Game Design Document: Top-Down Shooter

1. Game Overview

- **Title**: [To Be Determined]
- **Genre**: Top-Down Shooter
- **Engine**: Godot 4.4
- **Target Platform**: PC
- **Player Experience Goal**: Fast-paced, tactical shooting against waves of enemies with resource management and upgrades

2. Core Gameplay

- Player Mechanics:
  - WASD movement
  - Sprint (with cooldown)
  - Shoot in direction of aim
  - Reload system with clip and reserve ammo
  - Ammo pickups spawn randomly
  - Health system with dot-based UI
  - Player death with respawn menu
- Enemies:
  - Zombie-type AI chases player
  - Damages player on contact
  - Dies on taking enough bullets
  - Spawns using CollisionPolygon2D bounds
  - Planned: multiple enemy types & waves

3. Controls

Action	Key	Description
Move	WASD	Directional movement
Shoot	Left Mouse Button	Fires a bullet
Reload	R	Reloads weapon
Sprint	Shift	Temporarily increases speed

4. UI Elements

- **Health UI**: Red dot indicators in HUD
- **Ammo UI**: `Clip / Reserve` count, lower-left corner
- **Reload Message**: Centered text "Press R to Reload!" flashes on key press
- **Death Screen**: Appears on player death, includes Respawn button

5. Systems

- Spawning System:
  - Uses a CollisionPolygon2D to define spawn area
  - Random points picked within polygon for enemy and ammo spawns
- Ammo System:
  - Clip and reserve tracking
  - Reload only allowed when clip isn't full and reserve has bullets
  - Ammo pickups add to reserve
  - Timer with "One Shot" prevents reload spam
- Wave System:
  - Planned: Hybrid time-based and kill-based wave logic
  - Future: Different enemy types per wave

6. Art & Audio

- **Visual Style**: Using Kenney.nl assets for top-down sprites and tiles
- **Planned FX**:
- - Muzzle flashes
- - Damage flashes
- - Reload animation (TBD)
- **Sound**: (TBD)

7. Scenes & Scripts

- **Main Scenes**:
- - `Main.tscn` – world root
- - `Player.tscn` – player with movement, shooting, health
- - `Enemy.tscn` – AI-controlled chaser
- - `AmmoPickup.tscn` – collectible for reserve ammo
- - `HUD.tscn` – UI canvas with health and ammo display
- **Key Scripts**:
- - `Player.gd`: Handles input, shooting, sprinting, health, ammo
- - `Enemy.gd`: Basic AI movement and damage
- - `Spawner.gd`: Spawns enemies using polygon area

- - `WaveManager.gd`: (In progress)

8. Future Features / Wishlist

- Multiple enemy types (e.g. ranged, fast movers)
- Wave system with boss rounds
- Upgrades (ammo capacity, health, speed)
- Sound effects and music
- Pause menu & settings
- Save/load functionality

9. Technical Notes

- Godot 4.4-specific features used:
- - `CollisionPolygon2D` for spawn areas
- - Scene-based modular architecture
- - Timer nodes with `One Shot` for reload logic

10. Level Design

The game will feature multiple levels that unlock progressively after a certain number of waves. Each level will increase in difficulty through faster enemy spawns, tougher enemies, and denser enemy waves. A hard limit will define the final level, leading to a potential end-game or victory screen. New levels will be created and loaded dynamically as the player progresses.

11. Enemy Types

- Zombie Types: Melee enemies that chase the player and deal contact damage.
- Shooter Types: Ranged enemies that attempt to maintain distance and shoot projectiles at the player.

12. Upgrade System

- Different Weapons: Shotguns, rifles, or SMGs with unique stats.
- Enemy Drop Powerups: Temporary buffs such as health regen, ammo refill, damage boost, or speed boost.

13. Suggested Additions

- Game Progression Tracker: Display wave number, level number, and difficulty.
- Enemy Spawn Preview: Small indicators or shadows that show where enemies will spawn.
- Dynamic Music System: Intensity increases with wave number or enemy presence.
- Achievement System: Optional objectives like 'No Damage in a Level', 'Perfect Reloads', or 'Kill X with Y weapon'.
- Statistics Screen: Post-run summary of kills, shots fired, accuracy, waves survived, and time played.
- Difficulty Modes: Easy, Normal, Hard to adjust spawn rates, enemy health, and player resources.

14. Weapon Stats

Weapons will be differentiated by various stats that impact gameplay and player strategy. Example stats include:

- **Pistol**: Standard weapon, moderate damage, average fire rate, low ammo capacity
- **Shotgun**: High burst damage, short range, low fire rate, limited ammo
- **SMG**: Fast fire rate, low individual damage, high ammo capacity, low accuracy at range
- **Rifle**: High accuracy, moderate fire rate, good damage, medium ammo capacity
- **Sniper** (Planned): High damage, slow fire rate, very limited ammo, long reload time

15. Enemy Behaviors

- **Zombie**: Slowly follows the player; deals damage on contact; basic pathfinding
- **Fast Zombie**: Runs at high speed; low health; dies quickly but hard to avoid
- **Tank Zombie**: Slow but high HP; knockback-resistant; designed to absorb bullets
- **Shooter Enemy**: Maintains distance from player; fires projectiles; uses predictive movement
- **Boss Enemy** (Planned): Appears at end of wave set; combines multiple behaviors; has special abilities like dashing or summoning minions

16. Visual Mockups (Text Descriptions)

To better visualize gameplay, below are descriptive mockups of the user interface and gameplay screen layouts.

- **HUD Layout**: Health dots in the top-left corner, Ammo counter in the lower-left, Reload prompt appears centered when needed.
- **Gameplay Screen**: Top-down view with player sprite in center, enemies approaching from all sides, pickups glowing slightly for visibility.
- **Death Screen**: Fullscreen overlay with darkened background, 'You Died' text in center, 'Respawn' button below.
- **Wave Transition**: Flashing text shows 'Wave Complete' and next wave number; pause between waves for pickups.
- **Level Transition**: Fade to black, then fade into new map layout with increased enemy spawn rate.