Silver Dragon Studio

Project Parkour Bullet Hell

Game Design Document

Contains studio policies, contact information, and schedule availability for all team members

Team Name

Silver Dragon Studio

Game Name

Project Parkour Bullet Hell

Engine Version

Unreal Engine 5.2.1

Team Member	Degree Program	Pref Role	Email	Availability
Ashe Bravo-King	Game Design Online	Systems/UI Design	caking1@student.fullsail.edu	Every Day: 7am-10pm
Caleb Wharton	Game Design Online	Level Design	clwharton@student.fullsail.edu	Varies Week to Week
Dylan Gaumer	Game Design Online	Systems Design	dwgaumer@student.fullsail.edu	Every Day: 10am-12am
Leon Stusalitus	Game Development Online	Programmer	lbstusalitus@student.fullsail.edu	Mon-Sat: Anytime
Thomas Morin	Game Design Online	Programmer	tjmorin@student.fullsail.edu	Every Day: 2pm-12am

Silver Dragon Studio Charter

Expectations and guidelines for the members of Silver Dragon Studio

Mission

Our mission is to create an exciting and meaningful gaming experience that showcases each of our unique specialties.

Values

1. **Quality of Work** - Produce work we are all proud of without taking shortcuts.
2. **Mutual Respect** - Respect for all team members to ensure a safe and professional place.
3. **Proper Time Management** - Manage one's time to improve workflow and quality with the team.
4. **Communication** - Proper communication with the team to keep a constant flow.

Bios

- **Thomas Morin:** I have great experience with blueprint scripting in Unreal Engine 4/5 and have some experience in AI Design and UI Design (created a mini-game using UI widgets in a game). I have been learning more about the Niagara system in Unreal Engine and I plan to further my skills with it. I have also found out there is a way to make animations for a character model in UE5 which I plan to learn. I play a lot of different genres of games, but my favorite are RPGs.
- **Caleb Wharton:** I am proficient in Level Design, UI Design, Combat Design, and Systems Design. I want to further my skills as a Level Designer and Combat Designer. While I haven't done extensive work with complex AI, I have implemented simple AI systems in 4 projects and have experience working with AI. I play a lot of action/adventure games, as well as RPGs, and various competitive multiplayer games (Rocket League, CSGO, etc.)
- **Ashe Bravo:** I have solid experience with blueprint scripting and limited AI experience. My focus is systems design and modular coding. I am also very interested in the production side of things with analytics, workload balancing, etc. I have quite a bit of experience working in vector art software designing logos, fliers, and more recently UI elements for my game projects. I play an eclectic combination of space sims, speed-running games, roguelikes, and cozy farming sims (Star Citizen, Neon White, Hades, and Stardew Valley respectively).
- **Dylan Gaumer:** I am committed full-time student becoming a proficient Game Developer with a specialization in Game System and Technical Design. Games offering virtually boundless replay potential, regardless of their vintage, is something I hold in the highest esteem. I'm particularly drawn to games like Baldur's Gate 3 that excel in uniting players within the realms of their collective adventures.
- **Leon Stusalitus:** I am a full-time online Game Development student proficient in C++ and C#. I have a strong understanding of 3D math, the application of physics in a game environment, data structures and common game development design patterns. I can create code which accomplishes desired functionality for a game engine; I utilize my problem solving skills to figure out solutions to bring new behaviors into the game. I really enjoy competitive multiplayer games, and have found myself drawn to hardcore PvP survival games, currently enjoying Dark and Darker in between Baldur's Gate 3 progression with some of my friends on a multiplayer run-through.

Roles and Responsibilities

- **Ashe Bravo**

    - Systems Designer
- **Caleb Wharton**
    - Level Designer, UI Designer, Generalist
- **Dylan Gaumer**
    - Technical Designer
- **Leon Stusalitus**
    - Gameplay Programmer
- **Thomas Morin**
    - Blueprint Scripting, Basic AI Designer

Processes

- **Communication**
    1. Hold Standup Meetings at least once every other day on discord.
    2. Message in discord if late/issues come up
    3. Confluence Page will contain meeting notes
- **Decision-Making**
    1. Bring up the decisions in the meeting
    2. Brainstorm and weigh pros/cons
    3. Vote (Majority Rule)
- **Problem-Solving**
    1. If there are any technical/design problems, communicate the issues on discord
    2. Refer to online references or review old classwork/projects

Rules of Conduct

- No overworking to health deterioration
- Speak respectfully to other team members
- Communicate with the team
- Be punctual
- Always strive for your best quality work

Additional Content

- Unreal Engine 5.2.1 - to create the game
- Discord - for basic communication and stand up meetings

Individual Statements of Commitment

I, **Thomas Morin**, will fulfill all responsibilities and roles given to me to the best of my ability for my team.

I, **Caleb Wharton**, promise to fulfill all responsibilities and commitments that have been outlined in this team charter.

I, **Ashe Bravo-King**, will fulfill the duties and responsibilities assigned to me to the best of my ability.

I, **Dylan Gaumer**, will fulfill all responsibilities and duties assigned to me to the best of my ability.

I, **Leon Stusalitus**, will fulfill all responsibilities and duties assigned to me to the best of my ability.

Expected Unavailability

Anticipated dates or times that availability will be different to your typical availability

Team Member	Date/Time	Reason
Ashe Bravo-King	Oct 20-23, 2023	Gaming/Networking Convention in Los Angeles

Genre

Defines the target genre of Project Parkour Bullet Hell

First Person Roguelite Hack and Slash Platformer

Identity

Establishing the core identity of Project Parkour Bullet Hell

Players use a wealth of movement abilities to navigate complex environments, all while dodging a storm of incoming attacks, destroying any enemy that gets in the way to gain resources until they die and do it all over again with the resources and knowledge they gained along the way.

Design Pillars

Defining the design pillars of Project Parkour Bullet Hell

Tight Movement:

Movement must be responsive and give the player complete control over their avatar. The player should never feel like the avatar did something that they did not intend that resulted in their death.

Focused Levels:

The level design must be challenging to navigate but easily understood, giving the player opportunities to use their skill and the avatar's abilities to conquer the course. Levels should feel like an enemy unto themselves.

Intuitive Combat:

Combat should be challenging but intuitive with enemies that are easily understood and avatar abilities that are intuitive to control. Combat should facilitate movement through the level, not hinder it.

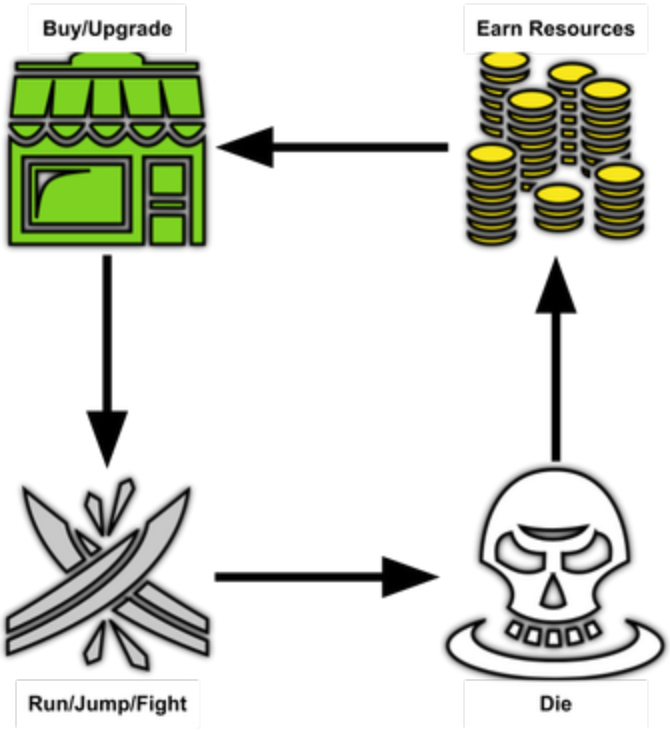
Meaningful Upgrades:

Upgrades and power-ups should meaningfully change the gameplay experience, unlocking new aspects of traversal and combat both on the levels ahead of them and on the player's next run through the game.

Core Gameplay Loop

Core Gameplay Loop

- Run, Jump and Fight
- Earn Resources
- Die
- Buy Upgrades and Restock



Reference Games

Reference games, their mechanical breakdowns and elements that the team wants to draw from

Neon White

Research and mechanical breakdown for reference game 1

Neon White

Video References

https://youtu.be/MmmXw2n8nec?si=ecl7vrN1U1zcuXL8

https://www.youtube.com/watch?v=5c-FzmupggY&list=PL2EaZp2MxQ5td0nvzhFMCV1ZtE4KOSfve

Screenshot Ideas

Notes

- What do you do in the game? How is it played?
  - As White, you run, jump, attack, and use abilities to complete the level as fast as possible.
- What is the core gameplay loop?
  - Traverse levels
  - Eliminate Enemies
  - Collect weapon cards
  - Use weapon cards
  - Complete level
  - Repeat level for time, rewards, and collectibles
- How does the camera work?
  - Neon White uses a stable first person camera with very little bob or sway
- How tall is the player in measurable units?
  - White is about 2m tall

- Using the player's identified unit scale, how high can they jump?
  - 6m (3 avatars tall)
- Using the player's intensified unit scale, how far can they travel in a second?
  - About 5-6m/s when not on water
- How do you win a level, scenario, or puzzle?
  - Complete the level faster than the platinum time on the level.
- What are ways the player can lose, or be defeated?
  - Take damage or fall off the map 3 times.
- What makes it good?
  - Levels are complex and have multiple paths including intentionally placed shortcuts to help the player reduce their completion time
  - Focused, simple mechanics that are used in each level with very little fluff.
  - Cards and their limitations give players meaningful choices and tradeoffs.

Ghost Runner

Research and mechanical breakdown for reference game 2

Ghostrunner

Video References

https://www.youtube.com/watch?v=HdYamt9zWR8 https://www.youtube.com/watch?v=zsjaRHMr088

Screenshot Ideas

Notes

- What do you do in the game? How is it played?
  - As Jack, you run, jump, slide, dash, attack and use special abilities to defeat enemies and traverse Ghostrunner’s dynamic levels.
- What is the core gameplay loop?
  - Traverse the environment
  - Attack enemies
  - Die
  - Learn the level
  - Repeat
- How does the camera work?
  - Ghostrunner uses a stabilized first person camera with limited bob and sway added, along with some FOV dilation to help create the feeling of speed
- How tall is the player in measurable units?
  - Jack’s model is about 2m tall
- Using the player's identified unit scale, how high can they jump?
  - Jack can jump about 2m (about avatar height)
- Using the player's intensified unit scale, how far can they travel in a second?
  - Jack runs approximately 10m/s
- How do you win a level, scenario, or puzzle?
  - Kill all necessary enemies without dying and make it to the end of the level.
- What are ways the player can lose, or be defeated?
  - Get shot or fall off of the playable space of the map.
- What makes it good?
  - Movement is tight and precise which enables the player to have accurate control as you move insanely quickly around the map while feeling totally in control.
  - Levels are intuitive but feel complex, offering multiple paths to attack enemies with distinct risks. Enemy placements and AI force an aggressive play-style that requires the player to commit to their path from start to end.
  - Enemies are predictable allowing the player to hone in their timing over the course of their attempts.
- What should we pull from Ghostrunner?
  - Movement
  - Focused Level Design
  - Intuitive Enemies

Gunfire Reborn

Research and mechanical breakdown for reference game 3

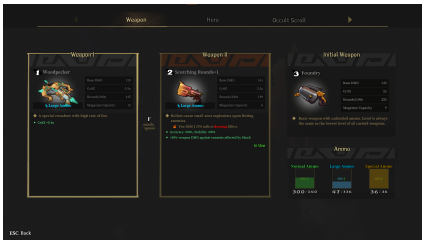
Gunfire Reborn

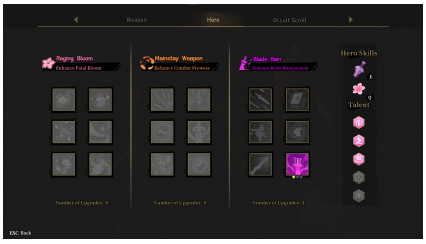
Video References

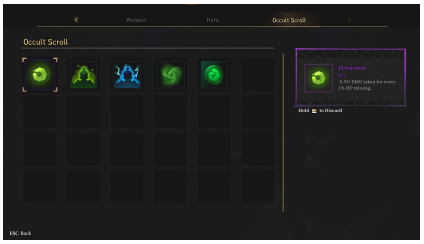
https://www.youtube.com/watch?v=LAx-KAGsgmI

https://www.youtube.com/watch?v=-tDBvESHWz8

Screenshot Ideas







Notes

- What do you do in the game? How is it played?
  - The players delve through dungeons and clear rooms filled with enemies. As the players advance, the enemies become more powerful with more mechanics to deal with.
- What is the core gameplay loop?
  - Kill enemies
  - Get guns, money, ammo, and upgrades
  - Spend money on upgrades
  - Die/finish the game
  - Buy permanent upgrades

- How does the camera work?
  - The camera is a heavily stabilized first person camera with minimal bob and sway.
- How tall is the player in measurable units?
  - 2 meters
- Using the player's identified unit scale, how high can they jump?
  - The player can only jump 1 meter high
- Using the player's intensified unit scale, how far can they travel in a second?
  - 2 meters (can be increased through upgrades and items/scrolls/weapons)
- How do you win a level, scenario, or puzzle?
  - Clear the room of all the enemies to move to the next room
  - Clearing all the rooms moves the player to the next stage
  - Clearing all stages allows the player to fight the boss
  - Defeating the boss allows the player to move onto the next level
- What are ways the player can lose, or be defeated?
  - Player loses when their health hits 0 from taking damage from enemies, and they have used up their revive for the run.
- What makes it good?
  - Fast paced gameplay
  - UI that explains itself and reminds players of all necessary controls.
  - Meaningful upgrades with impactful up and down sides.
  - Special abilities make characters feel distinct and are each impactful on playstyle
- What should we pull from Gunfire Reborn?
  - UI
  - Upgrades

Returnal

Research and mechanical breakdown for reference game 3

Returnal

Video References

https://www.youtube.com/watch?v=IO0AB3Hg5cc

https://www.youtube.com/watch?v=kCkHBjGJI8g

Screenshot Ideas

Notes

- What do you do in the game? How is it played?
  - In Returnal, you run, jump, dash, shoot, aim, use secondary gun abilities, interact with pickups, and use consumables to fight your way through the ruins of a lost alien civilization.
- What is the core gameplay loop?
  - Traverse the Environment
  - Kill Enemies
  - Get resources
  - Unlock temporary and permanent upgrades
  - Die/Finish the game and repeat.
- How does the camera work?
  - Returnal uses a third person camera that closes in to an over-the shoulder perspective when standing still, but increases FOV when moving to give greater situational awareness when moving, widening slightly further while sprinting. It appears to be on a spring arm to prevent terrain clipping.
- How tall is the player in measurable units?
  - Returnal’s player avatar is about 2m tall
- Using the player's identified unit scale, how high can they jump?
  - Returnal’s avatar can jump about 3-4m high (without any upgrades)
- Using the player's intensified unit scale, how far can they travel in a second?
  - Returnal’s avatar moves about 5-6m/s, sprinting around 6-8m/s.
- How do you win a level, scenario, or puzzle?
  - Defeat enemies, traverse the various environments, defeat bosses, and reach the mysterious signal.
- What are ways the player can lose, or be defeated?

    - Take enough damage that the avatar is reduced to 0 suit integrity.
- What makes it good?
    - Clear projectile indicators and enemy attack patterns.
    - Dynamic environmental design that allows the projectiles to be a clear contrast to the overall environment.
    - You can see paths that upgrades will unlock for you before you even get the upgrades, creating a sense of anticipation for those upgrades.
- What should we pull from Returnal
    - Projectile design (rely heavily on Niagara)
    - Upgrade paths
    - Weapon expertise (if we introduce weapon variety)

Dead Cells

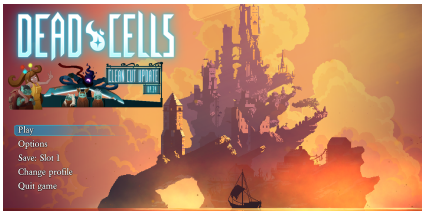
Research and mechanical breakdown for reference game 3

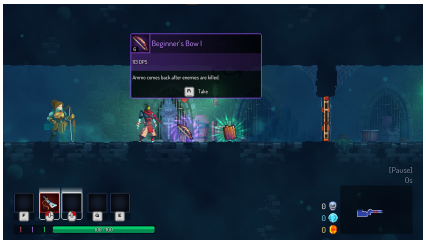
Dead Cells

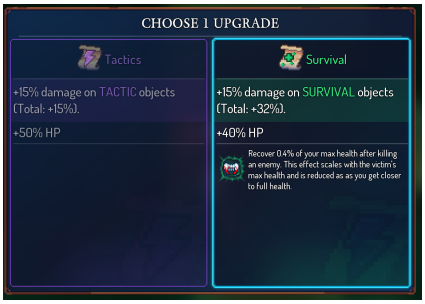
Video References

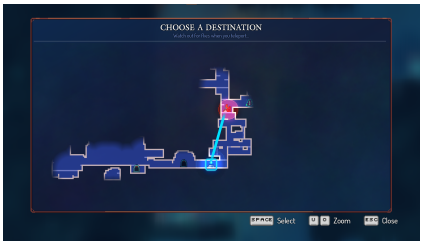
https://youtu.be/YWO5_IORq1M?si=E-roRe-VWphJppgp https://www.youtube.com/watch?v=R6Q6vh7Xnbg

Screenshot Ideas









Notes

- What do you do in the game? How is it played?
    - The player defeats different types of enemy monsters and collects gold for temporary/permanent items/upgrades. They can also collect cells from enemies that can be used in a refuge room for many types of permanent upgrades.
- What is the core gameplay loop?
    - Kill enemies
    - Get weapons, money, cells, and upgrades
    - Spend money and cells on per run and permanent upgrades respectively
    - Die/finish the game and repeat

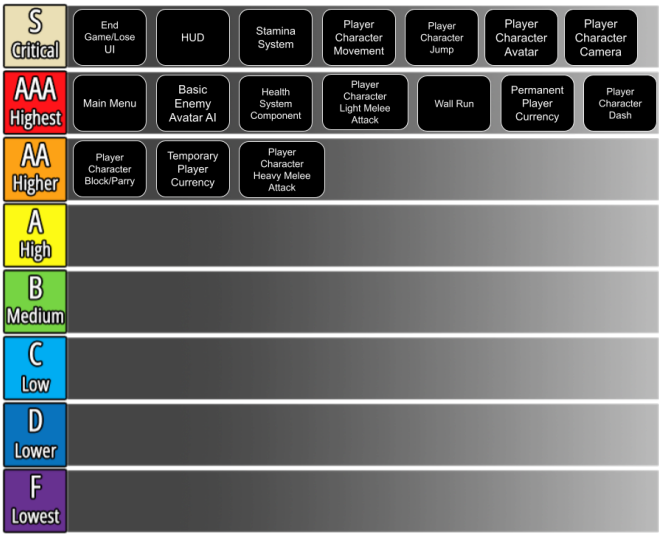
- How does the camera work?
  - The camera is a 2d side-scrolling camera that gives lead room in the direction of the player's movement and allows the player limited control of the camera to look a small distance in any direction.
- How tall is the player in measurable units?
  - 2 meters
- Using the player's identified unit scale, how high can they jump?
  - The player can jump 2 meters per jump which is 1 player avatar height. They also have the ability to double jump and temporary upgrades to upgrade the jump.
- Using the player's intensified unit scale, how far can they travel in a second?
  - 5 meters per second (can be increased through momentum and items)
- How do you win a level, scenario, or puzzle?
  - Reaching/finding a door somewhere in the level that lets the player go to a refuge to heal up and upgrade before entering the next level.
- What are ways the player can lose, or be defeated?
  - The player loses when their health drops to 0 from enemy damage.
- What makes it good?
  - Difficulty
  - Predictable and choreographed enemy attacks
  - Rhythm of combat
  - Powerful weapons
  - Unique environments and hazards.
- What should we pull from Dead Cells?
  - Level pattern (run through the area followed by area of refuge)
  - Upgrade tradeoffs and buffs

Desired features and their documentation for Project Parkour Bullet Hell

Minimum Viable Product

Features needed for Project Parkour Bullet Hell Minimum Viable Product

PBH-1 - MVP
TO DO



Core

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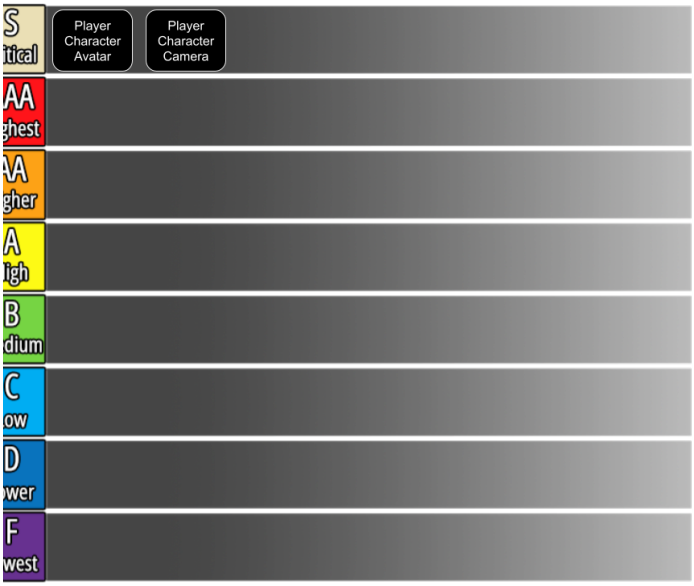


Basic Enemy Avatar

PBH-26 - Basic Enemy Avatar
DONE

User Story

As a player, I want to have a basic enemy I can defeat, so I can gain power-ups and currency for upgrades.

Dependencies

- Base Avatar
- Enemy Projectile
- Base Power-up

Completion Criteria

1. Must have a way to detect the player avatar
2. Must ignore damage from the enemy projectile blueprint
3. Must have a chance to drop a power-up when eliminated.

Player Character Avatar

PBH-5 - Player Character Avatar
DONE

User Story

As the player I want to play as a fast character who hacks and slashes their enemies, so that I can feel nimble and powerful.

Dependencies

- Base Avatar
- Player Character Camera

Completion Criteria

1. Must have the following inputs:
   a. Directional Movement (WASD)
   b. X and Z axis look controls (Mouse)
   c. Jump (Spacebar)
   d. Dash (Left Shift)
   e. Slide [hold] (Left Ctrl)
   f. Attack (Left Mouse)
   g. Block/Parry [hold] (Right Mouse)

    h. Enter ranged mode as a toggle (Q)
        i. Aim down sights (Right Mouse)
2. Must have a placeholder weapon
3. Must have a camera component attached to the head of the model by a spring arm so we can control camera bob and sway independently of the model's animations.
4. Must be able to see the avatar's body and legs when looking down.
5. Blendspace for directional movement animations must be implemented.
6. Should be slowed by 20% returning to normal over 2 seconds after taking damage

Blueprint Usage

Key Variables:

- Avatar Mode: The avatar mode enum tracks whether the player is in ranged or melee modes and allows you to switch functionality for other events based on the currently active mode.
- Checkpoints Array: Stores an array for all checkpoints in the current level
- Active Checkpoint: Stores the most recent checkpoint activated
- Base FOV: Stores the default 80 degree camera FOV
- Running FOV: Stores a value of 85 degrees for camera FOV when running
- Dash FOV: Stores a value of 90 degrees for camera FOV used during the dash timeline.
- Current Firebolt Charges: Stores the current number of firebolt charges available for the player to use
- Max Firebolt Charges: Stores the max amount of firebolt charges the player can have.
- Mithril Collected: Stores the amount of mithril collected by the player character.
- Gold Collected: Stores the amount of gold collected by the player character.
- Enemies Run Total: Stores the total number of enemies defeated by the player in their current run.
- Enemies Needed: Stores the number of enemies that need to be killed to progress past the current area. Is used to display this information to the player via the HUD.
- Enemies Killed: Stores the number of enemies that the player has killed towards the number needed to progress to the next area. Is also used to display information to the player character on the HUD.
- bIsRunning: Stores whether or not the player character is running. Is used in the camera dilation timeline and can be used for other gates.
- Base Move Speed: Stores the default movement speed of 1000cm/s
- Damage Slow Factor: Stores a value of .8 which is used to slow the player character by 20% when they take damage.

Interfaces and Supplementary Blueprints:

- BPI_CollectItems: This interface should be implemented on any item or power-up that the player can pick up. Power-ups and items should send a message to the player character when they overlap the player character and have events in the PCAvatar blueprint to trigger the desired effect when they are picked up.
- BPI_KillEnemies: This interface should be implemented on all enemy character blueprints, as well as the trigger volume for enemy zones. The trigger volume should use this interface to tell the PCAvatar how many enemies must be killed to progress. When enemies are killed they should use the Kill Enemy event to tell the player to increment the total killed. Enemies that must be killed to progress should also used the Kill Needed Enemy in the same way.
- BPI_TakeDamage: This interface should be implemented on any object that can take damage, as well as on projectiles and weapons to tell the pawn to take damage at the appropriate time.
- BP_Sword: This interface has the model and collision volumes for the player character's sword. All damaging logic for the player character's melee abilities should be added here.

Other Notes:

- All inputs that do not yet have functionality have debug print strings to verify that the inputs are working, these may be removed once functionality has been added.
- Comment Color Code
    - Black: Normal Comment
    - Green: Enum Switch description
    - Red: Debug
    - Blue: Timelines and Sequences

Player Character Camera

PBH-14 - Player Character Camera
DONE

User Story

As the player I want to want to have a first person view so I can have a challenging combat experience and make precise parkour movements.

Dependencies

- Player Character Avatar

Completion Criteria

1. Camera follows players horizontal and vertical movements.
2. Camera doesn't clip the characters body or head.
3. Camera has a running camera shake that is activated by running.
4. Camera shows a first person view.
5. Camera doesn't clip through walls or ceilings.

Gameplay

All Gameplay Features will populate this page.

Tasks within the Core Gameplay Loop

Core Gameplay Loop Win

PBH-39 - Core Gameplay Loop Win
DONE

User Story

As a player, I want to move through dynamic environments and fight dangerous enemies and collect power-ups so that I can advance to the next level and win the game.

Dependencies

- Basic Enemy Avatar AI
- Player Avatar Death / Spawn
- End Game/Lose UI

Completion Criteria

1. Player movement and related abilities must be functional.
2. Player attacks and related abilities must be functional
3. Basic enemies and their attacks must be functional
4. Basic power-ups must be functional
5. End Game/Lose UI must be functional.

Core Gameplay Loop Fail

PBH-72 - Core Gameplay Loop Fail
DONE

User Story

As a player, if I don't move effectively through the environment and overcome enemies in my path I want the game to fail me so that I can realize that my method of play or inactivity was an unsuccessful attempt at playing the game.

Dependencies

- Basic Enemy Avatar AI
- Player Avatar Death / Spawn
- End Game/Lose UI

Completion Criteria

1. Player movement and related abilities must be functional.
2. Player attacks and related abilities must be functional
3. Basic enemies and their attacks must be functional
4. Basic power-ups must be functional
5. End Game/Lose UI must be functional.

Level Rating System

PBH-153 - Level Rating System
DONE

User Story

As a player I want to know how well I did on a level, so that I can replay it again to improve my rating.

Dependencies

- Core Gameplay Loop

Completion Criteria

1. Must have logos for bronze, silver, gold, and mithril
2. Must have times set for each rating for each level
3. Must have kill counts set for each rating for each level
4. Must have a start screen that displays past stats when you select the level in free play mode
5. Must display your ratings in the level win screen
6. Must save your stats for each level

Usage:

Level Creation:

When you make a new level you will need to do a few things to tie it in with the scoring system.

1. Make a copy of the ScoreData Structure in Content>Blueprints>Scorekeeping and name it [LevelName]Score. This is where you will put the requirements for each tier of reward into the appropriate variables.
2. In BPC_Scoring in the same folder listed above, select the LevelNameArray variable and add a new array element, with the exact name of the level you are adding (e.g. LVL_MVP). At this point you should also add a variable of type [LevelName]Score, and for its category set it to Level Requirements, to keep the variables list sorted.
3. In the Load Score Reqs function on BPC_Scoring, replicate the process in the magenta comment box, executing from the false pin of the previous branch in the chain and checking for Level Number = [the index of your level's name in the LevelNameArray]. Off of the true pin, set the ScoreData struct, splitting the struct pin on that set node. Then take the struct variable you created in step 2, split that struct pin, and plug all values from your level's score struct into the corresponding pin in the ScoreData struct. It should now have all of those variables stored in the ScoreData struct.
4. To save the scores you are simply going to reverse the above process, checking if the level number = the index of your level in the LevelNameArray. This time off of the true pin for the branch, you will set your level's score struct, splitting the struct pin, and plugging every pin on the score data struct into its corresponding pin. This pushes that data back up to the struct for use in menus, and allows unlocking levels etc.

All AI Features will populate this page.

Basic Enemy Avatar AI

PBH-18 - Basic Enemy Avatar AI
DONE

User Story

As an enemy avatar, I want to be able to move and locate the player, so I can attack and defeat them.

Dependencies

- Player Character Avatar
- Player Character Light Melee Attack
- Player Character Heavy Melee Attack
- Basic Enemy Avatar

Completion Criteria

1. Character Horizontal Movement
2. Character locks on when the player is detected

3. Character attacks player when in range
4. Gets knocked back when attacked
5. Has a full 360 degree detection range

Basic Enemy Avatar

PBH-26 - Basic Enemy Avatar
DONE

User Story

As a player, I want to have a basic enemy I can defeat, so I can gain power-ups and currency for upgrades.

Dependencies

- Base Avatar
- Enemy Projectile
- Base Power-up

Completion Criteria

1. Must have a way to detect the player avatar
2. Must ignore damage from the enemy projectile blueprint
3. Must have a chance to drop a power-up when eliminated.

Basic Melee Enemy Avatar

PBH-34 - Basic Melee Enemy Avatar
DONE

User Story

As a player, I want to have melee opponents so that I can feel the intensity of a sword-to-sword fight and have diversity in the types of enemies that I face.

Dependencies

- Basic Enemy Avatar

Completion Criteria

1. Must be able to move around the environment
    a. Movement speed should be 3m/s
    b. Turn rate should be 180 degrees/s
2. Should have 50hp
3. Must be able to move towards the player avatar
4. Must be able to attack the player avatar once they are in range
5. Should attack once per second while they are in range of the player avatar.
6. Must do 20 damage to the player avatar if they hit the player avatar with the attack.

Basic Ranged Enemy Avatar

PBH-33 - Basic Ranged Enemy Avatar
DONE

User Story

As a player, I want to have ranged enemies so that I have projectiles to avoid while traversing the environment and an opponent to defeat to gain power-ups and currency for upgrades.

Dependencies

- Basic Enemy Avatar
- Player Character Avatar

Completion Criteria

1. The Ranged Enemy Avatar should remain stationary in the world
2. When a zone collision volume is triggered the ranged enemy should find the look-at vector to the player character avatar
3. Once it has found the vector it should fire projectiles at the player character avatar in a pre-defined pattern, targeting the position of the avatar at the time of firing, not leading player character movement.
4. Projectiles should do 5 damage
5. Should have 50hp

Enemy Ranged Projectile Patterns

PBH-172 - Enemy Ranged Projectile Patterns
DONE

User Story

As the player, I want ranged enemies to have different projectile patterns, so I can skillfully weave through and dodge.

Dependencies

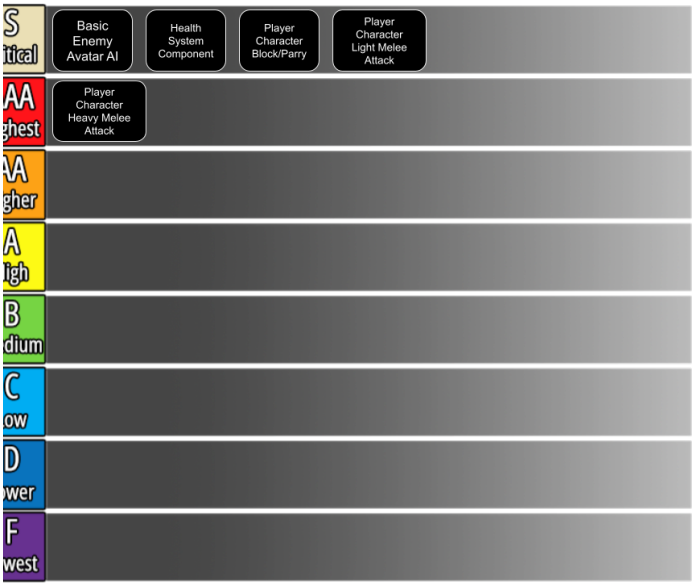
- Basic Ranged Enemy Avatar
- Enemy Projectile T0
- Basic Enemy Avatar AI

Completion Criteria

1. Ranged Enemy may shoot a horizontal line pattern
2. Ranged Enemy may shoot a vertical line pattern
3. Ranged Enemy may shoot time projectiles in a random placement pattern

Combat/Health

All Combat/Health Features will populate this page.



Basic Enemy Avatar AI

PBH-18 - Basic Enemy Avatar AI
DONE

User Story

As an enemy avatar, I want to be able to move and locate the player, so I can attack and defeat them.

Dependencies

- Player Character Avatar
- Player Character Light Melee Attack
- Player Character Heavy Melee Attack
- Basic Enemy Avatar

Completion Criteria

1. Character Horizontal Movement
2. Character locks on when the player is detected
3. Character attacks player when in range
4. Gets knocked back when attacked
5. Has a full 360 degree detection range

Avatar Health PBH-4 - Player Avatar Health DONE

User Story

As the player I want my character to lose health when attacked and gain health when healing, as well as having enemy characters that lose health when attacked.

Dependencies

- Player Character Avatar

Completion Criteria

1. Parent Actor loses health when attacked
2. Parent Actor gains health when healing.

Player Character Block/Parry PBH-13

User Story

As the player I want to block enemy attacks so I can defend myself

Dependencies

- Player Character Avatar
- Player Character Movement
- Basic Enemy AI

Completion Criteria

1. Player character can block/parry by holding R-Mouse
2. Blocking will reflect projectiles and ignore all damage for the first .25 seconds of the block.
3. After the first .25 seconds creates an additional 40hp health pool that behaves as a shield
4. If the 40hp of the shield is depleted slow the player avatar by 25% and make them take 5% increased damage for 2 seconds.
    a. The 25% slow should decay over the two seconds returning to the avatar's normal speed.
    b. During this 2 second duration the player cannot block
5. Blocking ability fully replenishes over 5 seconds.
6. The avatar cannot jump, dash, or slide while holding block.

Player Character Heavy Melee Attack PBH-12 - Player Character Heavy Melee Attack DONE

User Story

As the player I want to have a heavy melee attack so I can land powerful blows to enemies.

Designer's Intent

The player should be able to charge up a heavy attack while in the air by holding the attack button, and upon landing release the attack button to release a heavy attack that damages enemies in an AOE.

Dependencies

- Player Character Avatar
- Player Character Movement
- Basic Enemy AI

Completion Criteria

1. Player Character can charge up a heavy melee attack by holding the attack button while falling.
2. The attack releases upon the player landing, dealing damage in a 3m radius cylindrical AOE centered on the avatar's sword.
3. Enemies within the AOE should take 50-100 damage scaling with their distance from the center of the cylinder.
4. There should be a .25 second cooldown after this attack before the player can move or attack after completing the heavy attack.

Player Character Light Melee Attack

PBH-11 - Player Character Light Melee Attack
DONE

User Story

As the player I want to have a fast light melee attack so I can perform rapid strikes to the enemies.

Dependencies

- Player Character Avatar
- Player Character Movement
- Basic Enemy AI

Completion Criteria

1. Player Avatar can perform three attacks in rapid succession
2. After completing a sequence there should be a .5 second cooldown.
3. Attacks should take .15 seconds
4. If the player doesn't click within .5 seconds of the most recent attack in a combo the avatar should reset to a ready pose.
5. Attacks deal 50 damage to enemies
6. The sword should have an elongated rectangular collision volume that goes above and below the model for the sword to allow the player some wiggle room on their aim.
7. The avatar should have a .5m radius sphere collision in front of the avatar's head that causes the player to snap to any enemy within that sphere when attacking.

Player Character Ranged Attack

PBH-20 - Player Character Ranged Attack
DONE

User Story

As the player I want a ranged attack so I can attack enemies from a distance so that I can eliminate distant threats.

Dependencies

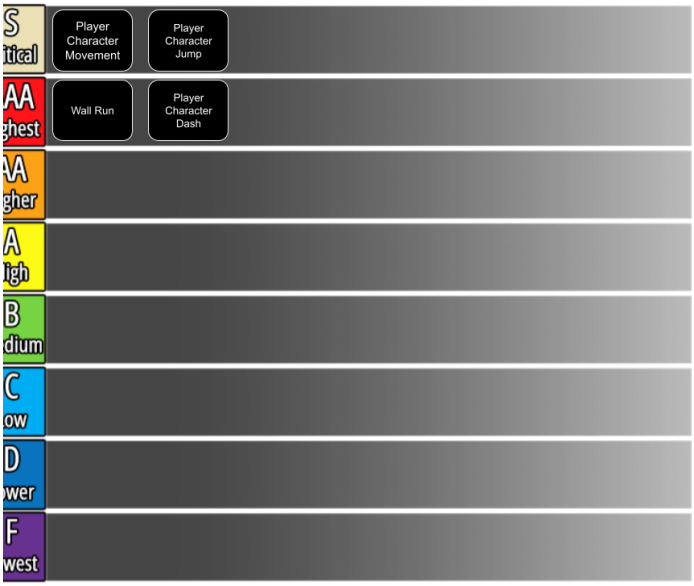
- Player Character Avatar
- Player Character Movement
- Player Projectile T0
- Basic Enemy AI

Completion Criteria

1. Player can press Q input to enchant the weapon.
2. Pressing the attack button should fire the ranged attack.
3. The projectile should be an arc coming off the sword as if they were throwing the enchant from the weapon.

Movement

All Movement Features will populate this page.



Player Character Dash

PBH-10 - Player Character Dash
DONE

User Story

As the player, I want to be able to dash, so I can avoid enemy attacks.

Dependencies

- Player Character Avatar
- Player Character Movement

Completion Criteria

1. Player dashes in their current facing direction when L-Shift is pressed
2. Should move the player 10m on the X-Y plane
3. Dash duration should be .25s
4. Must have a 1.5s cooldown

Player Character Jump

PBH-8 - Player Character Jump
DONE

User Story

As the player I want my character to be able to jump so I can use it to traverse the level.

Dependencies

- Player Character Avatar
- Player Character Movement

Completion Criteria

1. Player Character can jump via input.

2. Player Character can’t fire ranged attacks while jumping.
3. Jump height should be 2m
4. Must have directional control while in the air

Player Character Mantle

PBH-22 - Player Character Mantle
DONE

User Story

As the player I want my character mantle close jump obstacles so the movement seems more natural and fluid.

Dependencies

- Player Character Avatar
- Player Character Movement
- Player Character Jump

Completion Criteria

1. If a ledge is within .5m in front of the head of the player avatar when jumping the avatar will climb to the top of the ledge.
2. Player Character cannot perform any other action while mantling.
3. Mantling is performed via the jump input.
4. Player can’t exit mantle animation until it’s finished.
5. Player mantles over the obstacle and does not clip through it.
6. Mantling should take .25 seconds

Player Character Movement

PBH-6 - Player Character Movement
DONE

User Story

As the player I want to have fast and snappy movements so I can precisely attack enemies.

Dependencies

- Player Character Avatar

Completion Criteria

1. Player moves all directions in the X-Y plane at 10m/s
2. Should not have acceleration, should immediately move at full speed

Player Character Slide

PBH-19 - Player Character Slide
DONE

User Story

As the player I want to slide so I can use different movement patterns to navigate the level and dodge enemy attacks.

Dependencies

- Player Character Avatar
- Player Character Movement

Completion Criteria

1. Avatar transitions from running to sliding when L-Ctrl is pressed.
2. Avatar hit box is reduced to 1m tall when in the sliding state.
3. Sliding should grant a +10% boost to movement speed when it is initiated that then decays to 0m/s based on ground friction.
    a. This should also be apply in the air, giving an additional 10% increase to movement speed then follow a normal jump arc.

4. When the avatar's movement speed is reduced to 0m/s they must transition to a crouched state
5. Avatar can slide when on the ground or in the air
    a. if the slide begins in the air the avatar will immediately slide upon impact with the ground.
6. Player can't slide through walls or environmental objects

Wall Run

PBH-9 - Wall Run
DONE

User Story

As the player I want my character to be able to run on walls so I can use it to traverse the levels in a new way.

Dependencies

- Player Character Avatar
- Player Character Movement
- Player Character Jump

Completion Criteria

1. Player Character can begin wall running via jump or colliding with a wall while falling.
2. Player Character can't fire ranged attacks while wall running.
3. Player Character runs horizontally on walls following a parabolic arc
4. Player avatar falls from the wall if they lose too much momentum or the wall mesh ends

Wall Run Refinement

PBH-133 - Wall Run Refinement
DONE

User Story

As the player I want the wall run feature to give a speed boost while wall running and to give feedback that I am wall running so I can know when I am using the ability.

Dependencies

- Player Character Avatar
- Player Character Movement
- Player Character Jump
- Player Wall Run

Completion Criteria

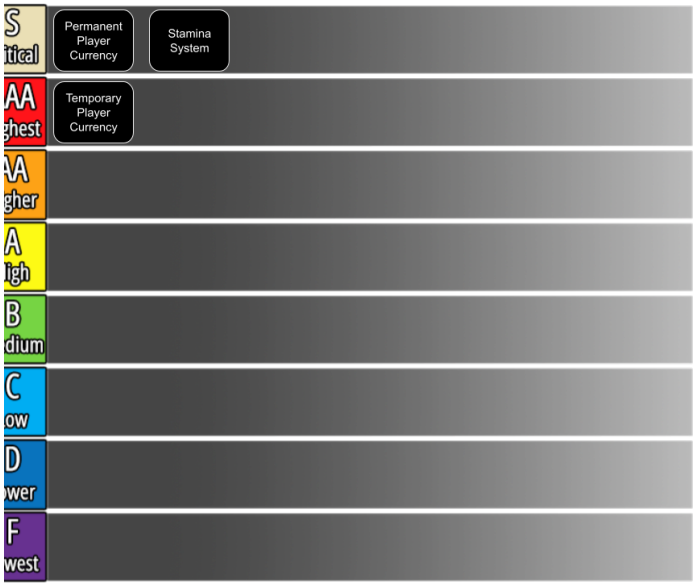
1. Player Character receives a speed boost during wall running
2. Player Character has a visual effect indicating the increased motion during wall running

Tasks

- Wall Run Animation PBH-138 DONE

Systems

All Systems (Currency, Stamina, Upgrades, etc.) will populate this page.



Checkpoint System

PBH-24 - Checkpoint System
DONE

User Story

As the player I want the game to have a checkpoint system so I can save my run progress and respawn at a recently reached location.

Dependencies

- Player Character Avatar

Completion Criteria

1. When players reach a checkpoint it will update to show it's the most recent checkpoint.
2. When players reach a checkpoint it will reset all other recent checkpoints.
3. Checkpoints have a spawn location where players will spawn if they fall into a pit trap during the level.

Damage System

PBH-108 - Damage System
DONE

User Story

As the player/enemy/environment I want to be able to damage anything with health.

Dependencies

- Player Character Avatar
- Player Character Movement
- Basic Enemy AI

Completion Criteria

1. Needs to be an actor component with an interface to add new damage types.
2. Needs to have a health function to keep updating on damage/heal.
3. Needs to be modular to add blocking and parrying or any other instances.

Damage System is based off of this video.
https://www.youtube.com/watch?v=o3uFXnNxwKE

Pick Up Weapon System

User Story

As the player I want to be able to pick up different weapons

Dependencies

- Player Character Avatar
- Player Character Movement

Completion Criteria

1. Needs to be able to pick up different weapons and attach them to the player avatar.
2. Can only pick up weapon if there is another weapon in-front of them or purchased to replace current weapon.
3. Player can not be empty-handed during runs.
4. Weapon will disappear after the timer expires(timer base is 30s).

Save/Load Game System

PBH-23 - Save/Load Game System
DONE

User Story

As the player I want the game to save my progress and load my progress when I start the game so I can put the game down and come back to it.

Description

Save/Load needs to save many things including the game instance state, menu and options settings, and more; the old checkpoint system will be scrapped in favor of level load/saves followed by a checkpoint save/load if needed (currently scrapped). The following issue tracks the list of things that need to be saved: https://silverdragon202309.atlassian.net/l/cp/0C1aiFzc

Dependencies

- Player Character Avatar
- Game Instance
- Game Levels

Completion Criteria

1. The autosave will save player stats, currency, and other information between levels
2. Upon starting the game for the first time, the game will look for available game instance settings such as audio levels, last saved game for a continue button (if available), and more; if found, the game will pull in those settings. If not, the game will create a new file for storing the data.

Old Completion Criteria

1. When players reach a checkpoint their game will autosave.
2. When players lose or pass a level the game will autosave.
3. Autosaving will save player stats, currency, and a variety of level information.
4. When players start the game for the first time it will create a new save game slot.
5. Continuing the game will load the last save and unlock all unlocked levels.
6. Continuing the game will load the player at their furthest reached checkpoint unless they choose a different level.

Upgrade Shop

PBH-113 - Upgrade Shop IN PROGRESS

User Story

As the player I want a shop between levels where I can buy upgrades so I can spend the currency I made on my run.

Dependencies

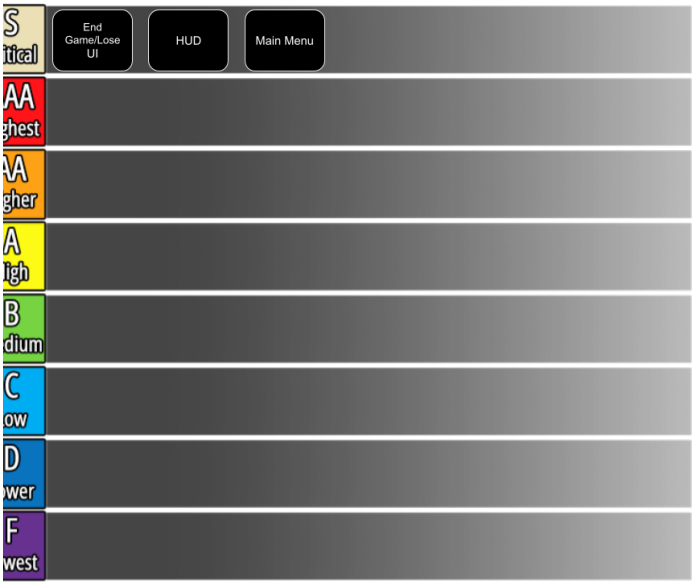
- Upgrades

Completion Criteria

1. When interacting with the shopkeeper a widget will popup with a shop display.
2. When interacting with the shopkeeper the game will continue but the player movement input will be disabled.
3. The shop allows players to spend currency to buy upgrades and new weapons.
4. New weapons are added to the players inventory system.
5. New upgrades are passively updated and added to the player character.
6. The shop widget has a back button for players to back out when finished browsing.

UI/HUD

All UI/HUD features will populate this page.



End Game/Lose UI

PBH-17 - End Game/Lose UI
DONE

User Story

As the player I want a screen to popup when I pass/lose a level so I can see my stats for the run and see my earnings.

Dependencies

- Core Gameplay Loop
- Player Character Avatar
- Health System Component

Completion Criteria

1. When the player loses a lose screen should popup.
2. When the player passes a level a pass screen should popup
3. Both screens should include stats such as: Run Time, Enemies Killed, Upgrades Earned, Currency Earned, and any bonuses.
4. The pass screen should also show players that they unlocked the level to be replayed.

HUD

PBH-15 - HUD
DONE

User Story

As the player I want to have player facing information on my screen so I can see various stats like health, stamina, and ability cooldowns.

Dependencies

- Player Character Avatar
- Health System Component
- Stamina System Component

Completion Criteria

1. Players can see how much health they have
    a. This should be a bar that fills from 0 to 100%
2. Player can see when the block ability is available
    a. This should be a bar that is grayed out when the player cannot block and then fill from 0-100% based on how much of the 40hp shield is available to the player.
3. Player can see how many firebolt charges are available
4. Player can see if their dash ability is available.
5. Players can see their current time on the current stage as well as their time on the current run
6. Should display the number of enemies they must defeat to move on to the next area.
7. Must have a crosshair present to show where the user is aiming.

Main Menu

PBH-16 - Main Menu
DONE

User Story

As the player, I want to have a menu to navigate that allows me to play the story mode, play individual levels, adjust options, see the game credits, or quit the game.

Dependencies

- Sound Effects Component
- Music Component

Completion Criteria

1. The main menu must display the title of the game.
2. The main menu must have a button that allows you to enter the campaign mode
    a. This button should say “start new game” if there is no save data present
    b. This button should say “continue run” if there is save data present
    c. There should be a button next to this button that allows the player to clear their saved data.
3. The main menu must have a button that allows you to select a level to play
    a. The toybox level must always be available
    b. Story levels should become available to select from if the save data indicates that the level has been completed.
4. The main menu must have a button that allows the player to access an options menu
    a. The options menu must allow the player to adjust the music and sound effects volume independently
    b. The options menu must allow the player to review the input controls for the game
5. The main menu must include a button that allows the player to view the credits for the game
    a. The credits screen must include the names and desired roles of all members of Silver Dragon Studio.
6. The menu must include a button that allows the player to quit the game
    a. Clicking the quit button must show a prompt for the player to verify that they want to quit the game.

Pause Menu

PBH-21 - Pause Menu
DONE

User Story

As a player, I want to press the escape key on my keyboard to pause the game so that I can take a break from the current gameplay session, access the options menu, and have the ability to resume my run.

Dependencies

- None

Completion Criteria

1. Pressing the P or Escape keys pauses the game and displays the pause menu
2. Clicking Resume or pressing P or Escape again resumes the run.
3. Clicking End Run ends the current run and returns you to the starting area of Level 1.
4. Clicking Quit to Menu returns the user to the main menu
5. Clicking Options takes the player to the options menu.
6. Run Stats are shown on the pause menu upon loading.

Splash Screen

PBH-79 - Splash Screen
DONE

User Story

As a player, when I first open the application, I want to see a splash screen that displays the name of the team that created the game for three seconds before automatically transitioning to the main menu, so that I know which team was responsible for making the game.

Dependencies

- None

Completion Criteria

1. When the game starts a splash screen will appears for three seconds
2. The splash screen disappears after the three seconds elapse.
3. After the splash screen, the main menu appears.

Transition UI

PBH-239 - Transition UI
TO DO

User Story

As the player I want a loading screen between levels, so my gaming experiences seems more seamless.

Dependencies

- None

Completion Criteria

1. Automatically populates the screen on level load.
2. Stays on screen for at least 3 seconds.
3. Uses key art as a background.
4. Has a small bar that displays a loading throbber and a gameplay tips.
5. Gameplay tips scroll across the bottom of the screen.

Supplementary

Features intended for implementation into Project Parkour Bullet Hell beyond what is needed for an MVP

All Supplementary Combat/Health Features will populate this page.

Boss Enemy AI

PBH-25 - Boss Enemy AI
DONE

User Story

As the player I want to fight a boss at the end of each level so I can be challenged.

Dependencies

- None

Completion Criteria

1. Boss has substantially more health than regular enemies.
2. Boss has various attack patterns.
3. Boss fight shouldn't take less than 1 minute on a base run.
4. Boss fight should activate when players enter an area.
5. Triggering the boss fight will trigger a small introductory cinematic.
6. Boss does damage to player if attacks hit.
7. When fighting the boss there is a health bar for the boss on the players screen.

All Systems pertaining to supplementary features will populate this page.

Permanent Player Currency

PBH-28 - Permanent Player Currency
DONE

User Story

As a player, I want a currency system in my roguelite game that has a permanent currency, so that this will allow me to make lasting upgrades between runs and utilize immediate benefits during my current play through.

Dependencies

- End Game/Lose UI.

Completion Criteria

1. The currency looks like mythril
2. Can be used to purchase permanent upgrades

Temporary Player Currency

PBH-29 - Temporary Player Currency
DONE

User Story

As a player, I want a currency system in my roguelite game that has temporary currency, so that this will allow me to make immediate upgrades to benefit my current run.

Dependencies

- HUD.
- End Game/Lose UI.

Completion Criteria

1. The currency looks like gold
2. Can be used to purchase upgrades for current run
3. Set to 0 upon player death

All Upgrades will populate this page.

Double Jump

PBH-38 - Double Jump
DONE

User story

As the player I want to a double jump upgrade so I can access more areas of the levels.

Dependencies

- Player Character Avatar
- Player Character Jump

Completion Criteria

1. When jumping if the player is in air they have another jump.
2. The jump can't go through ceilings.
3. The jump triggers an air step animation.

All PowerUps will populate this page.

Health Power-up

PBH-36 - Health Power-up
DONE

User Story

As a player I want to be able to pick up health power-ups so that I can survive for longer.

Dependencies

- Base Power-up
- Player Character Avatar

Completion Criteria

1. Must have a glowing green mesh to indicate that it restores health
    a. Optionally have a green particle effect and rotating and levitating movement components.
2. Must use the power-up interface to tell the player avatar blueprint that it is a healing powerup
3. Player avatar blueprint must implement the power-up interface as an event that restores 10hp when a health power-up is picked up.

Firebolt Charge Power-up

PBH-37 - Firebolt Charge Power-up
DONE

User Story:

As a player I want to have a power-up that replenishes charges of my firebolt ability so that I can use it multiple times throughout my play-through.

Dependencies:

- Base Power-up
- Player Character Avatar

Completion Criteria

1. Must have a glowing orange mesh to indicate that it restores firebolt uses
    a. Optionally have a fiery particle effect and rotating and levitating movement components
2. Must use the power-up interface to tell the player avatar blueprint that it is firebolt charge power-up

3. Player character avatar blueprint must implement the power-up interface as an event that restores 1 firebolt charge when a firebolt charge power-up is picked up.

Octopus Boss Fight

Features that likely fall beyond the initial 4-month scope of Project Parkour Bullet Hell