

# COMP 4300 Final Project Proposal

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In this project I will be making a 2D Shooter Game in C++ using the SFML library. The genre of the game will be 2D Platformer. The game will contain 4 Levels in total where the first three levels are going to be game levels and the fourth level will be a Boss Battle.

The elaboration of mechanics in this game are as follows.

## **Mechanics:**

**Collisions:** Collisions will be used very frequently in the game. For example, to detect interaction between enemies and bullets, and interactions between enemies and player will also be detected using bounding box when they are very close to each other. Collisions will also be used for player to jump and the player's interaction with different entities across the levels. Player will be able to pick up a weapon which is in the level using the collision detection. The player will then be equipped with the weapon which they can switch and use against other enemies.

**Weapons/Bullets:** Different weapons like bullets and area damage will be in the game. Bullets will kill one enemy at a time, however, area damage will damage multiple enemies if they are in range. The player will also have a third melee weapon.

**NPCs:** NPCs will act as enemies. NPCs will try to kill player with their own bullets and will try to get close to player to kill them with their touch. Enemies will have pathfinding, shooting, and some enemies will only follow a particular path.

**Moving Tile:** Different areas of the game will have moving tiles across the levels to make the level more interesting and challenging for the player.

**Damage/HP:** Player will take damaged if hit by the enemy or if the enemy touches the player. Collision detection will play an important role here to determine damage. The player will have multiple lives and they will be able to respawn if they die.

**Status Effect:** Player will have invincible effect for a certain period with one effect. Other effect will do more damage to enemies which will also last for only few seconds.

**Inventory:** Player will have an inventory where the player can choose options to select weapons and special powers.

**Ray Casting:** It will be used to detect if enemy can see the player. If flying enemies detect player below them, then they will drop bombs on the player. This will be achieved by using ray casting.

**Light Sources:** Some dark areas of the level will require the player to use a source of light to see clearly and avoid obstacles.

**Gravity:** Gravity will be applied on the player and the player will fall of the map if not standing on a solid object.

**Camera View:** Focus mode will help player look more closely at the level.

**Pathfinding:** Some enemies will use path finding to follow the player and chase them to get close to them and try to kill them.

**Game Progression:** The world map will show where the player is and if all the levels are unlocked the player will also be able to start another level directly.

**Save/Load:** The game will have a save load feature where player will be able to save when the game progress as they cross the level and will be able to play the level where they left off at a later time.

**Shaders:** Shaders will be used on the boss or any special enemy in the level.

**User Interface:** The game will have user interface which will help the player navigate before the game starts and to continue/quit the game.

**Sounds:** Background music will always be playing in the background and the music will change as the level changes.

**Options:** Options settings will help the players set the game according to their requirement. For instance, the difficulty of the game will increase more damage on the player from the enemy and the player will also have less life. Music volume will be used to manage the volume in the game. Player will also be able to rebind the keys to their requirement.

**Level Editor :** All the levels in the game can be made by the level editor. The Loading/ Saving and editing of the premade levels can be done by the level editor.

In the end when the player completes the game by winning the Boss Battle, the game will have a game over/credits scene.