Game Design Document

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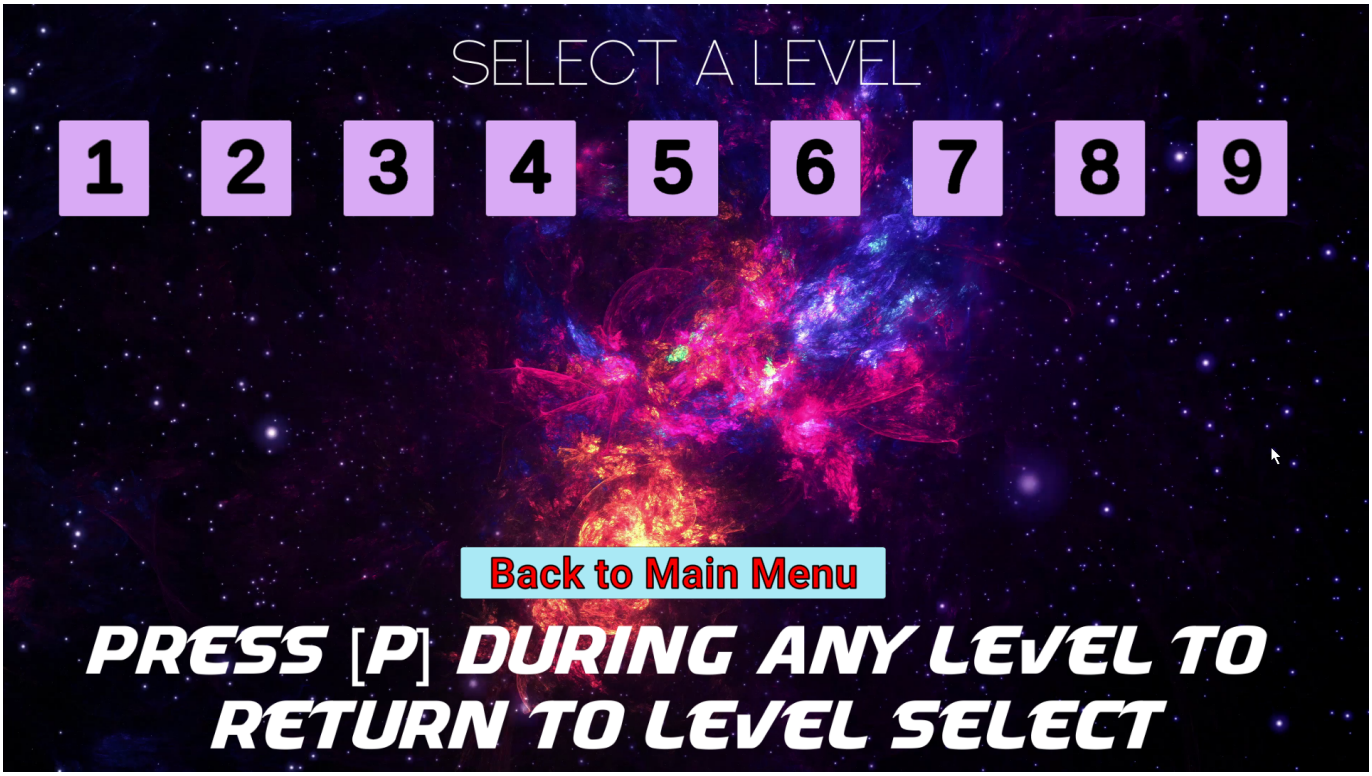
LET'S SURF!

Overview:

SURF! is a competitive, singleplayer, first-person 3D speedrun maze platformer game. You, the player, will traverse through different levels and maps with the use of gadgets and special movement called "surfing" to arrive at specific locations in the shortest amount of time. However, there will be many obstacles that hinder you from just simply walking to your destination. Certain hindrances like the walls will cause instant death when touched, preventing you from reaching your goal. Get creative, discover the fastest path, use physics and movement, and challenge yourself in order to reach your destination in the fastest time possible!

This game was inspired by CS:GO surfing and borrows similar physics and concepts such as movement. There will be ramps and slopes and other obstacles in the levels that the player can use. ***The knife in this screenshot IS NOT TO BE INCLUDED IN THE FINAL GAME.***

This is the Start Menu of the game. Simple, yet pleasing with complimentary background music.



The game features many different levels showcasing new movement techniques and varying difficulty. The level selection screen allows for easy navigation when choosing what level to come back to and play.

The unique "launch ramp," out of many other kinds of ramps, is showcased here from Level 8 in the game.

The player is currently in the process of "surfing" by using the physics of the game and the sloped surfaces to reach the end goal which is marked in yellow (Level 4).

Genre

The genre of the game is a first-person 3D speedrun maze platformer game that borrows the physics and movements from VALVE's CS:GO and concepts from CS:GO's surf gamemode in order to travel through the maze/obstacle course of the level through the use of extreme physics. The player must use the surroundings and slopes provided in the levels in order to get from point A to point B without dying in the shortest amount of time possible. The player's control of their movement is crucial in order to get to certain parts of the map and perform complicated air maneuvers in order to build up enough speed and momentum in order to skillfully traverse the map efficiently. There are many paths that the player can use to get to their specific destination so the player can get creative and choose the best and fastest way for them to get there. Of course, there will be obstacles that will try to hinder the player from winning.

Theme

While there is no set theme/setting to the whole game, the semi-realistic settings of the levels are the levels themselves that are designed and laid out. The level/map itself contains where all the gameplay is occurring and each of them can be compared similarly to an obstacle course. However, certain sets of levels can vary in terms of theme. For example, levels 1-10 will feature a sky setting/theme where the player is jumping and surfing around high up in the air above the clouds. If the player falls, of course, they die. For future levels, other themes for levels may include a school setting, a different indoor setting, an outer space setting, and more.

Visual Aesthetics

The game has a semi-realistic aesthetic of the modern world with textures, lighting, and reflections based off of the looks of the real-world. Depending on the theme of the level, extra lighting effects or colors may be included. The game is also played in a very smooth and satisfying first person view due to the surfing movement in the 3D world.

Sound Design

The game features licensed, empowering background music for different themes of levels. The game also has sound effects such as when the player begins a run and starts the timer, when the player finishes the level, and

when the player dies from falling into the void. In future updates, there will also be a wind sound when you're travelling super fast through the air, player sounds when you jump like when you jump and land on a surface, sounds when you walk on surfaces, and more. The game will also feature directional sounds that come from sources in the player surroundings.

Goal

In each "level," there will be a different goal where you have a start point and you must get to a certain end location without dying in the fastest time possible in one run. For example, for one "level," you must surf to build up enough momentum in order to fling yourself in a direction across a large gap toward the finish area. For the next "level," you have to strafe and dodge around a wall using the speed built up by surfing to get to the other side where the finish area is. You can use the surroundings of your space in order to aid your movement to get to your destination. You can challenge yourself to get the fastest time possible in each level. In a possible future update, you will also be able to compete against your friends or other people who play the game to try to beat their best time for a level.

Mechanics

The main mechanic that this game features is called "surfing." Whenever you hit/land on a slope, you start sliding down it. However, if you move your character against the direction that you are sliding down, you will be able to hug the surface for longer and use that time to use the rest of the sloped platform to change the direction you are going, build momentum, and continue moving along the platform. Basically, you slide against a slope, similar to wall running, but you use that momentum and with the help of physics to control your movement to launch yourself and fly to the next platform, turn around corners, etc. In the future, you will also be able to use a grappling hook to grab onto a wall or the ceiling in order to swing yourself across gaps and around corners. You cannot climb walls, and the only time you will be running or jumping will be at the start of a level. Left and right movement and coordination with mouse movement are crucial in order to succeed in this game. Game physics and gravity also play a big role in impacting your movement.

Controls

The keyboard controls are W, to move your character forward, S, to move your character backward, A, to move your character left, D, to move your character right, and space, to make your character jump. You use your mouse in different directions to move your camera or character's view around based on the direction that your mouse moves. When on a slope, the A and D keys will be the only keys that you need to surf. For example, if the slope of a platform is going down to the right, you want to hold left on your keyboard to counteract it and hug the surface of the slope. The mouse cursor will be used in the Main Menu and Level Selection screen in order for the player to click and select certain options. In any level, hitting M will send the player back to the Main Menu and hitting P will send the player to the Level Selection Screen. R will allow for the player to restart a level, and F will send the player to the next level once they have completed the current level. For Debugging/Dev Tools, L can be used to reset a current level's best time, B can be used to load the previous level in terms of index, and N can be used to load the next level in terms of index. For the grappling hook, which will be a future addition, left clicking will fire out a rope to attach to a surface if it is close enough to the player (since the rope is limited by length and raycasts will be used to check) and letting go of left click will detach the rope.

Players

This game is currently available for single-player and will later be available for online competitive multiple-player. The player can get a feel for the maps, learn how to surf, practice surfing, and challenge themselves by playing single player in order to beat their best times. The objectives and levels will be the same for both single and multiplayer. In multiplayer, you will be able to challenge other players in real life to compare best times and see who can beat the levels the fastest. Collisions against other players will be disabled to prevent sabotage and you can also race against their ghosts. You can also compare techniques and paths of other players as well. A ranking system for each level will display the top 10 people who got the fastest time for that level.

Enemies/Hazards

So far, the current hazards in this game feature the void of the world that will kill and reset the player whenever the player falls into it, surfaces and areas like walls and out-of-bounds areas that will kill and restart you on contact, and obstacles such as walls to impede your movement and path of navigation. The levels' designs and layouts are also technically a hazard, because it is dependent on you to control the player in such a way to prevent yourself from colliding into walls, figure out where your destination is in the levels, perform difficult maneuvers, and determine what the best, fastest path to get to the destination is. While there are no current enemies, AI surfers may be added in the future to chase the player down and kill/reset them with contact.

Future Enhancements/Bug Fixes

While I have mentioned many potential and ongoing game features in the earlier sections, the most upcoming enhancements include retexturing the levels, revamping the tutorial, making a better UI system with a popup message displaying each level's objectives, and making full levels that feature everything that the player has learned from levels 1 through 9. There may also be a return to the idea of incorporating a map of GSMST in some of the levels.

Technical References

CS:GO Best Surf Maps (Screenshot) - https://www.dbltap.com/posts/6311635-csgo-surf-servers-best-servers-to-play

Frames Per Second Counter in Unity - http://wiki.unity3d.com/index.php/FramesPerSecond

CS:GO Movement and Physics Ported to Unity - https://github.com/AwesomeX/Fragsurf-Character-Controller/tree/master/Source/Fragsurf

Modified CS:GO Movement and Physics Ported to Unity - https://github.com/Olezen/UnitySourceMovement/tree/master/Modified%20fragsurf

Cloud Development and Testing in Unity - https://github.com/SebLague/Clouds

C# Timers - https://docs.microsoft.com/en-us/dotnet/api/system.timers.timer

Unity Scene-Specific High Scores using PlayerPreferences - https://answers.unity.com/questions/1447020/scene-specific-high-score.html

Brackeys: START MENU in Unity - https://www.youtube.com/watch?v=zc8ac_qUXQY

Textures/Materials - https://opengameart.org/textures/all

Unity Documentation - https://docs.unity3d.com/Manual/index.html

Unity Play Music Across Scenes -

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