Schepens Game Dev 1st

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Mission to the Moon

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Overview

This game is a 2D single player strategy game, and is based on the 1979 Atari Lunar Lander game. In each level of the game, the player guides a small landing ship down to landing at a certain spot safely, without going at so fast a speed that it crashes and gets destroyed. Each level adds a certain amount to the player's score, with later levels making sure the landing point is farther away from the spawning point and awarding higher scores for the extra challenge it will be to complete the level. This game will differ in the key aspect that it will have a lot more color than what the original Lunar Lander had, and have a minigame not found in the original game.

Theme and Visual Aesthetics

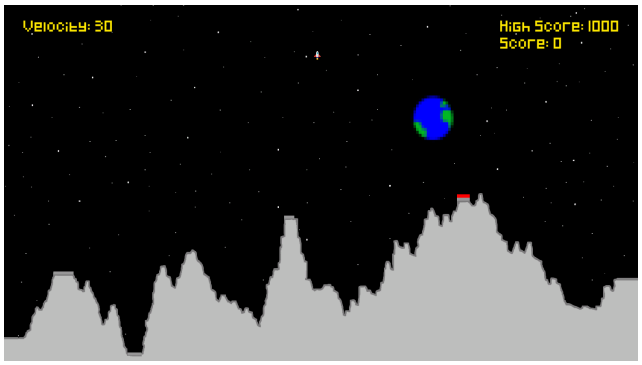

Figure 1: A zoomed out view of the game

The theme of this game is the moon. As such, the game is minimalistic, in order to keep in line with the original Atari Lunar Lander game as well as real life. Raster graphics are used in this game, which is different from the vector graphics of the Atari game. The background is static, and is mostly black with some stars and the Earth to add a small amount of color to the game. The lander is styled after a classic rocket shape, with lots of color and pixelation to stand out from the rest of the game. It is relatively small in comparison to the entire game screen in order for the player to have better visibility of the terrain. The terrain is outlined in a dark gray and is filled with a flat light gray. It is very jagged with many peaks and valleys. The landing zone will be marked in white, and it can be one of 4 different flat areas in each different terrain variant. The text indicators on the display which show different values are yellow and use the Pixeled font, in order to stay with the retro futuristic theme and to have better contrast against the dark background.

Sound Design

The sound design will be minimalistic, in line with the original Lunar Lander game. This means that there will not be any background music, and the only sounds heard are caused directly or indirectly by the player. Sounds in the game include thrusters firing, an explosion noise when a crash occurs, and a warning noise when the lander is going at a dangerous velocity towards the ground.

Mechanics

The ultimate goal of the game is for the player to land on the landing zone safely as many times as possible. The player can rotate the ship using the joystick (or arrow/wasd keys). The player can boost the ship based on the direction it is facing by pressing a button (or space bar). There may be a single or multiple landing points for the player to target. If the player hits the ground at an angle or at too high of a velocity, then the lunar lander will explode, causing the game to end. Once the game ends, the player's score is recorded on a leaderboard. Another system that could be implemented is a high score system that is persistent. Another mechanic for the game is that the lunar lander has a limited amount of fuel to get to the desired location safely.

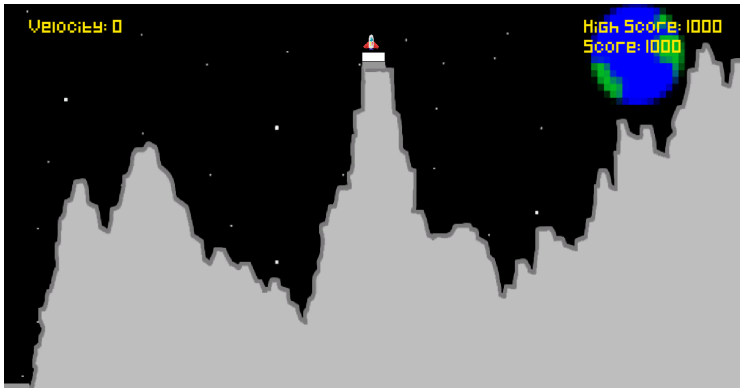

Figure 2: A successful landing

Hazards

Hazards in this game include not landing at a designated landing site, the player hitting the ground at a high vertical speed, or the player hitting the ground at a high horizontal speed, which would cause the lander to explode. The player can also run out of fuel which would lead to one of the aforementioned scenarios. Another hazard that will be used is random pieces of space rock that float above the

Figure 3: A crash on the terrain

terrain, which could collide with the lunar lander as it gets closer towards the ground.

Creative Element

The creative element of this project is a bonus asteroid destroying level in addition to the graphics and sounds revamps. This bonus level is activated by successfully landing the rocket in the first stage of the game, and allows the player to earn some more points and beat previous high scores. The player uses the joystick/arrow keys to swivel a cannon around the level, and once they have aimed at an asteroid (with randomly generated positions and movements) successfully, can press the action button to fire a laser. Upon firing the laser, it may hit the asteroid, causing it to be destroyed and granting the player bonus points. This bonus level lasts for twenty seconds, and upon ending, will bring the player to the game end screen where they may view their final score.

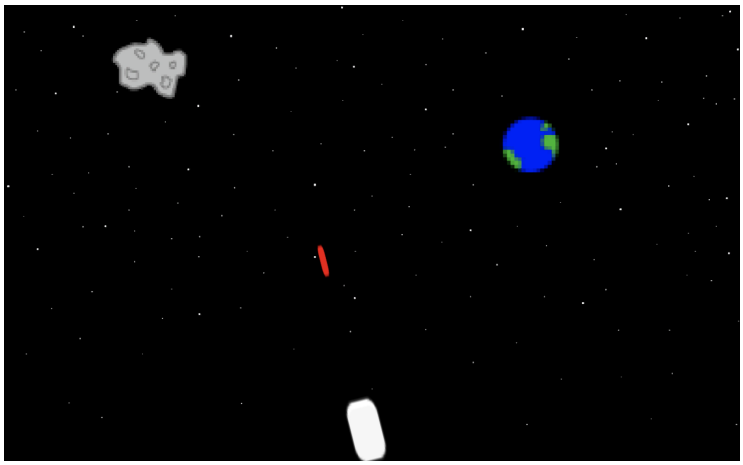

Figure 4: Creative element, where a laser beam is being fired at an asteroid

Individual Tasks

Student	Responsibilities
Rayan Afsar	Level generation and design; Obstacle programming and design; Speedometer and distance calculations (includes detecting how hard the lunar lander lands)
Maddox Pealock	Programming of gravity; Programming of thrusters; Programming of score calculations and Persistency
Oliver Kuehl	Sound Design; Artwork for Sprites; Main menu design

Technical References & Credits

Thirslund, A. [Brackeys]. (2018, July 15). 2D movement in Unity [Video]. YouTube. https://www.youtube.com/watch?v=dwcT-Dch0bA

Old Classic Retro Gaming. (2014, July 4). Arcade Game: Lunar Lander (1979 Atari) [Video]. YouTube. https://www.youtube.com/watch?v=McAhSoAEbhM

Unity - Scripting API
https://docs.unity3d.com/ScriptReference/Vector3.Lerp.html

https://docs.unity3d.com/ScriptReference/Transform-eulerAngles.html

All images used are actual in-game screenshots. The font used for the title screen and the text indicators is the Pixeled Font by OmegaPC777, and was downloaded from https://www.dafont.com/pixeled.font.

https://freesound.org/

https://mixkit.co/

https://opengameart.org/