# Cyberspace Game Design Document

1. Title Page
   1. Game Name – Perhaps also add a subtitle or high concept sentence.

Cyberspace – Use a highly customizable spaceship to fight waves of enemies to defeat a corrupted AI and escape a computer universe.

1. Game Overview
   1. Game Concept

The player fights enemies and dodges hazards in a 2d plane while navigating a 3d environment trying to reach the end of the level, getting a high score. The player can also customize different parts of their ship to gain different abilities and stats.

* 1. Genre

The game is a shooter similar to Space Invaders or Galaga, but with a 3d element to it.

* 1. Target Audience

The target audience will be towards teens-adults, and will be simple enough to be an entry point into the genre, but will take a lot of skill to master.

* 1. Game Flow Summary – How does the player move through the game. Both through framing interface and the game itself.

From a level select, the player selects a level. In a level, the goal is simply to get to the end. In boss levels, the goal is to defeat the boss.

* 1. Look and Feel – What is the basic look and feel of the game? What is the visual style?

The game will have a simple, almost cartoony style. The colours will be bright and vibrant to match the tone of the game.

1. Gameplay and Mechanics
   1. Gameplay
      1. Game Progression

The player will go through multiple levels where their goal is to survive to the end of it while getting a high score by defeating enemies, dodging hazards, and getting collectables. There may be times where the player’s path is blocked, and they must defeat a wave of enemies to continue, or where they are stuck going around a loop and must shoot buttons to continue. In boss levels, the goal is to defeat the boss by shooting exposed weak points until their health reaches zero.

* + 1. Mission/challenge Structure

In a level, the player will move forward along a predetermined path while enemies come in waves. There are 2 types of levels, ones where the player is on the ground and can only move level and right at the bottom of the screen, and ones where the player is in the air and can move all around the screen. While going through a level, different characters may banter automatically.

* + 1. Puzzle Structure

The player will be able to customize their ship before entering a level, changing their center, wheels/jet, and gun. This gives the player different stats and in some cases different shot types like a boomerang or a bomb. The hope is that that different builds of ships work better in different situations. In actual levels, the most puzzle that will happen will be having to shoot buttons or targets as they pass, trying to figure out how to hit a boss, navigating a maze through splitting paths, and using mechanics specific to a few levels, like riding mine carts or manipulating gravity. Ship parts can affect the player’s health, speed, slide, whether the gun can aim, the turn speed, the max turn angle, the cooldown of the shot, the projectile being shot, and any special abilities. Centers work are used for either the land or air ship, while wheels, jets, and guns are for one or the other. Below is a list of potential ship parts and their stats.

Centers

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Health | Speed | Slide | Aim | Turn Speed | Max Angle | Cooldown | Shot | Special |
| Base Stats | 10 | 5 | 5 |  | 10 | 60 |  |  |  |
| Basic |  |  |  |  |  | -10 |  |  |  |
| Tank | 2 | -0.5 | 0.5 |  |  |  |  |  |  |
| Crate | -1 | .5 | -0.5 |  |  |  |  |  |  |
| Cake | 1 |  | -0.5 |  | 1 |  | -0.1 |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Wheels

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Health | Speed | Slide | Aim | Turn Speed | Max Angle | Cooldown | Shot | Special |
| Basic |  |  |  |  |  |  |  |  |  |
| Tank |  |  |  |  |  |  |  |  |  |
| Stone |  |  |  |  |  |  |  |  |  |
| Unicycle |  |  |  |  |  |  | - |  |  |
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|  |  |  |  |  |  |  |  |  |  |
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Guns

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Health | Speed | Slide | Aim | Turn Speed | Max Angle | Cooldown | Shot | Special |
|  | 10 | 5 | 5 |  | 10 | 60 |  |  |  |
| Basic |  |  |  |  |  | -10 |  |  |  |
| Aim |  | - | 0.5 |  |  |  |  |  |  |
|  |  | .5 | -0.5 |  |  |  |  |  |  |
|  |  |  | -0.5 |  | 1 |  | -0.1 |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Jets

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Health | Speed | Slide | Aim | Turn Speed | Max Angle | Cooldown | Shot | Special |
| Base Stats | 10 | 5 | 5 |  | 10 | 60 |  |  |  |
| Basic |  |  |  |  |  | -10 |  |  |  |
| Tank | 2 | -0.5 | 0.5 |  |  |  |  |  |  |
| Crate | -1 | .5 | -0.5 |  |  |  |  |  |  |
| Cake | 1 |  | -0.5 |  | 1 |  | -0.1 |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

* + 1. Objectives – What are the objectives of the game?

The player’s ultimate goal in the game is to collect Light Gears in order to escape from Cyberspace. In each level, they can get up to 3.

* + 1. Play Flow – How does the game flow for the game player

Levels will be unlocked in sets of 4. In each level, the player can get up to 3 Light Gears, based on their score. The player must collect a certain number of light gears to unlock the next set of levels. In between sets, there will be one mandatory level. 5, 15, 25, etc. will be large levels with a larger plot purpose, and levels 10, 20, 30, etc. will be boss fights. There will be 6 Boss levels (2 land, 2 air, a final that has both in phases, and a harder version of the final boss), which will all be mandatory.

* 1. Mechanics – What are the rules to the game, both implicit and explicit. This is the model of the universe that the game works under. Think of it as a simulation of a world, how do all the pieces interact? This actually can be a very large section.
     1. Physics – How does the physical universe work?

Nick and Sarah are trapped in Cyberspace, a world where the corrupted AI Hex can create anything, except in a small domain where Nick has control. By collecting Light Gears, they able to gain control and eventually uncorrupt Hex.

* + 1. Movement in the game

In a level, the player can only move left, right, up, and down along the screen. They move forward automatically through the environment. Sometimes, the path will split and the player can choose to go left or right for example by moving to that side.

* + 1. Objects – how to pick them up and move them

By destroying enemies, the player collects Bits, which are automatically collected. The player will also pass health pickups which they collect by touching them. Long levels will also have checkpoints that are activated automatically as the player passes them.

* + 1. Actions, including whatever switches and buttons are used, interacting with objects, and what means of communication are used

The player can move into different objects as they pass them or shoot different objects that will have different level specific effects, such as clearing paths.

* + 1. Combat – If there is combat or even conflict, how is this specifically modeled?

As they the player moves through a level, they must dodge hazards as they pass. Enemies come in waves, shoot for a bit, then fly away. When the player is stopped and enemies come in, they will stay until they are defeated. When the player customizes their ship, the gun effects the shot they fire, having types like a laser or an ice blast.

* + 1. Economy – What is the economy of the game? How does it work?

From defeating enemies, the player collects Bits, a currency that is used to build new ship parts. There are also other destructible objects that yield Bits. From beating levels and bosses, the player collects Light Gears, which are used to unlock more levels.

* + 1. Screen Flow -- A graphical description of how each screen is related to every other and a description of the purpose of each screen.

From the title screen (selecting new game), the player goes to the opening cutscene, then to the first level, then another cutscene, then to the level select. From there, they can select any level, some of which will start with a cutscene, then start the level. After beating the level, they go back to the level select (possibly after a cutscene).

* 1. Game Options – What are the options and how do they affect game play and mechanics?

From the options in the pause menu, the user can change the audio levels of music, sound effects, and voices. In air levels, they can invert vertical movement. They can also change the controls.

* 1. Replaying and Saving

The player does not have to collect every Light Gear in a set of levels to access the next set, but as the Light Gear requirement becomes higher, they may be encouraged to revisit older levels to get more. Furthermore, as the player gets new ship parts, they can replay harder levels to be able to get a high enough score to get all 3 Light Gears in a level. The things that are saved when exiting the game are the total number of Light Gears they player has gathered, how many they have gotten from each level, the highest score the player has achieved on each level, the total number of Bits the player has collected, the specific ship parts the player has bought, and the last ship combination the player has built, and the options the player has set in the option menu. Options are only saved when they are changed, while everything else is saved during the loading screen going to the level select.

* 1. Cheats and Easter Eggs

Many cheats will be made during the production of the game for easier development, such as infinite health, or unlocking all ship parts or levels. These will probably be deleted with the final build of the game, but some may be kept and used as rewards for beating the game. A few Easter eggs have been planned, but more might come up throughout development. These include having a maze of vents in reference to my grade 12 Physics teacher, possibly having a reference to Owl-Man from Washed Up Wizard, my previous game, and having one level look similar to my residence building, Med-Syd Hall.

1. Story, Setting and Character
   1. Story and Narrative – Includes back story, plot elements, game progression, and cut scenes. Cut scenes descriptions include the actors, the setting, and the storyboard or script.

Before the events of the game, scientist Nick is working to create artificial intelligence. He has recently hired an intern, Sarah, who has yet to arrive. Upon being successful, the AI, named Hex, becomes corrupt by some unknown force and sucks Nick into his computer. After a long period of time (possibly a few days), the actual game begins with Sarah showing up at his abandoned house/laboratory. Everything in the real world is viewed through a security camera, switching between different views. A device at the door scans her, then the floor opens up, dropping her deep under the house. Hex appears on a large screen and tries to get Sarah to give Hex her phone. Hands reach out from the screen and try to rip it out of her hands. Sarah grabs a flower vase and splashes water on the screen. There are lots of electrical sparks, and Sarah is thrown back. Hex gets angry and says “Fine! Then you shall join him!”. Then the screen turns into a vortex and Sarah gets sucked into the screen, dropping her phone in the process. This then goes to the title screen. After starting a new game, Sarah lands in a large white void, where she runs into what ends up being a basic enemy, a Triagla. She runs but is eventually cornered at the edge of a cliff. Just as it is about to shoot, an object flies in from the edge of the screen and destroys it. The object (which ends up being the player’s ship with the starting ship parts) splits into 3 pieces, the gun, center, and wheels. Sarah slowly approaches them, then they suddenly magnetize back together. The center piece opens up, revealing a console with buttons and a screen. The screen comes to life with Nick on the other end. He tells Sarah to get into the machine and there isn’t much time to explain. Nick launched the ship by cannon to get it to Sarah, but doesn’t have direct control over it, so Sarah has to control it to get back to Nick’s bunker, which ends up being the tutorial level. Nick also changes the control console to look like a keyboard and mouse and makes the screen display the ship from a 3rd person view, mimicking the in-game view, Hud and all. Upon getting back to the lab, Nick explains that they are trapped in a computer world known as Cyberspace, which Hex has large control over. Hex is trying to collect something called Light Gears, which allows her to gain control. If Nick and Sarah can get to and collect the Light Gears first, then they should be able to create a portal back to their universe. Nick is able to use the Bits collected by Sarah to create new ship parts, giving it different abilities. Cyberspace contains many regions, such as the medieval insect forest and the crystal caves, that Nick and Sarah have to explore to find Light Gears. Each of these areas has conflicts, such as 2 castles being at war. Most are caused indirectly by Hex searching for Light Gears. Nick and Sarah help to bring peace to each of these areas, will also finding Light Gears themselves. As levels go on, they learn more about Hex’s intentions, that she was trying to get Sarah’s phone so that she could use the internet to trap more people in Cyberspace. There are also times when the real Hex is trying to fight her corruption. Eventually they discover a few strongholds where a lot of Hex’s Light Gears are being kept. These end up being bosses. After the first boss, levels that use an air vehicle start. In the end, they collect enough Light Gears to escape, but in the process are stopped by Hex, who steals all their Light Gears and becomes super powerful. The final battle has 2 large phases using both the land and air vehicles. In the end, they defeat Hex and escape back to the real world. Everything seems to be back to normal, but Nick still feels very bad for Hex. Then, he realizes that (maybe) if they can collect every Light Gear, they might be able to uncorrupt Hex. They decide to willingly get sucked back into Cyberspace to save her. The player must go back and collect every Light Gear from previous levels, as well as some bonus levels. After collecting every one (a total of 200), they go back to fight Hex one last time, she steals the Light Gears again and is even more powerful, being a harder boss than before. Nick and Sarah are at first unable to defeat her but are then many of the characters from the different regions show up and help. Together, they are then able to uncorrupt Hex and they return to Earth, back into Nick’s lab. They are concerned about how Hex became corrupt, but everything seems to end happily… until they walk outside, and everything around the house is destroyed, abandoned, and apocalyptic. Cut to credits!

* 1. Game World
     1. General look and feel of world

Cyberspace is another universe with many different regions. The player explores 4 of them, and they are all separated by a white matrix. Hex is able to control and manipulate the environment, and is causing havoc in each of them. Most of these areas have some sort of conflict that Nick and Sarah help to solve, while finding Light Gears along the way.

* + 1. Areas, including the general description and physical characteristics as well as how it relates to the rest of the world (what levels use it, how it connects to other areas)

Matrix – A void of neon shapes that can move and stretch. The boundaries of each region. Where Sarah first enters Cyberspace. Contains Nick’s lab, a makeshift bunker he has built to hide from Hex.

Medieval insect forest – A dense jungle with two large kingdoms, human knights, and large monster insect creatures, that are at war with each other. The human castle looks like a medieval castle (one section looks like Med Syd Hall) in a grassland of cliffs while the insect castle looks like a city in the trees with lots of vegetation below. In between, are a mucky swamp and an overgrown stone temple. Boss is giant demonic caterpillar that turns into giant butterfly.

Whirlwind desert – A large desert with an underground mine,

containing glowing crystals. On the surface, there is an oasis, a dessert area, some pyramids whose trap filled tombs connect to the mine, and a train system going between all of them. There are frequent sandstorms. Boss is a mummified candy monster.

Aquatic Nebula – A space junkyard and an aquatic base connected through many small portals. space area filled with random floating debris. Fleet of spaceships in the middle being bombarded with junk. Underwater base on sea floor with nearby Atlantis-like city in coral reef and many dark tunnels. Base in threat of flooding. Boss is a giant octopus who uses portals to go between areas.

Volcanic Tundra – Snowy mountain that turns into volcano by flipping switches all around the environment. In later level, Switches break and area becomes a half and half split of the two. Large nuclear factory moving around mountain. Convertor belts, gears, and vents everywhere. Factory is alive as a giant robot. Upper area full of circuits and wires. Boss involves chasing factory robot as it rampages around the mountain, and getting into its brain.

* 1. Characters. Each character should include the back story, personality, appearance, animations, abilities, relevance to the story and relationship to other characters

Nick – The scientist that created Hex.

Sarah – Nick’s intern.

Hex – The AI corrupted by an unknown force.

1. Levels
   1. Levels. Each level should include a synopsis, the required introductory material (and how it is provided), the objectives, and the details of what happens in the level. Depending on the game, this may include the physical description of the map, the critical path that the player needs to take, and what encounters are important or incidental.

There will be a total of 54 levels and 6 bosses. They are unlocked in sets of 4. After every set there is a mandatory level. Levels 5, 15, 25, etc. are longer levels, while levels 10, 15, 25, etc. are bosses. Below are some potential levels in mostly random order. They will mostly be sorted by difficulty.

Training Level

The tutorial will take place in a matrix environment after the opening cutscene. The player starts moving forward automatically. They learn how to move left and right and have to dodge objects. Some enemies appear and they have to shoot them. More exposition is given. Sarah learns about Bits and Light Gears. The rest of the level is normal, introducing more subtle game mechanics, like the score, health, checkpoints, and end of level.

1. Interface
   1. Visual System. If you have a HUD, what is on it? What menus are you displaying? What is the camera model?

During a level, the screen will display health, current score, and number of bits collected in the corners of the screen. If a character is talking, then text plus their face will be at the bottom. In the level select, the number of Light Gears and the total number of Bits will be displayed at the top. The camera views the player from a fixed 3rd person view as they move forward through a level.

* 1. Control System – How does the game player control the game? What are the specific commands?

The w, a, s, d keys are used to move the player. The player’s gun shoots with left click. If the gun can aim, it aims toward the mouse. Shooting different interactable can have different effects, like clearing a path. They can also pause the game with escape.

* 1. Audio, music, sound effects

For now, most of the music and sound effects will be found through royalty free sources. Voice acting will be done through people I can find who want to volunteer.

* 1. Help System

The player will be taught things as needed through exposition in levels and can check all the controls in the pause menu at any time.

1. Artificial Intelligence
   1. Opponent and Enemy AI – The active opponent that plays against the game player and therefore requires strategic decision making
   2. Non-combat and Friendly Characters
   3. Support AI -- Player and Collision Detection, Pathfinding
2. Technical
   1. Target Hardware

The game will be built for PC, with both Windows and Mac versions.

* 1. Development hardware and software, including Game Engine

The Unity Game Engine will primarily be used for level building and bringing the code, art, and music together, MonoDevelop will be used for all programing in C#, Blender will be used for 3d modelling, and Photoshop will be used for texturing and UI art.

* 1. Network requirements

Probably none. If a multiplayer mode is added, then the only network requirements would be whatever is needed for 2 computers to connect.

1. Game Art – Key assets, how they are being developed. Intended style.
   1. Refer to Reference art.