FIRST PERSON SHOOTER GAME PROJECT REPORT

Engine Version: Unreal Engine 5.6

Project Template: Third Person Template

Development Period: 21 August – 31 August, 2025

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1. PROJECT OVERVIEW

This project implements a First Person Shooter (FPS) game using Unreal Engine 5.6. The game features a custom playable character, shooting mechanics with reloading and ammo pickups, enemies with AI behavior, and inheritance-based weapon/enemy systems.

The project satisfies all core requirements and includes additional challenge features such as reloading, inventory-based ammo management, enemy AI, player health, and weapon switching.

2. ASSETS USED

2.1 CHARACTER

Asset Link: https://www.fab.com/listings/15e2afd1-11c0-4679-832c-ebbfb6162583
Implementation:
- Imported as the player character.
- Retargeted animations from the UE5 Mannequin Skeleton.
- Fully functional in FPS template with movement, looking, and shooting.

2.2 ENVIRONMENT

Asset Links: https://www.fab.com/listings/b1817d54-07b6-48b6-8a48-081e91161544
Implementation:
- Modified and optimized environment for FPS gameplay.
- Added collision adjustments and lighting refinements.
- Integrated MP5 model as one of the player's rifles.

2.3 RIFLE

Source: Sketchfab MP5 Pistol and Link: https://sketchfab.com/3d-models/mp5-pistol-c346457524654ecd984865060e08dc4f
Implementation:
- Imported as one of the player's rifles.
- Different properties set via inheritance (magazine size, damage, fire rate).

2.4 ENEMIES

Asset Link: https://www.fab.com/listings/9fdd1645-600d-460f-be4b-0b6421b7cf38
Implementation:
- Base Enemy Blueprint with movement, attack, and health system.
- Created 3 inherited enemy types:
  - Enemy A → Low HP, fast movement, low damage.
  - Enemy B → Balanced HP and damage.
  - Enemy C → High HP, slow movement, high damage.

3. CORE REQUIREMENTS IMPLEMENTATION

3.1 FIRST PERSON CHARACTER

- Used UE's First Person Template.
- Replaced mannequin with custom character.
- Player fires projectiles/line traces from the gun on mouse click.

3.2 SHOOTING SYSTEM

- Implemented line trace shooting.
- Fire rate system prevents infinite fast shooting.
- Added muzzle flash effect and gun sound.

3.3 TARGETS

- Static and moving targets placed in the map.
- On hit → targets destroyed or change color.

3.4 SCORING

- Destroyed targets increase score.
- Score displayed on UMG HUD.

3.5 GAME FLOW

- Timer set to 60 seconds (default).
- When timer ends → final score shown with "Play Again" option.

4. CHALLENGE FEATURES

4.1 RELOAD & AMMO SYSTEM

- Player starts with limited ammo.
- Press R to reload (only works if ammo is in reserve).
- Destroyed targets spawn ammo pickups → stored in inventory.
- Player can reload anytime if ammo is present.

4.2 ENEMY AI

- Enemies move towards player.
- If enemy reaches player → player loses health.
- Each enemy has unique stats (HP, damage, speed).

4.3 HEALTH SYSTEM

- Player has a visible health bar.
- HP decreases when enemies deal damage.
- Game ends if player's HP reaches 0.

4.4 WEAPON SWITCHING

- Player can switch between:
  - Pistol → Larger magazine, lower damage, faster fire rate.
  - Rifle (MP5) → Smaller magazine, higher damage, slower fire rate.
- Both weapons inherit from a Base Gun Blueprint.

4.5 MENU SYSTEM

- Main Menu → Start Game, Exit.
- Options Menu → Choose game duration (30s, 60s, 90s).
- End Screen → Shows final score and replay option.

5. INHERITANCE-BASED SYSTEM

- Weapons:
  - Base Gun Class → Pistol, Rifle (different magazine size, damage, fire rate).

- Enemies:
  - Base Enemy Class → Three enemy variations (different HP, damage, speed).

6. RESULTS

- FPS prototype completed within the set duration (21–31 August, 2025).
- Fully functional shooting, reload, scoring, timer, and enemy system.
- Inheritance ensures scalability for new weapons and enemies.
- Game loop successfully implemented with replayable flow.

7. CONCLUSION

This FPS project built in Unreal Engine 5.6 demonstrates asset integration, animation retargeting, modular game system design, and AI-driven gameplay. It satisfies all fundamental requirements and successfully integrates challenge features like reload system, ammo pickups, health system, weapon switching, and menu customization.

The project is a solid foundation for future FPS expansions, including advanced AI, multiplayer, or new maps.