game will feature a user interface (UI) that provides relevant information to the player, such as score, lives, and power-up status. The UI will be created using programming techniques to display and update information on the screen, as well as to handle user interactions with UI elements, such as buttons or menus.

9. Audio Integration: The game will include sound effects and background music to enhance the overall gaming experience. Programming techniques will be used to integrate audio files, trigger sound events, and adjust volume levels based on specific game events or actions.

10. Data Persistence: The game will implement data persistence mechanisms to save and load game progress, scores, and settings. This will involve using programming techniques to read and write data to external files or databases, ensuring that player progress is retained across gaming sessions.
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Testing Approach:

During the development phase, we might add some more features to the game and also edit the UI of our program. Maybe we will add a saving score function or others, depending on what is necessary or better to improve our game.

Conclusion:

In conclusion, the development of a Shmup game presents an exciting opportunity to deliver an immersive and enjoyable gaming experience. By incorporating engaging gameplay, power-ups, challenging boss battles, and captivating visuals and audio, we aim to create a game that appeals to be fun and meets the course requirement .