Design Documentation

**Character Design Sheet**

Summary

A flying character with upgradable elements in conflict with a number of basic enemy types.

Features/Mechanics

**Player Flight System** - a flight system as the core movement mechanic.

**Basic & Heavy Weapon** - 2 basic weapon types for combating the enemies.

**Inventory & stat effecting pickups** - A inventory system inspired by *Skyrim* with pickups for collecting items and health.

**Enemies** - A series of basic enemies with various weapons and a final boss enemy.

**Energy system** - An energy, Mana system for firing weapons and tracking health.

**Wind** - A wind system where blocks of wind are spawned through the level effecting the flight mechanic.

Interface

The game will have a basic UI showing just the essential elements for gameplay, those being the energy/health bar, effects indicator for wind, damage .etc as well as an aim reticule.

A picture containing text, night sky

Description automatically generated

This will be the main interface for the prototype, the bottom bar will show energy/health and the top right corner will show the current status effects such as wind, there will also be some screen effects for flight boost and damage.

A picture containing graphical user interface

Description automatically generated

This will be the inventory screen, it will appear on top of the main display and pause the game while open, it will list all items the player has collected with an icon next to those that are equipped.

Controls

WASD - Basic Movement controls

Space - Jump/Fly up

Ctrl - Crouch/Fly Down

Shift - Run/Flight Boost

Left Mouse - Fire Main Weapon

Right Mouse - Aim Weapon

Scroll Wheel - Fire Alt Weapon

Tab - Open Inventory

Diagram

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Art Style

The prototype will have a more realistic leaning art style



Sound

The game will have SFX for shooting each weapon, launching flight, landing, flight boost & Wind to name some of the main elements.

MoSCoW

**Must Have**

Flying System

Basic & Heavy Weapon

Inventory & Stat Effecting Pickup System

Basic Assault Enemy

Checkpoint Race System

Energy/Mana System

**Should Have**

Additional Player Weapons & Pickups

Additional Enemy Types

Wind System

**Could Have**

Boss Enemy

Melee Combat

**(Probably) Won’t Have**

Map System

Non-combative NPC’s (Pedestrians, Cars)

Fetch Quest System

**One sheets**

Below are some One sheets for the primary player character, Basic enemy and Boss enemy documenting their basic mechanics and inspiration.

Graphical user interface, text, application, email

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Graphical user interface

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Graphical user interface

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**Thematic Resonance matrices**

Player Character

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Mechanics** |  |  | **Correlation %** |
| **Themes** | Flight | Energy Weapons | Energy System |  |
| Sci-Fi | 1 | 1 | 1 | 100 |
| Futuristic | 1 | 1 | 1 | 100 |
| Electricity | 0.5 | 1 | 1 | 83 |
| **Correlation %** | 83 | 100 | 100 |  |

This is a thematic resonance matrix for the core player characters and their abilities, all but flight/electricity have full marks for correlation with the other 2 being slightly off but still enough within the theme to fit.

Enemy Characters

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Mechanics** |  | **Correlation %** |
| **Themes** | Assault, Rocket & Sniper Weapons | Attack on sight |  |
| Military | 1 | 1 | 100 |
| Foot Troops | 1 | 1 | 100 |
| Evil | 0.8 | 1 | 90 |
| **Correlation %** | 93 | 100 |  |

This table focuses on the enemy characters, the 3 weapon types and their auto response of attacking on sight. The main themes for these enemies are, military, foot troops and evil, as they’re the base foot militia of a private army that’s taken over the city. All mechanics have high correlation with the themes and vice versa, the only one not at 100% is Evil/Weapons which is a hard one to decide on as there’s a lot of debate surrounding the topic.

Level Elements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Mechanics** |  |  | **Correlation %** |
| **Themes** | Wind | Checkpoints | Pickups |  |
| Realistic | 1 | 0 | 0 | 33 |
| Arcady | 0.5 | 1 | 1 | 83 |
| Free Form | 1 | 0 | 1 | 66 |
| **Correlation %** | 83 | 33 | 66 |  |

This table focuses on the level elements, as you can see this it is slightly less aligned than the previous ones, the issues being with the realistic art theme and the checkpoint system. It may be worth considering scraping the checkpoint idea as it doesn’t conform very well with the rest of the project, which would bring the realistic theme up to a workable 50%.

Prototype Video

<https://youtu.be/m29Ppbyj00o>

Technical Documentation & Plan

Core Loop

*Define the main activities that the player will perform in the prototype.*

Action(s): Free Form Flight, Enemy Combat, Race Minigame

Reward(s): Pickups, Character Progression

Expansion(s): Race Minigame

**Core Loop Diagram**

N/A – Due to the nature of the project there won’t be a complete game loop.

**Actions**

*The main actions the character will perform to play the game.*

|  |  |  |
| --- | --- | --- |
| **Action** | **Description** | **How does the player perform and complete this action** |
| Free Form Flight | An unrestricted flight system as the core movement system | The player flies around as they wish and for as long as they wish. |
| Enemy Combat | Enemy combat as the core gameplay mechanic | Enemies will spawn throughout the sandbox play space for the player to defeat. |

**Rewards**

*The rewards that the player will be received when they successfully complete the actions.*

|  |  |  |
| --- | --- | --- |
| **Reward** | **Description** | **How and when does the player earn this reward** |
| Pickups | A pickup system for collecting items and health | Spawned randomly or dropped by enemies |
| Character Progression | Picked up items can be equipped to improve the players overall stats | Equipping collected items through the inventory system. |

**Expansions**

*The expansions that the player will obtain to continue playing the game.*

|  |  |  |
| --- | --- | --- |
| **Reward** | **Description** | **How and when does the player use this expansion** |
| Race Minigame | A race minigame where the player can fly through checkpoints to try get the best time | The player can activate the race from a starting point and then progress through the checkpoints to the finish. |

Game Rules

**Win**

The player Wins when they defeat the final boss of the sandbox.

**Lose**

The player loses each time they die however they can respawn with minimal loss.

**Death / Respawn**

When the player Dies they will be respawned at the nearest spawn point to continue their fight.

**Lives**

The game will have no Lives system

**Energy**

The player has an energy pool from which they can draw ammo for firing weapons and health, as they take damage the pools maximum size is decreased limiting their ability to fire weapons, they can find pickups to repair themselves and increase the pools size.

Camera

The game will have a third person camera with a perspective of looking over the player characters shoulder, there will also be a zoomed in version where the camera comes level with the player head for a more first person type view.

A picture containing sky, outdoor, shore, dune

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Play Space

**Map(s)**

The player will have a freeform sandbox level to play around in primarily designed to look like a modern city.

Game Entities

|  |  |  |  |
| --- | --- | --- | --- |
| **Game Entity** | **Description** | **How does the player use/interact/control this entity?** | **How does this entity work?** |
| Player character | The core Player Character | The players inputs control this entity | The entity receive inputs from the player controller which effect its movement, attacks and any other gameplay mechanics within the project. |
| Assault Enemy | The basic enemy Type | The player interacts with this entity during combat | The assault enemy sense the player, going on alert, then begins firing at the player, taking cover when they’re low on health. |
| Heavy Enemy | The tougher enemy type | The player interacts with this entity during combat | The Heavy enemy fires a more slow rate of fire weapon after sensing the player and refuses to take cover as they are tougher with more health. |
| Sniper Enemy | The highest damage enemy | The player interacts with this entity during combat | This enemy immediately finds cover to being shooting a slow rate of fire medium damage weapon. |
| Boss Enemy | The final Boss | The player interacts with this entity during combat | The final boss would reflect the players abilities with a more complex combat AI. *Note: This enemy may not be included in the final artifact.* |
| Item Pickup | Pickups for stat effecting items | The player can collect this entity for its effect | When collected by the player, adds an item to the players inventory which can then be equipped |
| Repair Pickup | Pickup for health | The player can collect this entity for its effect | When collected by the player, repairs up to a set amount of damage received by the plyer |
| Energy Pickup | Pickup for ammo | The player can collect this entity for its effect | When collected by the player, gives a sudden energy replenishment. |

Systems and Mechanics

|  |  |  |  |
| --- | --- | --- | --- |
| **System/ Mechanic** | **Description** | **How does the player use/interact/control this entity?** | **How does this system or mechanics work?** |
| Wind | Wind that effects the player flight system | This entity effects the players movement characteristics | Wind will spawn/activate at points through the level, this will effect the player flight system by adding velocity in whichever direction the wind is blowing, the player can fly out of these to avoid them. |
| Energy System | A mana type energy system | The player draws from this energy pool when firing their weapons and flying, the player health is recorded by the pools maximum size decreasing. | When the player boosts or fires their weapons energy is used up from their pool, it regenerates when not in use and can be quickly resupplied with pickups. When the player takes damage the pools maximum size decreases, this can only be repaired with a pickup. (See Flowchart) |
| Inventory | A system for managing collected items | The player uses this to view and alter their selected items | When the player collects items they will be added to this system, from which the player can equip them to alter their stat such as movement speed, fall damage, equipped weapons. |
| Checkpoints | A checkpoint that can be connected to others to create a racecourse | The player can enter these to trigger the next and complete a timed race challenge. | All checkpoints will be placed in the level and linked to each other sequentially, as the player passes through one it will deactivate and trigger the next and so on until the final checkpoint. |
| Respawn | A system of respawning the player | Upon player death a respawn point is selected for them to begin from | Player starts will be placed throughout the level, upon death these will be cycled through to find the one nearest the players death point to use as a respawn point. (See Flowchart) |

**Energy System Flowchart**

Diagram

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**Respawn System**

Diagram

Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Action | Potential Issues | Safe Guards |
| Week 6 | Complete the Pickups & all Basic Systems as well as begin work on the level elements. | No Major issues Predicted. | N/A |
| Week 7 | Start basic AI implementation with future subclasses in mind. Finish tidying up the Animation. Finish level elements | AI may take more time than anticipated to implement which could push back other features. | AI will be revisited in Week 9 meaning smaller issues can be postponed. |
| Week 8 | Begin work on the inventory system tying into the existing pickup system. Finish secondary weapon types. | Existing weapons are Tied into The player character, not separate entities. | Ensure Weapons are separated into a class system in week 6. |
| Week 9 | Complete AI for both subclasses and assess viability of boss enemy. | Boss enemy may be unviable. | Enough other enemy classes should have been completed to meet the brief. |
| Week 10 | Tidy up project, Level Meshing, UI finalisation, Sound & SFX. Play Testing. | Level meshing may take up too much time. | Attempt to find and use a premade level. |
| Week 11 | Polish & Play Testing, Hand in the Project. | Earlier elements may remain unfinished. | Any elements that run over should be able to be dealt with in this week. |

Action Plan