**Bullet Hell Sim**

**MDA: Aesthetic Goals**

I want to make a game that is **challenging** while also fulfilling a **fantasy (or very aesthetically pleasing).** The way to win is to be an untouchable gaming god.

I want to make a simple 2D topdown projectile hell sort of game, or at the very least some game that is skill expressive.

I will make the game challenging by forcing the player to gather coins while dodging projectiles until the point threshold is met. You can make it easier by freezing time, but that costs points and coins do not spawn.

Signs I have succeeded: it is challenging, but fair. Deaths are not “the game’s fault” but the “player’s fault” if that makes any sense.

Signs I have failed: too challenging, borderline frustrating (projectiles are too fast, projectiles spawn too close to the player and feels unfair, or game drags out too long).

The game will be fantasy-like with the help of colorful sprites and backgrounds. The goal is to be aesthetically pleasing. Maybe like a feeling of being high in the sky in some sort of dogfight.

Signs I have succeeded: sprites are colorful and fantasy like, and sounds are fun.

Signs I have failed: sprites are uninspiring and boring, and sounds are uninspiring.

**Core loop:**

Dodge incoming projectiles to survive. Collecting coins while dodging projectiles gives you points. The player can freeze time momentarily for a breather at the cost of some points. When the player hits a point threshold, they win the game. If they get hit, they lose.

survive->collect coins->repeat

**Devlog:**

**11/13/2022**

Created Player script. The player has tight arrow controls (not addForce) and the freeze time mechanic (spacebar). Time can be frozen for X seconds by pressing the spacebar when time has not been frozen. Added audio clip to time freeze (on the player).

Created Projectile script. The projectile is a box and orients itself to the player and adds force based on the position of the player when the projectile was initialized. The projectile freezes when time is frozen by the player, but restores its velocity when time is unfrozen. The projectile also faces the player when spawned in. Projectile destroys itself when it hits a box or player, and can phase through other projectiles.

Created wall objects. They’re walls with Collider2Ds. The player cannot pass through it and projectiles get destroyed if they touch it.

**11/14/2022**

Created Spawner script. Spawner randomly spawns a prefab of the projectile every X seconds within a location (the bounds of the box). Spawner also tries to avoid spawning near the player or the wall.

Bugs: time unfreeze will “catch up” and spawn extra projectiles. I think that this could actually be an interesting feature: as a caveat to freezing time, projectiles will still spawn, but you don’t know where.

**11/15/2022**

Game is complete!

Created ScoreKeeper, Coin, “you\_died” (gameover) scripts.

ScoreKeeper keeps track of points and terminates the game when a point threshold is reached. The game can now terminate if you die or if you win the game.

Freezetime now deducts (2) points.

Coins will add points to ScoreKeeper when you collect them, and they will destroy themselves. Scorekeeper plays an audio clip when the player wins.

The “Coin\_sound” script, which is attached to an invisible GameObject, was created as a workaround to play a coin\_pickup audio clip, because I could not for the life of me figure out how to either a) store and play two unique audio clips on a single gameobject or b) attach the audio to coin and play it without it being lost by Destroy().

“You\_died” displays a “YOU DIED” or “Victory!” text depending on how the game ends (there are various booleans to keep track of that). Additionally, it plays a death sound if you die.

Modified Spawner script so that it can spawn coins as well, but only when there are no other coins available (I did this with a bool whose value I modify in the Unity editor).

Fixed time unfreeze bug. I’ll just increase the projectile spawn rate to make the game harder, since the game is playable without time freeze at this point anyways.

Added tons of sprites!! The game looks very pretty now.

**Postmortem**

I set out to make a less intense 2D Touhou-like minigame (sort of like Undertale fight mechanics). Originally I thought about recreating a phase from a fight in Undertale (Undyne) with similar graphics. It’s still Undertale inspired (white box) but I changed my mind about much of the aesthetics later. By the end I was just trying to create a working 2D projectile hell simulator because I realized that’s what it basically was.

Something I wish I could’ve done better is the spawning mechanic. I think it would be more fair and fun if the projectiles spawned further from the player (like, outside the box), but accelerated much quicker towards the player. By the time I realized that this is more of what I wanted, I had almost finished the game, so I just stuck with it. It’s not like my current spawning mechanic is bad anyways.

Something I’m unsure of was game balance - I ended up making time freeze only deduct 2 points instead of 5. I think the fun of the game actually comes from playing without time freeze, and it’d be a different game to make players have to rely on freezing time.

Time freeze then becomes a mechanic for the game to be more accessible to people who don’t have much experience with these sorts of games, and the low point cost encourages people that it’s OK to freeze time.

The audio source and audio clip stuff still confuse me because it’s really unintuitive in my opinion. I wrote some pretty unorganized code to get audio clip stuff working and I would probably tidy that up if I had more time. I’m learning that Unity has a lot of caveats that we have to consider (for example, not every script updates at the same frame, and Destroy() can have weird behavior if you want to do something and call it in the same frame).

I successfully made a 2D bullet hell sim though. Or something resembling that genre. I wasn’t planning on going insane with the bullets anyways. I’m happy that the time freeze mechanic works just as intended and I’m happy I was able to find the sprites and sound clips.

My last project didn’t really need to use Prefabs, but it was essential in this project, so I learned a lot about how to use them (even though they’re not that complicated).