STAR SHOOTER

Design Document for:

Star Shooter

The Sci-Fi Top-Down Shooter

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Version # 1.00

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Design History

Version 1.00

Version 1.00 includes some key parts of the game overview, such as the game pitch, gameplay summary, and target audience. Here is what we changed:

1. We wrote the game pitch and the defense of the game pitch.
2. We wrote a summary of the gameplay.
3. We defined the target audience and how our game appeals to them.
4. We used the philosophy section as a place to note ideas and keep the links to potential assets.

Version 1.01

Version 1.01 includes the initial details of the game world and characters and the game overview from the previous version. Here is what we changed:

1. We determined the game setting and universe where Star Shooter will take place.
2. We created a character sheet for the protagonist and antagonist
3. We researched and defended our design choices for the setting and characters

Version 1.02

Version 1.02 includes the story overview of the game world. Here is what we changed:

1. We determined the exposition of the story
2. We made the character have the call to action
3. We researched and defended our story written choices.

Version 1.03

Version 1.03 includes an overview of the gameplay and mechanics. Here is what we changed:
1. We determined the core mechanics, player actions, conditions, reward/punishment systems, and challenges
2. We researched and defended our implementations of what was learned in Principles of Modeling and Simulation

Version 1.04

Version 1.04 includes an overview of the Level Design. Here is what we changed:
1. We determined the level design paper map that shows what a piece of the game would look like
2. We researched and defended our design choices for the level as well as what makes good level design

Game Overview

Game Pitch

Star Shooter is a top-down sci-fi shooter game with pixel art that offers gamers round-based challenges. The player must fight through endless waves of enemies, upgrading weapons to achieve a new high score. A loadout of standard weapons can temporarily be enhanced by collecting a power-up for

special weapons. Boss enemies will appear at breakpoint rounds as a sign that the difficulty is about to ramp up.

Our game pitch aligns with our research of components of a good game pitch because it is concise and informative while maintaining a clear vision. It is important for a game pitch to be concise and informative because the goal is to sell the idea of our game within a small window of time. Our game pitch focuses on the bigger picture and gameplay mechanics, rather than less important aspects such as story/ background and filler industry buzzwords.

Game Summary

The player will start with a pistol and earn more standard weapons by completing rounds. Standard weapons can be swapped on the go allowing the player to adapt their playstyle to the given situation. Enemies will spawn outside of the screen, track the player, and attack when they get too close. Upon defeating an enemy, the player's score will go up and there is a chance to drop a power-up.

Combat is fast paced, as most enemies have low health values and will die in only a few shots from the player. The player will sport a similarly small health pool and will only be able to survive a few hits from most enemies before going down. As a result, the player must prioritize consistently avoiding attacks to survive, while also defeating enemies in a timely manner to avoid becoming overwhelmed. If a player takes damage without dying, they will be able to regenerate health from a pickup dropped by defeated enemies.

Like many arcade games, Star Shooter is intended to be endless, only ending once the player has run out of lives. Because the game only ends in the event of the player's inevitable failure, several metrics are taken to gauge the player's performance at the end of the run; these metrics may include the number of rounds the player survived, the total score they achieved, and/or the number of enemies they killed.

Target Audience

Our target audience is directed towards teens and older who enjoy action-paced sci-fi adventures and fast gameplay. The audience is drawn towards combat that gets more intense and strategic with their movement, guns, and power-ups while appreciating a game that offers quick satisfaction and replay ability to achieve higher rounds and better scores. Those who like futuristic themes with pixelated artwork will also find Star Shooter to be a great game.

The projected ESRB rating of the game is set for T for Teen as it has some fictional violence, stylized action, use of fictional guns, and lack of heavy graphic violence. We intend to target this audience as teens are highly active in gaming and have a sizable crowd that is geared towards action-packed games that can be played casually or competitively. This allows people to create a community whether it's strategizing, having a leaderboard system to see who the best is, along with sharing their experience of the game with others.

The game can target the teenage audience by having
- Progressive Gameplay: With the round-based system, enemies become more difficult while players unlock better weapons is designed to keep teens engaged by offering steady progression of the levels and difficulty.
- Sci-Fi Theme: The game has a futuristic world along with pixel art that appeals to teens especially as more games with pixel art get more attention towards this group recently.
- Skill-Based Progression: Teens are drawn to games where they can show off their skills whether it be to family or friends, or to see their own growth, and Star Shooter is able to cater to that competitive nature.
- Short but Engaging Sessions: With round-based gameplay and increasing difficulty, Star Shooter appeals to teens who want bite-sized sessions of gameplay that could be played between homework, on the go, etc.

Philosophy

- Singleplayer, arcade-style shooter
- Health system: Player generally dies in 3 or so hits
- Types of enemies? Default, Bosses, slow + armored, fast + low hp,
- Stat tracking: score, round, time, # enemies defeated, # bosses defeated
- Leaderboard: score, round, score + time, round + time (speedruns)

FREE ASSETS:
https://assetstore.unity.com/packages/2d/environments/pixel-art-top-down-basic-187605 (BG TILESET)
https://assetstore.unity.com/packages/2d/environments/brown-rock-tileset-top-down-32x32-pixel-art-281170 (BG TILESET)
https://assetstore.unity.com/packages/2d/characters/2d-character-astronaut-182650 (ASTRONAUT)
https://assetstore.unity.com/packages/templates/packs/top-down-gun-pack-35277 (GUNS)

PAID ASSETS:
https://assetstore.unity.com/packages/2d/sci-fi-2d-top-down-shooter-graphics-275888 ($5; SCI FI SHOOTER)

The Game World

Game Setting

Star Shooter takes place during an alien invasion on a somewhat futuristic version of Earth. The player must survive an onslaught of alien soldiers by taking up defensive positions in various ransacked buildings (e.g. apartments, offices, laboratories) throughout Nexus City (name pending), the first city besieged during the war with the alien armada. As the player survives further into the invasion, they eventually gain the opportunity to take the war to their extra-terrestrial invaders, boarding alien spaceships and placing them in far more hostile and unfamiliar environments as the game ramps up in difficulty. In the meantime, they are stuck in the city where terror rises and the environment is dangerous for the average citizen living there. Because of this, there is not much interaction to be had as there is chaos ensuing, the most is citizens pleading for help, injured, or aliens communicating with one another as they conquer the city. However, the player is left with the weapons they have on them and resources dropped from the aliens and citizens as a means of surviving through the onslaught. The player must take down the aliens and their base of headquarters in the city before moving on to the next area.

Universe

Nexus City, and the cause of the invasion

The landing point of the alien invasion. Several months prior to the start of the game, humanity discovered a breakthrough in superluminal communication technology known as "Void Propagation", allowing messages to be sent millions of light years away in the span of mere days. In an observatory on the outskirts of Nexus City, astronomers immediately began to put this new technology to work, transmitting messages to distant galaxies in the hopes of contacting alien civilizations. Upon receiving no response, it was assumed by the researchers that there existed no alien civilizations advanced enough to detect their communication attempts, or that those who could detect these attempts lacked the means to respond in kind.

Unbeknownst to humanity, their call was received by astronomers of the Volarian Empire, an extraterrestrial empire with aims to conquer the Laniakea Supercluster.

Volarian Empire

A ruthless empire lead by Emperor Volaros, the "Conqueror of the Abyss". The Volarian empire has its sights set on Earth due to humanity's discovery of Void Propagation, a technology which functions off of the very same principles as Volaros's void-manipulation abilities. By seizing control of Earth, Volaros believes that he can harness the power of this new technology in conjunction with his own powers to send entire armadas to distant galaxies beyond the original reach of his powers.

In order to claim Void Propogation technology as their own, the Volarian Empire has been sent to attck Nexus City directly, as it has been identified as the origin of the superluminal message which contacted the Volarian empire.

Energy Weapons

Advancements in human technology have led to the widespread adoption of energy-based weaponry. Compared to ballistic firearms, energy weapons do not need to be reloaded unless the battery is fully depleted and can be recharged from a variety of sources. This becomes crucial during the player's journey, as humans discover a means of siphoning energy from technology recovered from alien combatants, allowing the player to recharge their weaponry even in the middle of combat.

The Physical World

Overview

The immediate setting of Star Shooter is in a scientific laboratory on Earth in Nexus City that specializes in the development of advanced space technology and weaponry. This made the lab a high priority target for alien invaders who want the research for themselves.

Key Locations

Lobby: the first room in the building and where our player will start and encounter the first enemies.
Research Labs: larger rooms where important research is stored and will have many enemies

Travel

The player will traverse the building going from room to room, exploring the area and defeating enemies. There will be staircases to ascend to the next floor, but all enemies must be cleared before going up.

Scale

The scale of the player and enemies will be realistic in respect to each other. However, the laboratory will be scaled within reason to provide engaging combat and exploration—the floor plan will be designed to favor gameplay rather than a realistic laboratory layout.

Objects

Various items can be found for the player to use, that include:

Powerups, they will spawn from defeated enemies as a means to help the player advance in the wave of enemies

Guns, these will grant better methods of getting past the enemies

Environmental objects, these includes walls, boxes, rocks, pits, and such as a means of cover or hazards that the player considers when strategizing how to get through the waves.

Time

The game's time is anomalous, as the player and enemies move in real time but the battles themselves are done in a quick fashion to promote intense but fast paced gameplay. This means that the waves of battles can be short or long but intense depending on how far the player is into the game as it gets more difficult with enemy types and quantities of enemies.

Game Characters

Overview

Our main characters consist of the protagonist, Seren Orin, and the antagonist, Volaros. Serin Orin is a bounty hunter who mainly cares about getting his bounties done whereas Volaros is an alien tyrant who plans on expanding his empire. Both characters are at odds with one another when Seren is hired as a mercenary to stop Volaros and his reign of terror.

Main Characters

Character: Protagonist
☐ **Full Name: Seren Orin**
☐ **Nickname(s): The Lone Wanderer**

General Statistics:
☐ Gender: Male
☐ Age: 30
☐ Height: 5'10
☐ Weight: 200 lbs
☐ Occupation: Bounty Hunter
☐ Social/Economic Status: Surviving off the money he makes from the bounties, somewhat stable but could have better sources of income. Seen as a threat and unapproachable due to his line of work
☐ Appearance Description: Young man who wears a suit for his bounty missions and is somewhat muscular.
☐ Image: (from ChatGPT)

Personality:
- Alignment: True Neutral
- Governing Trait: Pragmatism and Discipline
- Conflicting Trait: Compassionate and Recklessness
- Pet Peeve(s): Unfinished bounty
- Greatest Hope: Completing the ultimate bounty to set him for life
- Greatest Fear: Messing up a high stakes bounty
- Greatest Triumph: Has not failed a bounty he has accepted
- Greatest Tragedy: The death of his fiancé, Lisa
- Moral and Religious Views: Morally irrelevant – Tries his best to not think of moral standpoints, especially after his line of work and the loss of his wife, however deep inside he wants what is best for everyone. And he is agnostic, does not really deny or believe in any god, but knows his work would bring conflict with how he would be viewed from those gods.

Favorite & Least Favorite:
(can be made up if not grounded in our known reality)
- Book: Here One Moment by Liane Moriarty (it was his fiance's favorite book to read)

- Animal: German Shepard
- Food: Chicken Pot Pie
- Color: Blue
- Song: Fly Me to the Moon by Frank Sinatra
- Sound: Spray of bullets

What do they do when they are…:

- Happy: Does a faint smile, recalls back to the time he felt most happy with his fiancé and remembers how good the feeling of being happy is.
- Afraid: He remembers he needs to get the job done and needs to stop thinking about how he feels
- Confused: Tries to remain calm and analyze the situation, is prone to making rash decisions from time to time if aggravated
- Sad: If he is at his lowest he goes and visits his mother, otherwise he goes to an isolated area to be alone in his thoughts.
- Bored: Messes around with his gun, and might do some maintenance on them
- Angry: Walks around somewhat aimlessly as a means to subdue his anger
- In Love: He thinks of his previous lover Lisa and instantly loses feelings for anyone else
- Frustrated: Throws items and objects around, if he has a pistol with him he will use shoot something inanimate even if it is not his property
- Threatened: Gets fueled with a sense of adrenaline and lets his instincts take over

Special Talents/Skills/Abilities:
(not specific moves in the game, rather how you might describe what a friend is gifted at)
Determined: Will do what it takes to get the job done, even at his final moments.
Rarely fazed: Tries his best to not think morally of the job he does, yet there have been very few cases where he has been hesitant/showed remorse in what he has done.
Jack of all Weapons: Is solidly efficient at wielding a variety of weapons as a result from the numerous bounties he has taken over the years

Relationships:
(significant family and friends, their names, and relationship with each)
Had a fiancé named Lisa, they had been together for almost a decade, was unfortunately killed in a revenge plot for one of his successful bounty missions.

Had a father named Gerald Orin, served in the intergalactic military for most of his life, retired, and died from natural causes.

Has a mother named Jess Orin, worked on a farm in one of the planets protected by the intergalactic military most of her life, currently resides at her farm house and rarely sees her son after the loss of his fiancé.

Character: Antagonist
Full Name: Volaros
Nickname(s):   The Void Tyrant, Conqueror of the Abyss

General Statistics:
- Gender: Genderless (alien)
- Age: 4214 years old
- Height: 12 ft 6 in
- Weight: 666 lbs
- Occupation: Supreme Ruler of the Volarian Empire
- Social/Economic Status: Tyrnat with unlimited access to wealth and resources as desired.
- Appearance Description: Massive figure cloaked in darkness with ambiguous alien features and dark purple skin
- Image: (Generated by ChatGPT)

Personality:
☐ Alignment: Lawful Evil
☐ Governing Trait: Cunning and Aloof
☐ Conflicting Trait: Stubborn and Compulsive
☐ Pet Peeve(s): when his subordinates fail to meet his demands
☐ Greatest Hope: Death—hoping for an honorable death
☐ Greatest Fear: Death—fears a dishonorable death
☐ Greatest Triumph: Conquest and Establishment of the Volarian Empire
☐ Greatest Tragedy: Death of his best pupil—Volt
☐ Moral and Religious Views: Survival of the Strongest—the weak deserve to be laborers or to perish

Favorite & Least Favorite:
(can be made up if not grounded in our known reality)
☐ Book: Art of War by Sun Tzu; No least favorite book—knowledge is power
☐ Animal: Void Wyvern; Space Cockroaches
☐ Food: Space Chicken; Anchovies

☐ Color: Black and Dark Purple; White and bright colors
☐ Song: Lux AEterna by Metallica; Baby Shark by Pinkfong
☐ Sound: The screams of the subordinates who fail him; Children laughing

What do they do when they are…:
☐ Happy: Doesn't kill their subordinates for a minor inconvenience
☐ Afraid: Lashes out at their closest and most trusted subordinates
☐ Confused: Does everything in their power to better understand the situation to regain control
☐ Sad: isolates themselves in their throne room
☐ Bored: plays games—intergalactic 5D chess mostly; juggles small black holes
☐ Angry: becomes even more cruel to their subordinates
☐ In Love: no libido—their only love is conquest
☐ Frustrated: throws as many resources as it takes to ease the frustration
☐ Threatened: uses their subordinates as shields

Special Talents/Skills/Abilities:
Superior Intelligence augmented by many years of experience on the battlefield, making them a masterful tactician; Naturally Gifted at manipulating the Void—allows them to warp space to send troops to where they are required on the battlefield; Can juggle up to 5 small black holes

Relationships:
Views all their closest subordinates as pawns to do their bidding; Only close relationship was with a pupil named Volt, who died a dishonorable death on the battlefield fighting for them.

Enemies and Monsters

The main enemies are aliens from the Volarian Empire, who seek galactic conquest. Their leader, Volaros, can manipulate the void to warp troops to where they are needed on the battlefield. Most of the enemies are weaker foot soldiers that are led by stronger commanding officers (bosses). The alien foot soldiers, and their officers vary in strength with the stronger officers leading the stronger foot soldiers. Volaros sends out the weakest regiments first as they are the most expendable among the vast Volarian Armada.

Research & Defense (Setting & Characters)

What makes a great video game character is how immersive the player feels towards interacting with them when playing the game. They should feel some sort of attachment to the characters whether its positive (ex: rooting for the good guy) or negative (ex: wanting to see the downfall of the villain) and continue playing to see how their interactions develop more as the game progresses. As for the setting, it is important to narrow the focus of setting in the beginning, especially for some genres such as RPGs. If the game is going to have a lot of settings and heavy storytelling, it is best to make sure to start off slow in the beginning to not overwhelm players, especially those new to your game. Another way to build the setting is naturally through the player playing the game, along with what makes sense in the realm of the setting they are currently in, the culture, skills, objects, etc.

Research references:
https://bankuei.wordpress.com/2014/08/18/writing-setting-for-play/
https://www.pluralsight.com/blog/film-games/what-makes-a-great-game-the-key-elements-of-successful-games

The 3 design choices that we are implementing to be considered great choices we have made are
  1. The villain and how we know it is the villain. This is done in the fashion of the villain's traits being that they punish their subordinates when they don't do what is asked of them.
  2. The governing and conflicting traits for the protagonist. Seren is a bounty hunter and highly values getting the job done, however, he is human, therefore he is prone to showing a bit of morality and

rashness in rare cases but he does his best to only focus on the bounty. This could work out with the optional game mechanic to save the scientists as although for the player it is to increase their score, it represents that the protagonist may have the heart to not let those in need perish.

3. The immediate setting, we make sure that the beginning of the game is narrowed down and the player knows what is going on so that they are not confused or that there is too much going on when starting the game.

Story

Story Overview

Seren had been consumed by grief for years after the death of his wife, unable to move on from the loss. His best friend, deeply concerned, urged him to return to bounty hunting. Seren, once a renowned bounty hunter, had the skills to make a difference. His friend saw the potential for those skills to be put to good use, instead of watching Seren waste away in his sorrow.

But Seren refused. He couldn't forget that his wife's death was the result of a revenge plot from one of his past bounties. The fear of losing someone else close to him made him reluctant to return to the dangerous life he'd once led. His best friend, sensing the depth of Seren's pain, gave him space, allowing him more time to grieve.

Time passed, and Seren remained isolated until his best friend returned, this time with dire news. Earth was under attack by an alien force led by a Volarian commander. The invasion was devastating, and a huge bounty had been placed on the commander's head. This was no ordinary mission—it was a chance for Seren to reclaim his purpose and put an end to the threat. His friend urged him to take up arms once more. Reluctantly, Seren agreed.

With his resolve hardened, Seren set out for a top-secret weapons laboratory that had already been attacked by Volarian forces. The years of isolation had not dulled his abilities, but the emotional scars remained. As he ventured through the lab, Seren encountered fierce resistance from the alien troops, battling his way through the building to save as many scientists as he could along the way.

The deeper he ventured into the lab, the more gruesome the scene became. On the upper floors, Seren found the bodies of slaughtered scientists, their brutal deaths stirring painful memories. The horror of seeing them reminded him of the way he had found his wife after her murder. Sadness, grief, and rage filled his mind, almost overwhelming him as he pushed forward.

Finally, on the top floor, Seren came face-to-face with the Volarian commander interrogating the head scientist. The scientist, defiant even in the face of death, refused to give up any information about the lab's secret systems. Seren knew the stakes and confronted the commander in an intense battle, one that tested every ounce of his skill and endurance.

With the commander defeated, Seren rescued the scientist and stopped the aliens from accessing the lab's top-secret weapon schematics. It was a hard-fought victory, but the war was far from over. As Seren descended the lab, he was confronted with the aftermath of the invasion—the destruction left behind by the aliens and the cost of his battle to stop them.

Outside, Seren was greeted by the surviving scientists. For the first time in years, he felt something shift inside him. He realized that, while he could never bring his wife back, he could still use his talents to protect others and prevent further loss. Seren's path became clear.

Returning home, he was visited by his best friend once more. They spoke of the invasion and what lay ahead. Seren, now with a renewed sense of purpose, vowed to continue his fight against the Volarian

Armada. His ultimate target: Volaros himself—the one responsible for Earth's suffering. Seren, the bounty hunter, had returned, ready to face his greatest challenge yet.

Quests

Help Scientists:

Requirements: Reach the level to where the scientists can be found
Quest Giver: A scientist that passes by you trying to escape lets you know there are others trapped in the building
Quest Turn-in: As soon as the all the scientists are saved a visual cue (such as a counter) will go up (like 5/5 scientists saved) and will automatically be turned in after meeting the criteria
Quest Description: There are multiple scientists who are being kept hostage after the alien invasion, it is up to you to rescue them
Objectives: Find the Scientists, kill the aliens nearby, then make contact with the scientists
Dialog Start Text: "Hey, you there! I barely managed to escape but I know there are a few of us still trapped inside, I want to save them but I am badly wounded, will you help us?"
Dialog Complete Text: "Thank you so much for saving them, I know you are here on a mission but going out of your way to help us means so much, we will never forget what you have done!"
Dialog Incomplete Text: "Have you managed to find all of the staff left behind yet?"
Rewards Received: Player's overall score is increased by 10000 points.

Unlock Lightning Gun:

Requirements: Reach the first level with the research notes to start the quest
Quest Giver: Research notes about a powerful special weapon locked behind a vault in the 5th level
Quest Turn-in: Open the vault on the 5th floor with all 3 security codes
Quest Description: Research notes made mention of scattered security codes on the floors above that are required to open a vault that stores a powerful weapon that harnesses the power of lightning
Objectives: Find the security codes on the 2nd, 3rd, and 4th levels; unlock the high security vault on the 5th level; claim the weapon
Dialog: Start Text: As you examine the research notes, a diagram catches your eye—a vault hidden on the 5th level, housing a weapon of unimaginable power. Scattered across the floors above are the codes required to unlock this vault. If you can gather them, the lightning weapon will be yours. But time is of the essence—aliens won't wait for you to find the codes!
Dialog: Complete Text: The final code clicks into place, and the vault hisses open. Inside, you find the weapon, crackling with the electricity. The research notes weren't lying—this power will change the tides of battle.
Dialog: Incomplete Text: You've yet to unlock the vault. Without all the security codes, it remains sealed, its powerful contents just out of reach. The missing codes must be hidden on the 2nd, 3rd, or 4th levels. Keep searching.
Rewards Received: Lightning gun

Kill enemies with Pistol:

Quest title
Gunslinger
Requirements
Rescue a scientist in Level 1.
Quest Giver

Obtained during a dialogue with the rescued scientist during the transition between Levels 1 and 2.

Quest Turn-in

The player may attempt to turn in the quest during any transition between levels after the quest starts.

Quest Description

"The scientist I rescued managed to steal a powerful energy pistol from one of those aliens. He's reluctant to give up his only means of self-defense, but implied he could be persuaded if I prove my worth with my own pistol."

Objectives

Kill 50 enemies using only your energy pistol.

Dialog: Start Text

"I wish I could thank you properly for saving me, but I have nothing to give…"

"...Well, that's not entirely true. I suppose there is one thing: I managed to steal a pistol from one of those alien troopers before it could kill me."

"It's a powerful little thing, too! Not like the ones we have on Earth. One pull of the trigger and anything I pointed it at practically turned to dust!"

"But… this is my only weapon. I'd give it to you if I could, but unless you can zap enough aliens for the both of us, I don't think I'm making it out of this invasion alive without it."

Dialog: Complete Text

"Wait, is that your pistol?! It looks like it's seen better days… how many…?"

"..."

"There are a lot of civilian lives on the line. Even if I'm defenseless without it, I can't justify hording firepower like this for myself."

"So here… take the pistol I found. You could probably shoot down the entire armada by yourself with this thing, going off of what you can do with that peashooter of yours… no offense."

"Just… uh… could you trade me yours? I'd at least like a *chance* at survival, you know?"

Dialog: Incomplete Text

"Still doing alright? Good to see we're both still in one piece. Even with alien tech on my side, I've already had a few close calls…"

Rewards Received

An upgrade to the pistol, granting higher damage and reduced energy consumption per shot.

Research & Defense (Story)

What makes a great story within a video game involves many factors. The story must be credible so that the player is able to believe in the story and the characters set in it, it must be coherent so that there is no irrelevant parts but rather a connection between all the moments to create a whole experience, and it must be meaningful in the sense that the player is able to be interested in the story and potentially identify with the characters. In addition, the setting is an important aspect as it is what describes the universe that the game takes place in, and keeping matters consistent within that defined world space will create an immersive experience. Not only that, but rewards are a key tool in helping keep the player interested throughout the story whether it is an item or progression to the next part of the story. This allows players to be motivated to continue the story. Lastly, the way the story is played out is important, as there are different amount of ways this can be handled, whether its through in game cutscenes, silent storytelling, scripted events, and more.

Research References:
https://www.gamemarketinggenie.com/blog/things-a-good-game-narrative-needs#:~:text=Tension%2C%20excitement%2C%20big%20wins%2C,needs%20to%20be%20immersive%20too.

The 3 story writing choices that we are implementing to be considered great choices we have made are:

1. The reason why Seren is starting his journey. His backstory is a tragic one yet after helping the scientists he realizes how much of an impact he is making and the actual dangers that the Volarian pose to the fate of Earth. This is coherent as he first is reluctant to take on such a mission because of his past, but because of the encouragement of his friend and after his first success within this long mission, he understands the true importance of what is to come from the Volarian empire.

2. The settings and the game world make sense with the story. In this universe, we have defined that Earth is highly advanced and therefore having the Volarian Empire target Earth to obtain such technology makes sense and not attacking just to attack. It also makes sense why the first part of the game takes place in the laboratory and serves as a beginning for what is more to come throughout the rest of the game.

3. The past of Seren, creates an interesting yet meaningful engaging story as the player is able to see that this character has suffered by losing a loved one. However, despite this and with the help of his friend, he marches forward, living and going through such hardships in his journey to do what needs to be done to save the world and in a way accept the loss and move on but never forgetting the moments he had with her. This allows players who have suffered from losing a loved one to not give up and that despite the hardships faced in life it is possible to move past such tragic moments.

Gameplay & Mechanics

Core Mechanics

The core mechanisms that Star Shooter will focus on are progression and tactical movement. The progression of the game will focus on clearing levels with incremental difficulties and upgrading the weapon loadouts for more diversity in gameplay. Each level will have waves of enemies and breakpoint levels will have a boss enemy for the player to overcome. As the player advances through the levels, they will find new weapons to augment their loadout, or complete optional questions for weapon upgrades or special weapons. The tactical movement in Star Shooter derives from the swarming enemies the player must evade and defeat. Different types of enemies will have various quirks in their pathfinding that the player must account for, such as a ranged enemy keeping their distance or a bulky enemy shielding their allies. The various types of enemies paired with a diverse weapon loadout allows the player to come up with numerous strategies depending on their play style—a shotgun would allow for a fast-paced run-and-gun playstyle, where an LMG promotes a spray-and-pray playstyle. Physics will play a minor role in mechanics when determining how projectiles function.

Player Actions

The player is able to engage with NPCs to do a story quest to help them get better weapons, along with 8 directional movement and the player's ability to shoot the weapons they have equipped. In addition, the player will be able to pause the game as well as adjusting settings such as volume to make sure they have an enjoyable experience on their end.

Main Challenges

The main challenges in Star Shooter are physical coordination, namely reaction time, accuracy, and precision. As tactical movement is a core mechanic in the game, the player will need to react to where enemies are and have precise/ accurate aim to defeat them in a timely manner before being overwhelmed.

Pattern recognition of enemy types and level design (when replaying for a high score) will allow the player to make decisions quicker than before. Exploration is optional but can allow the player to find hidden quests that will set them up for success in the long run. Player improvement measured by score is the overall goal when playing Star Shooter.

Winning/Losing/Termination Conditions

As Star Shooter is intended to be endless until the player's inevitable failure, there is no true "victory condition" within the game. Victory is instead determined by relativistic factors, such as whether the player succeeded in surpassing a prior high score before their defeat.

The losing/termination condition is reached when the player character dies without any remaining extra lives. When this happens, the player's score (assuming it is high enough) is logged to an in-game leaderboard, and the player is returned to the title screen. All other progress made during that playthrough is completely wiped; the next time the player starts the game, they will be returned to the start of the game with the default number of lives and weapons, with no additional powerups or collectables from previous runs.

Rewards System

The reward system in the game includes gaining access to new weapons, accessing the next round of the game after completing the current round, having their score go up for every enemy defeated, and getting limited time power ups dropped from killing enemies. These are able to have the player feel accomplished by knowing they are advancing throughout their game while having a way to measure how well they are doing with the points system and round system, and having weapons and power ups to help make the journey to advancing the game more fun and enjoyable, and a bit easier as well. Each playthrough is able to bring competition to themselves as they would want to try again and see if they can get a better score and/or survive longer in the game.

Punishment System

The punishment system involves the player's health meter being decreased when they get hit by enemies. As simple as it sounds, we want to make it so that various enemies do different amounts of damage. An example would be that lets say the player has a base of 150HP, weak enemies in the beginning would do little damage per attack, taking away 10HP, but as the player progresses they meet different types of enemies such as a big slow melee enemy that has a lot of health but if you get too close and it attacks, it takes away 50HP of the player, and so on to balance the enemies so that there is a challenge but it is not underwhelming or nearly impossible.

Research & Defense (Gameplay & Mechanics)

The 3 ways that our gameplay and mechanics will be implementing aspects from Principles of Modeling and Simulation are the following:

1. Using mathematical models to help balance elements such as health and damage, by creating formulas that determine how these attributes scale as the player reaches further rounds and the enemies become more difficult by having a way to check the game's difficulty progression and fine tuning the parameters for the player challenges

2. Using statistical modeling for AI decisions such as the randomness in powerups dropping from enemies to make sure it is unpredictable for players to know when they will get them but at the same making it balanced

3. Using physics modeling to simulate bullets traversing the screen by incorporating formulas that adjust the acceleration, deceleration or incorporating forces like gravity towards the bullets.

Level Design

Level Paper Map

Rooms/Hallways: ▢
Player: 🙂
Enemies: ✖
Quest Item: ▯
Power-up: ◇
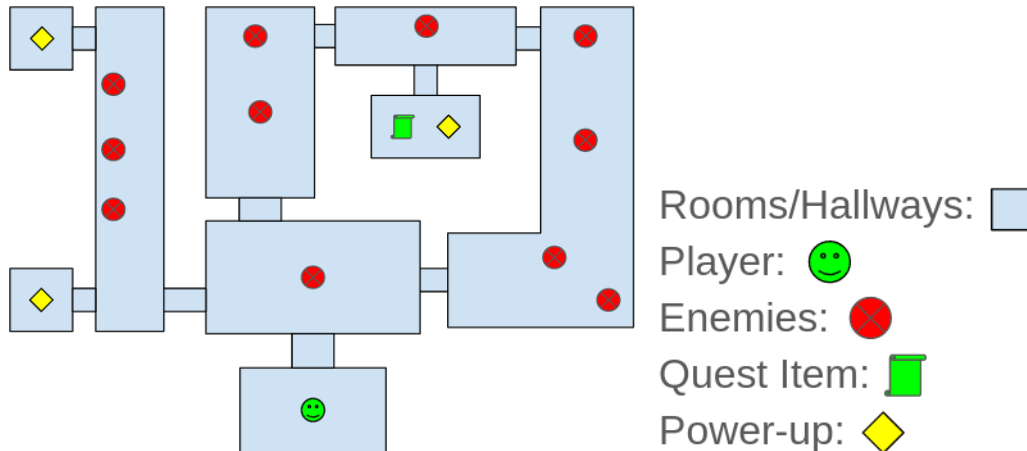
Research & Defense (Level Design)

What makes a good level paper map goes into detail on how the design of the level is. It includes elements such as pathways, spawn zones for the player and enemy, the terrain types, along with rewards, quests, doors, checkpoints, special trigger events, and such. There is a key that represents what all the elements in the map mean. For the pathways there is a critical map that is important that displays what the path to reach the end when the player does not explore at all.

As for level design, what goes into it are the form and function, flow, pacing, set design, atmosphere, landmarks, and invisible tutorials. The form and function are important as it allows the level design to have a purpose instead of just being a level, as this allows the level to not have any areas that feel off place or unusable. Having flow allows the player to be directed in the level and encourages the player to move, and pacing builds off that flow at which the player stops or is slowed down to experience challenges, such as different types of challenges so that the game is not constantly just one type of action. As for set design, allowing the environment to be realistic within the game world allows it to tell a story, set in the tone, and as well as the mood. Getting into the mood, many factors play a role in playing into this, the position of light and the color are important in setting the time of day and reflection of the level, weather effects allow various experiences, and audio plays a key role as it plays into visuals seeming realistic, setting the pace of the level, and ambience. Invisible tutorials allow instructions of how gameplay mechanics work be incorporated subtly without direct telling of it. It works best when the player at first glance does not recognize it as a tutorial at all.

The 3 ways that our level design map is justified is
1. The critical path for this game is getting rid of all the enemies without interacting with anything else, as this level is only ended once all the enemies are gone
2. The secret paths would be the quest item and power-ups as it is an optional reward but once done grants the player benefits.
3. The enemy locations are plentiful yet just enough for this level to provide a challenge for the player traversing the area.

References:

https://inworld.ai/blog/game-ux-best-practices-for-video-game-tutorial-design