SPACE ARENA

Nicholas Stiers
Thesis Book
December, 2020

Artist Bio

Nicholas Stiers is a Game Developer, Animator, and Visual Effects Artist. He lives in Clarksville, Tennessee where attends Austin Peay State University. He is enrolled in the Art + Design program and is currently completing his senior year toward earning a Bachelor of Fine Arts, with a focus in Visual Effects and Animation. He has been studying animation and visual effects since 2018, and game design since 2019. He has created several 2D and 3D works using design software like Maya and Harmony. He is currently developing a top-down shooter video game called Space Arena in Game Maker Studio.

Nicholas Stiers

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Experience

- Video Game: *Space Arena*
  Built, coded, and designed a top down arena shooter game in its entirety.

- Collaborative Short Film: *The Hangman's Den*
  Camera layout and design of this short film.

Education

December, 2020
Austin Peay State University, Clarksville, TN
BFA Animation/Visual Effects

Artistic Skills

- Character/Landscape modeling 2D/3D
- Roto
- Rigging/Texturing/UV mapping
- Animating 2D/3D

Software Skills

- Maya
- Toon Boom Harmony
- After Effects
- Nuke
- Illustrator/Photoshop
- Game Maker Studios 2

https://youtu.be/vqjTon2-Uog

Demo Reel Breakdown

Shot #

1. **Score-Bot**
   - Animation
   - Used my own modeling, textures, and rigging.
2. **Green Screen Insert**
   - Visual Effects
   - Incorporated myself into a movie.
3. **Green Screen Breakdown**
   - Visual Effects
   - Breakdown of how it came to be.
4. **Zombie Walk Cycle**
   - Animation
   - Walk cycle with human reference.
5. **Space Arena**
   - Video Game
   - Depicts some of the action, backgrounds, and levels of my game.
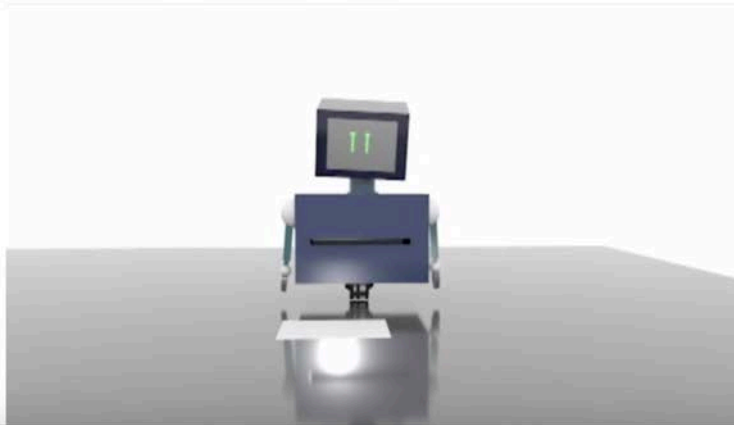
https://nstiers2.wixsite.com/mysite-1

Thesis Statement

Space Arena is a top down arena shooter game where the player goes on a journey from Earth through space to fight off and destroy invading ships from other planets, solar systems, and galaxies.

Proposal

My goal is to gain the experience of how to create a complete video game of my own, so that I understand the different roles and skills it requires. I am familiar with some of the big aspects of making a game, like the narrative, character building, world building, and technical skills of the program itself. However, there is still plenty about game development that I have yet to learn. I understand that usually these types of projects are developed by a team. However, because I am building it on my own, I am keeping the design compact, clean, engaging and fun. I am networking with other game developers for assistance with issues and feedback. I am also using various online sites for research and design ideas. With that assistance, I am building the entire game where all elements and aspects of it are of my own creation. I chose to use this approach as I feel that it will give me a better experience of how all pieces fit together and will help me to be better at working with a team, and contributing to the effort it takes to make even larger games commercially in my future as a game developer. This project is something that I feel will not only help, but give me an edge in the field I am pursuing.

Research

References

❑Similar Game Concept Ideas

  ▪ *Galactic Asteroids Patrol*: Noam Toledano

  ▪ *Super Mega Space Blaster Special Turbo*: Developed by Bare Knuckle Development

  ▪ *Viper Attack*: Developed by Gillsoft

❑Tutorials on YouTube

   Gamemaker Studio 2

https://www.youtube.com/watch?v=IWXJbUHLYXA (1-8)

   Text box tutorial:

 https://www.youtube.com/watch?v=RQIjRrRma6M

❑ 1-5 following the DND version of tutorials

https://www.youtube.com/watch?v=raGK_j1NVdE&t=483s

References

❑Developer forums for advice and game critique

  ▪Reddit Developer Forum

  ▪Gamemaker Community Forum

❑General internet research for problem solving

❑Forum Links:

https://forum.yoyogames.com/index.php?forums/work-in-progress.18/
https://www.reddit.com/r/GameDevelopment/
https://www.gamedev.net/forums/
http://forums.indiegamer.com/forums/game-design.19/

Visual Research

Backgrounds

Production

Timeline

|	Task Name	Start	Finish	Status Indicator
1	Iteration 1	Wed 1/15/20	Tue 3/31/20	✓
2	Create Start Screen	Wed 1/15/20	Tue 3/31/20	✓
3	◢ Player	Wed 1/15/20	Tue 3/31/20	✓
4	Build Spaceship Sprite - LVL 1	Wed 1/15/20	Tue 3/31/20	✓
5	Build Bullet - LVL 1	Wed 1/15/20	Tue 3/31/20	✓
6	Animate Spaceship and Bullet - I	Wed 1/15/20	Tue 3/31/20	✓
7	◢ Enemy	Wed 1/15/20	Tue 3/31/20	✓
8	Build Spaceship Sprite - LVL 1	Wed 1/15/20	Tue 3/31/20	✓
9	Build Bullet - LVL 1	Wed 1/15/20	Tue 3/31/20	✓
10	Animate Spaceship and Bullet - I	Wed 1/15/20	Tue 3/31/20	✓
11	Create Preliminary Backgrounds	Wed 1/15/20	Tue 3/31/20	✓
12	Create Scoring Mechanism - all Lev	Wed 1/15/20	Tue 3/31/20	✓
13	Test and Bug Fixes	Wed 1/15/20	Tue 3/31/20	✓
14	◢ Iteration 2	Wed 4/1/20	Thu 10/15/20	✓
15	◢ Build Sprites	Wed 4/1/20	Thu 10/15/20	✓
16	Player Spaceships	Wed 4/1/20	Sun 5/10/20	✓
17	Enemy Spaceships	Wed 4/1/20	Sun 5/10/20	✓
18	Bullets	Wed 4/1/20	Thu 10/15/20	✓
19	Create Level 2 - attack and scoring	Wed 4/1/20	Wed 5/20/20	✓
20	Test and Bug Fixes	Tue 5/19/20	Sat 5/30/20	✓
21	◢ Iteration 3	Wed 7/1/20	Sun 11/15/20	✓
22	Redesign Spaceships	Wed 7/15/20	Thu 10/15/20	✓
23	Redesign Backgrounds	Wed 7/15/20	Thu 10/15/20	✓
24	Replace Sprites with New Designs	Wed 7/15/20	Thu 10/15/20	✓
25	Insert Final Backgrounds	Wed 7/15/20	Thu 10/15/20	✓
26	Test and Bug Fixes	Wed 7/1/20	Sun 11/15/20	✓
27	◢ Iteration 4	Thu 10/1/20	Wed 12/2/20	✓
28	Create Death Animations	Thu 10/1/20	Mon 10/5/20	✓
29	Select Music and Sounds	Thu 10/1/20	Sat 10/10/20	✓
30	Code Sounds	Thu 10/1/20	Sat 10/31/20	✓
31	Test and Bug Fixes	Thu 10/15/20	Sat 10/31/20	✓
32	◢ Iteration 5	Sun 11/1/20	Sun 11/15/20	✓
33	Add "How to Play" Screen	Sun 11/1/20	Sun 11/1/20	✓
34	Add "Credits" Screen	Thu 11/5/20	Tue 11/10/20	✓
35	Create Executable	Tue 11/10/20	Sun 11/15/20	✓
36	Iteration 6 - Refine and Test	Sat 8/1/20	Sun 11/15/20	✓

Work
in Progress

Behind the Scenes

Sample Spaceship Design Evolution

Player Ship
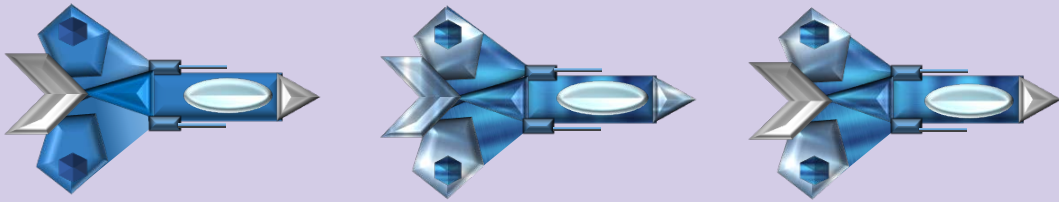
Enemy Ships
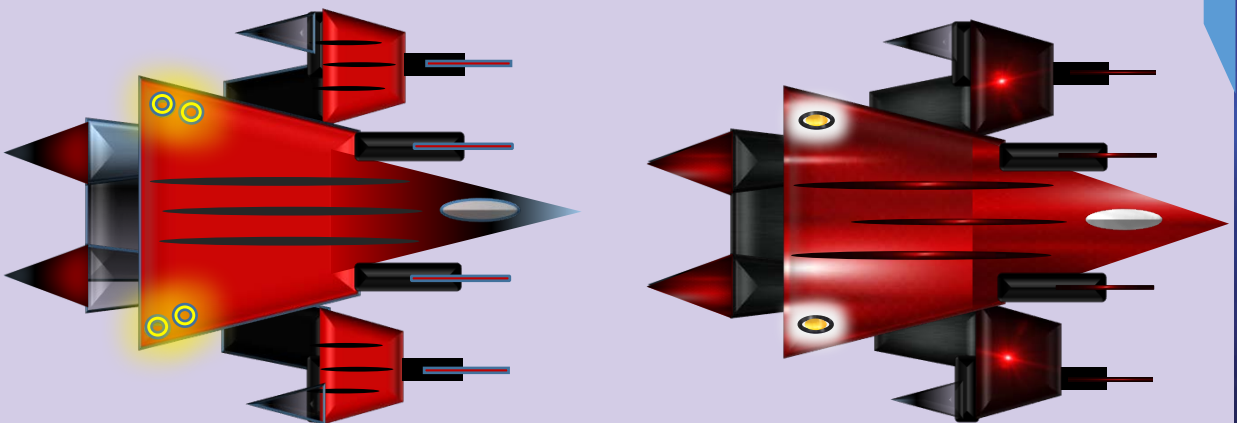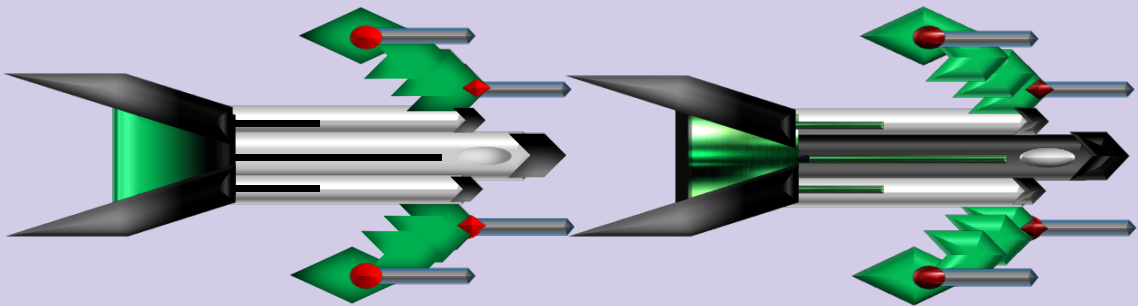
Behind the Scenes
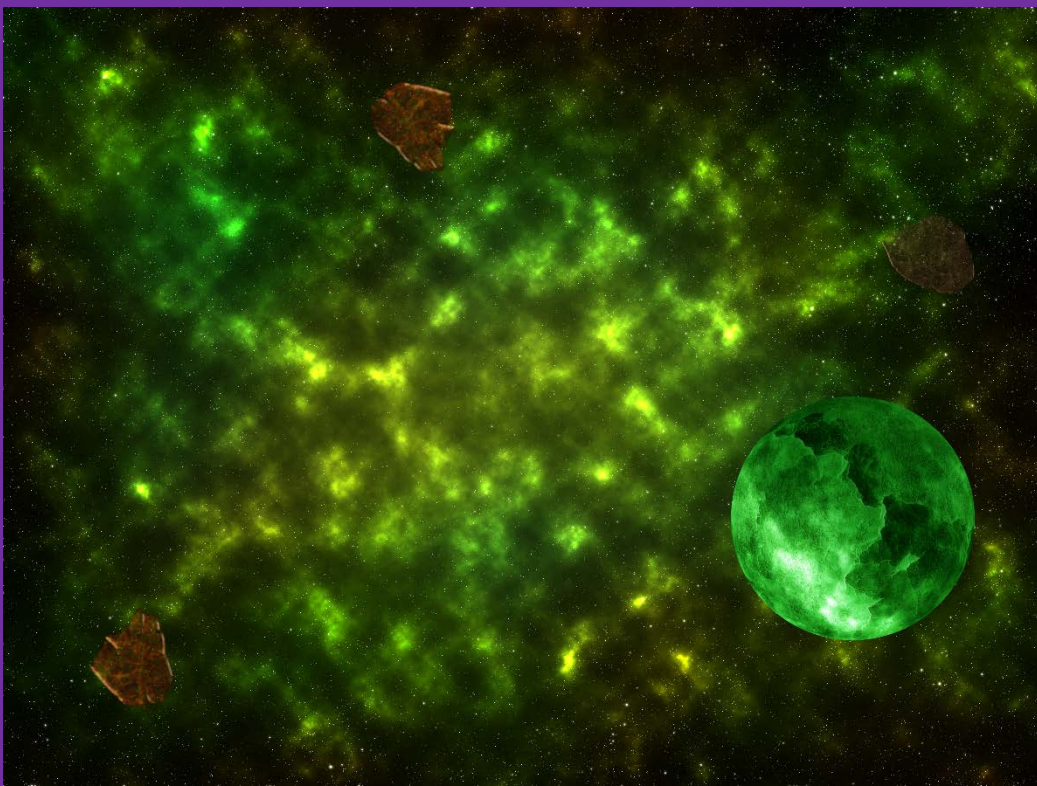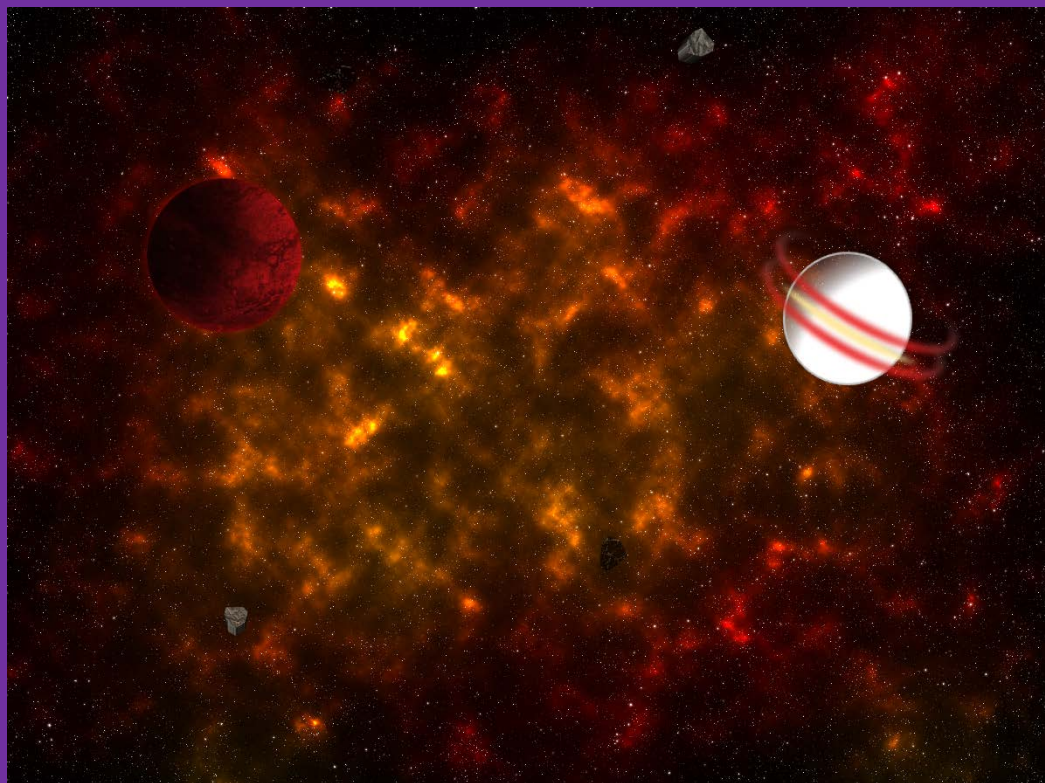
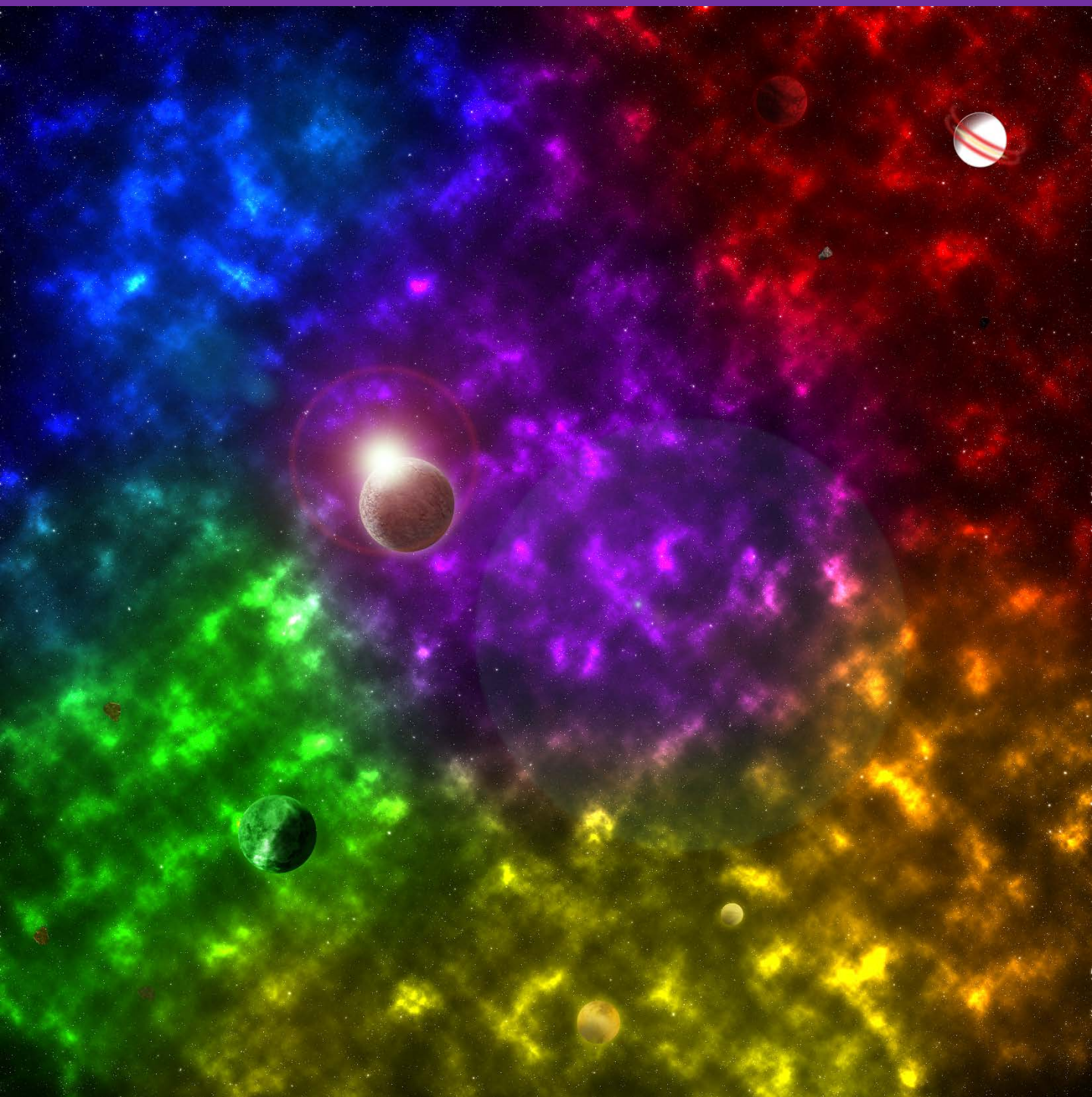## Preliminary Draft Backgrounds and Elements

Behind the Scenes

Final Background Used for Level 2

Final Background Used for Level 3
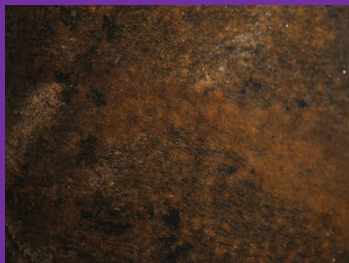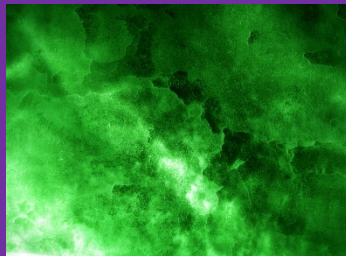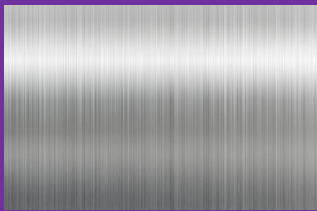
Behind the Scenes

Final Background Used for
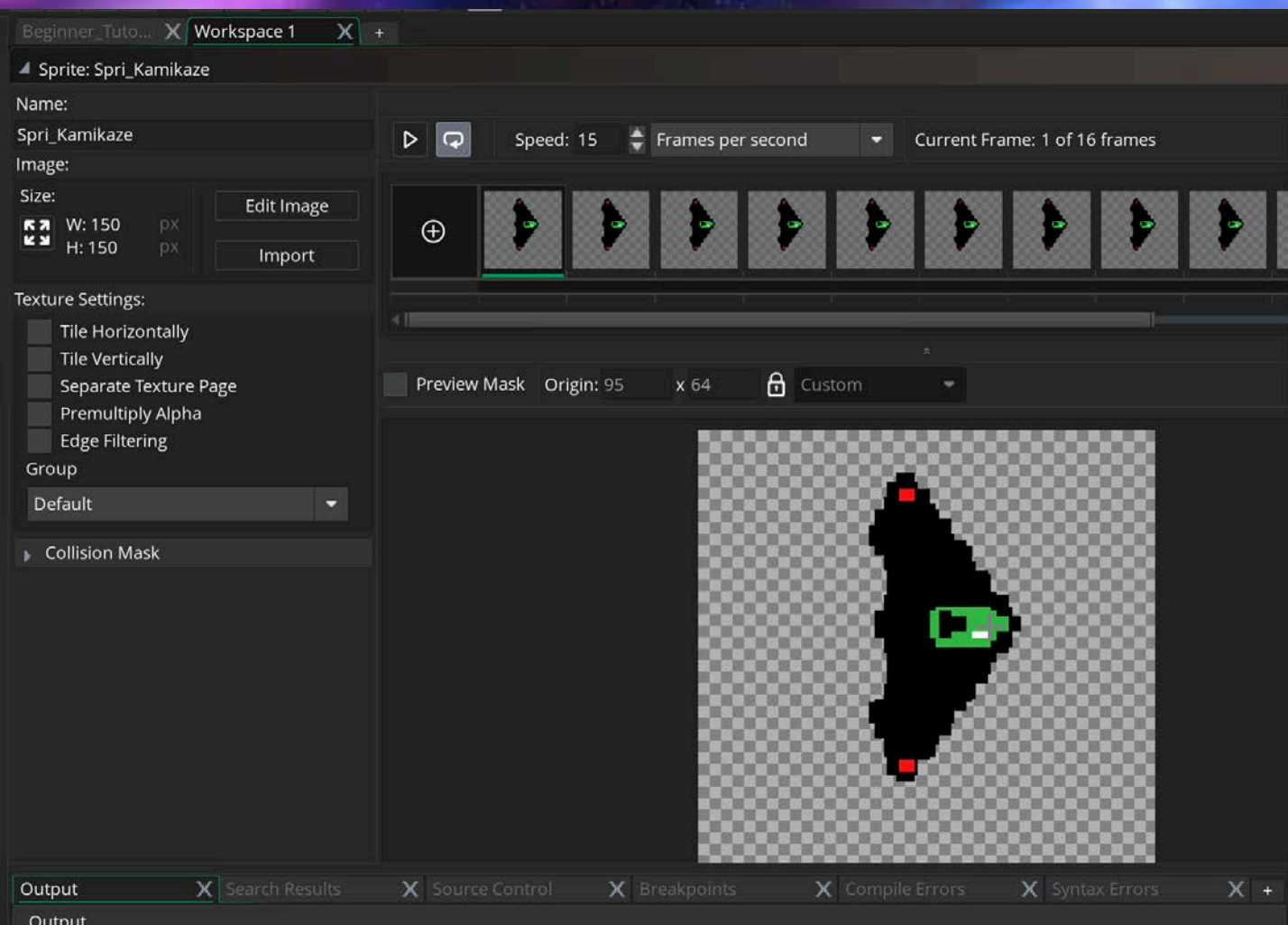Final Level of Game

Behind the Scenes

A few metal textures used in the spaceship designs.
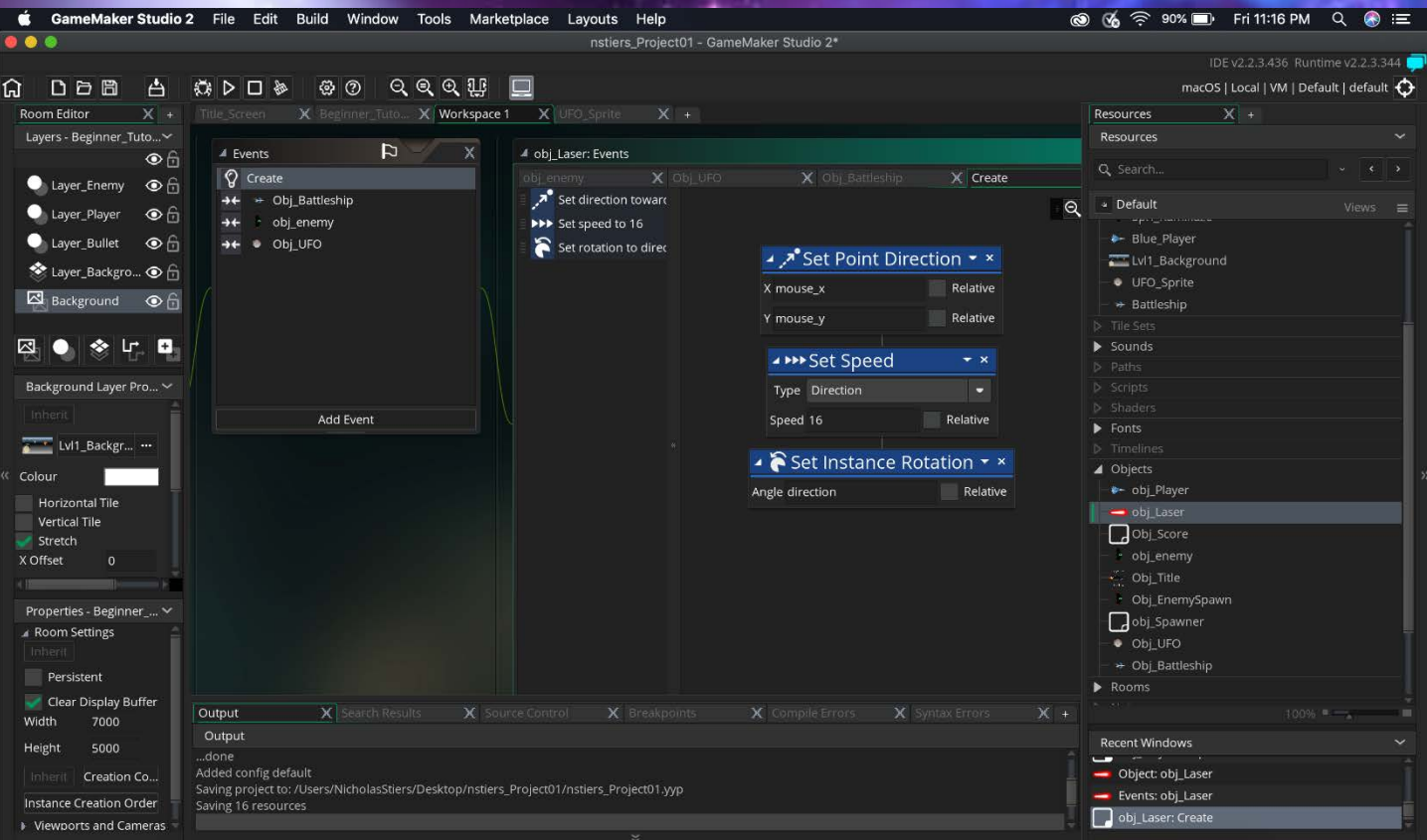
Planet Textures

Behind the Scenes

Code Sample:
Animation Design to Create Blinking Lights

Behind the Scenes

Code Sample:
Setting Bullet Direction and Speed

Behind the Scenes

```
259         draw_sprite(Char_Icon, 100, 530, 100);
260         draw_set_colour($FFFFFFFF & $ffffff);
261         var l4823845E_0=($FFFFFFFF >> 24);
262         draw_set_alpha(l4823845E_0 / $ff);
263
264
265
266         if(!variable_instance_exists(id, "score")) score = 0;
267         draw_text(400, 350, string("FINAL SCORE: ") + string(score));
268
269         draw_text(325, 425, string("Press Enter to Continue ") + "");
270
271         draw_set_halign(fa_left);
272         draw_set_valign(fa_top);
273         break;
274     }
275     case Final_Level:{
276         var vc = view_camera[0];
277
278         var cx = camera_get_view_x(vc);
279
280         var cy = camera_get_view_y(vc);
281
282         var cw = camera_get_view_width(vc);
283
284         draw_set_font(fnt_Score);
285
286         draw_set_halign(fa_center);
287         draw_set_valign(fa_top);
288
289         draw_set_colour($FF10FF00 & $ffffff);
290         var l2F77B2A3_0=($FF10FF00 >> 24);
291         draw_set_alpha(l2F77B2A3_0 / $ff);
292         draw_set_color(c_white);
293         draw_text(cx + (cw/15), cy + 32, string("Final"));
294         draw_set_color(c_lime);
295         if(!variable_instance_exists(id, "score")) score = 0;
296         draw_text(cx + (cw/2), cy + 32, string("Score: ") + string(score));
297
298         var l27C9A84C_0 = sprite_get_width(Spr_Lives);
299         var l27C9A84C_1 = 0;
300         if(!variable_instance_exists(id, "__dnd_lives")) __dnd_lives = 0;
301         for(var l27C9A84C_2 = __dnd_lives; l27C9A84C_2 > 0; --l27C9A84C_2) {
302             draw_sprite(Spr_Lives, 0, cx + 950 + l27C9A84C_1, cy + 105);
303             l27C9A84C_1 += l27C9A84C_0;
304         }
305         break;
306     }
307 }
308
```

Code Sample:
Creation of Events in Game

Behind the Scenes

```
Create                    X
1   loopdeloop = 0;
2   menu_x = x;
3   menu_y = y;
4   button_h = 52;
5   image_alpha = 0;
6
7   x = room_width/2;
8   y = room_height/2;
9
10  globalvar lifes;
11  lifes = 3;
12  // buttons
13  button[0] = "New Game"
14  button[1] = "Scoreboard"
15  button[2] = "How To Play"
16  button[3] = "Credits"
17  button[4] = "Exit"
18  buttons = array_length_1d(button);
19
20
21  menu_index = 0;
22  last_selected = 0;
23
24  globalvar isbossdead;
25  globalvar isbossspawned;
26
27  isbossdead = false;
28  isbossspawned = false;
29
30
31
32
```

Code Sample:
Main Menu Creation, and Boss Global Events

Behind the Scenes

Credits_Textbox: Events

| Key Press - Enter | ✕ | Draw | ✕ | Create | ✕ |

```
1   draw_set_halign(fa_center);
2   draw_set_color(c_white);
3   draw_set_font(fnt_Created_by);
4   draw_text(room_width – 500, room_height – 650, "SPACE ARENA: Created by Nicholas Stiers");
5   draw_set_font(fnt_SpecialThanks);
6   draw_text(room_width – 500, room_height – 500, "With Special Thanks!");
7   draw_text(room_width – 500, room_height – 435, "Tanner Jones");
8   draw_text(room_width – 500, room_height – 355, "Nathalie Stiers");
9   draw_text(room_width – 500, room_height – 275, "Angel Ganter");
10
11
12
13  draw_set_font(fnt_Menu);
14  draw_set_color(c_red);
15  draw_text(menu_x, menu_y + button_h, "Press Enter to go back");
```
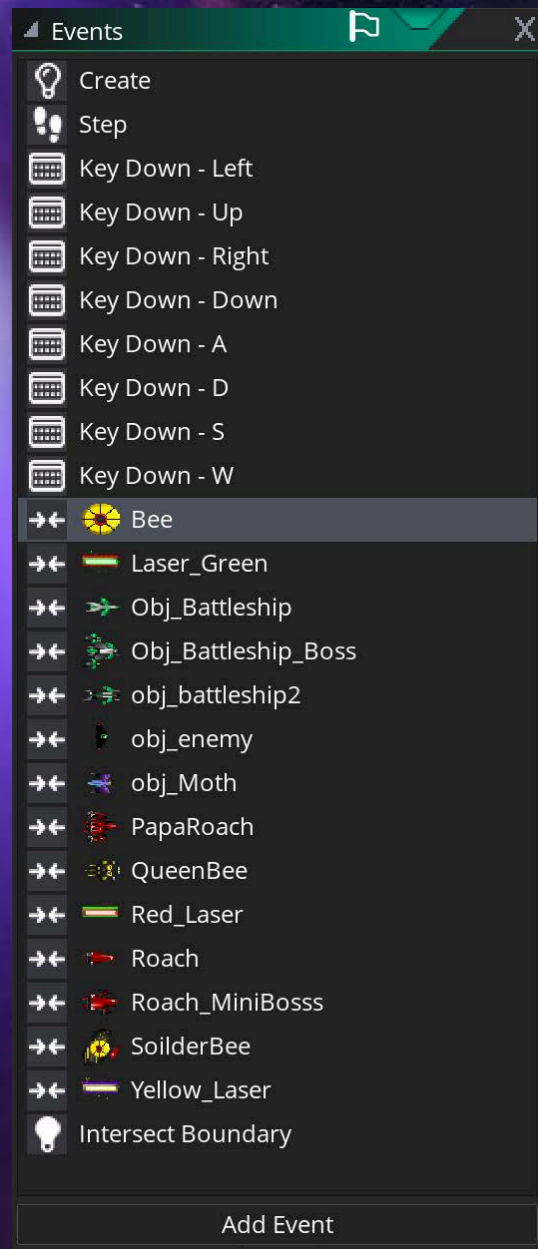
Code Sample:
Credits Screen Creation

Behind the Scenes

```
obj_Player: Bee

Bee                          X
  1  with(Obj_Game) {
  2      if(!variable_instance_exists(id, "__dnd_lives")) __dnd_lives = 0;
  3      __dnd_lives += real(-1);
  4      show_debug_message("Death by: battleship");
  5  }
  6
  7  instance_destroy();
  8
  9
 10  {
 11      isbossspawned = false;
 12      with(obj_enemy) instance_destroy();
 13      with(Obj_Battleship) instance_destroy();
 14      with(obj_battleship2) instance_destroy();
 15      with(Obj_Battleship_Boss) instance_destroy();
 16      with(Roach) instance_destroy();
 17      with(Roach_MiniBosss) instance_destroy();
 18      with(PapaRoach) instance_destroy();
 19      with(Bee) instance_destroy();
 20      with(SoilderBee) instance_destroy();
 21      with(QueenBee) instance_destroy();
 22      with(obj_Moth) instance_destroy();
 23
 24      with(Laser_Green) instance_destroy();
 25      with(Red_Laser) instance_destroy();
 26      with(Yellow_Laser) instance_destroy();
 27
 28      instance_create_layer(0, 0, "Layer_Player", obj_Player);
 29  }
```

Code Sample:
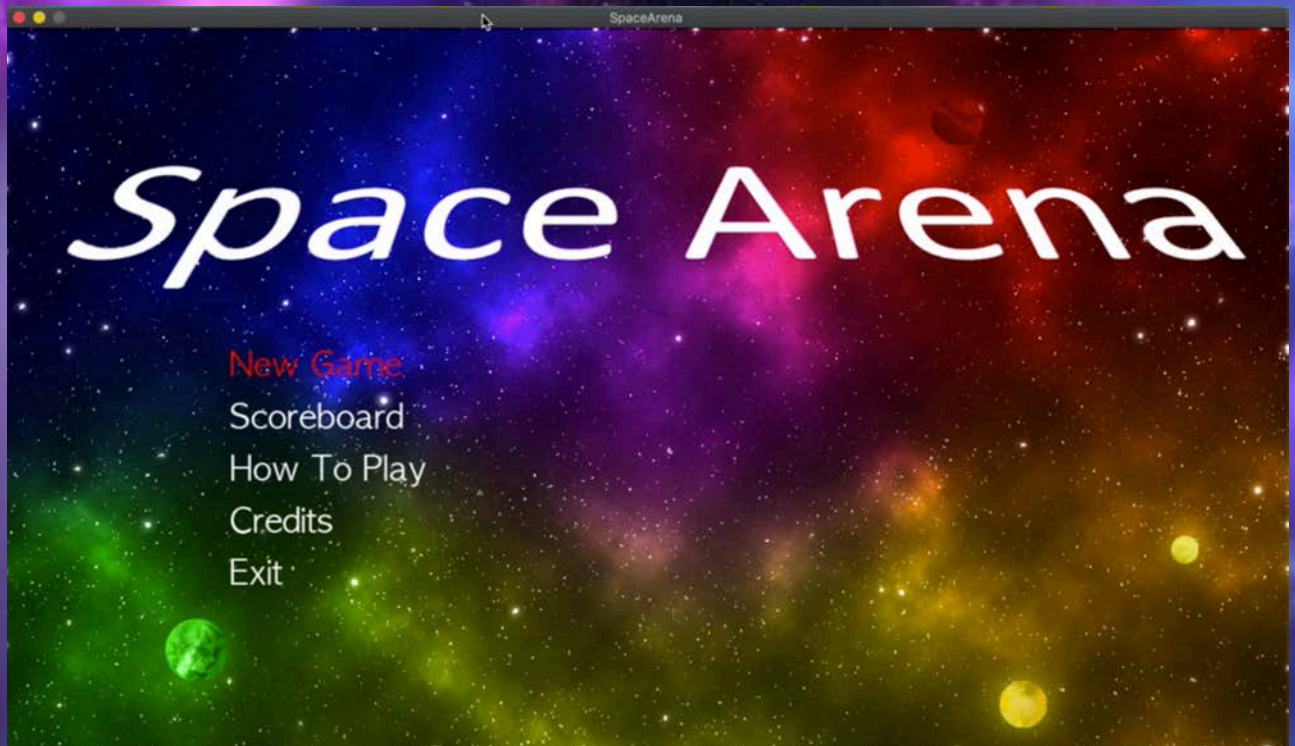What to Destroy When Player Dies

Behind the Scenes

Code Sample:
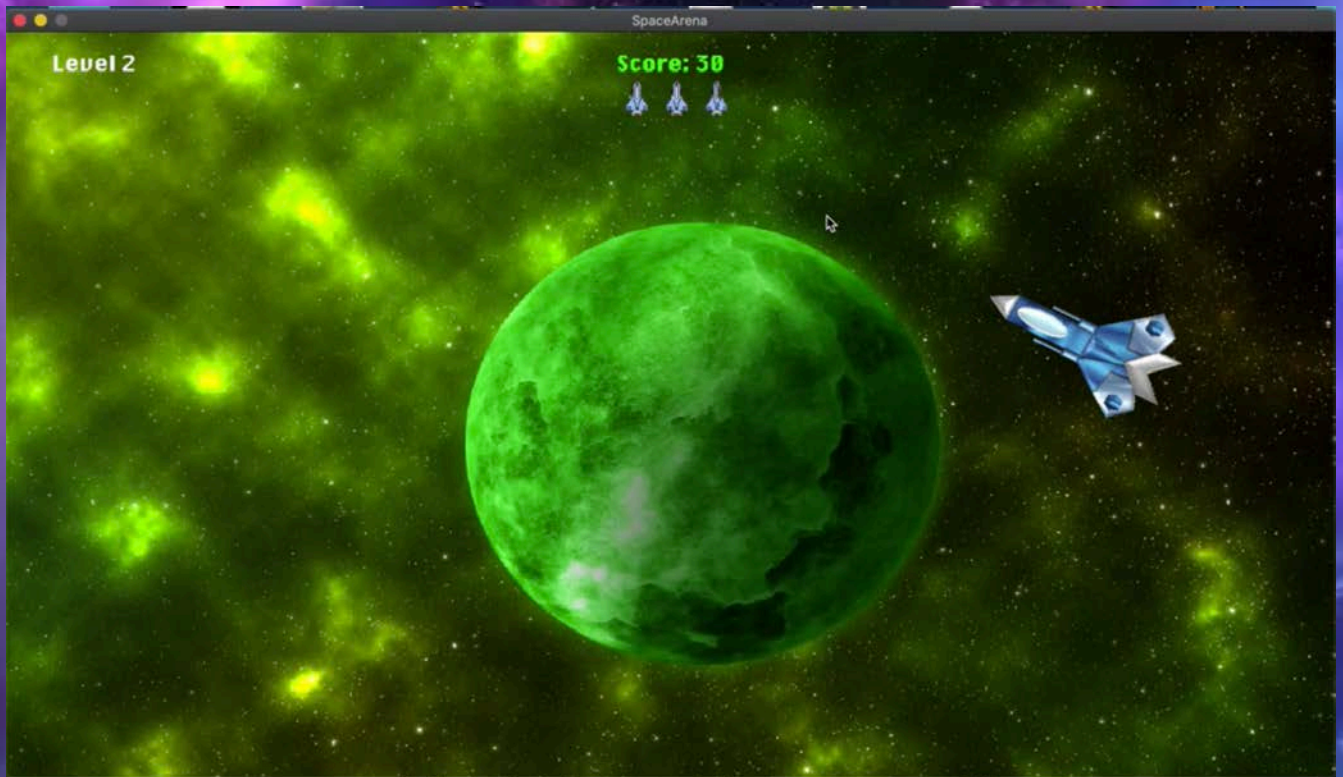Events of Interactions With Player Ship

Final Project

Screen Shots

Screen Shots

Video Game Link

https://youtu.be/gEzCLdt6uHU

Reflection

Undertaking this thesis project was not an easy task. In fact, making a game is not a small task no matter the scale. I found this out the hard way. I undertook this as my thesis because I wanted to understand how to build a game. I wanted to know what it took, how long it took, what components are needed, what skills are needed, etc. Looking back at it now I should have prepared a lot more for what all I had to deal with.

The program I used, Game Maker Studios 2, is a 2D game making program that I discovered not long before the first semester of my thesis class. Using a "Drag and Drop" method in the program the first 6 months of developing the game were not that bad. I followed countless demos, some of which ended up helping while others did not. In the last six months however the chaos started. I could no longer find drag and drop coding tutorials which addressed some elements I wanted to include in my game. After two weeks of no progress I decided to switch to actual coding. I have next to no prior experience in coding so this in itself was a living nightmare for three months. I could not work on the designs, sounds, or animations in my game because I had no way to program them into the game to see if they would work or not.

After three months I thought that there was no way I could finish this game. It was far too much for just one person who only had skills in artistic natures. I swallowed my pride and decided to ask a buddy of mine who knows coding to just take a look and see what he could do along with two others to help with concepts and coding as well. With these three people helping me I got past the coding that was blocking my path and sped to the finish line. I learned many valuable lessons from this project, but the main one is ask for help especially when you need it. This goes for anything, not just video game development. Video games are made by a team, and I made a video game with help. Now I need to go out into the world, and find my team.