**CSE 310 – Applied Programming**

**Module Plan**

[**https://github.com/TheMaughan/Game-Project**](https://github.com/TheMaughan/Game-Project)

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| **Date:** | 03/30/2021 |
| **Teacher:** | Bro. McBeth |
| **Module # (1-5):** | 5 |

1. Identify which module you have selected to work on. Place an “X” under the “Selected Module” column.

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| --- | --- |
| **Modules** | **Selected Module** |
| Cloud Databases |  |
| Data Analysis |  |
| Game Platform | X |
| GIS Mapping |  |
| Mobile App |  |
| Networking |  |
| SQL Relational Databases |  |
| Web Apps |  |
| Language – C++ |  |
| Language – Java |  |
| Language – Kotlin |  |
| Language – Python |  |
| Language – Rust |  |
| Choose Your Own Adventure |  |

1. At a high level, describe the software you plan to create that will fulfill the requirements of this module.
   1. I originally planned to make a screen saver inspired by the iconic green Matrix scrolling code. Instead, I got totally hooked on the tiled editor and 2D orthogonal game design.
   2. While I was studying up on platform games so that I could help enhance my group project’s platformer game, I came across a Pymunk physics tutorial on arcade’s main site. I originally was looking for a solution for animating the player sprite and for fixing the problem where the player sprite gets stuck on corners, crashing the game.
   3. For the last 2 weeks, I’ve been studying the different parts of the platformer trying to make a more visually enticing game as well as looking for specific solutions to the problems my team have been facing.
2. Identify at least two risks that you feel will make it difficult to succeed on this module. Identify an action plan to overcome each of these risks.
   1. I have been more and more aware of an unhealthy tendency within myself to disregard the curriculum and the requirements and blazing my own path. Even though I do learn a lot, even if the result still technically covers all requirements that an assignment would have, I always end up spending way too much time on my over-done assignments.
   2. I almost made the same mistake again on this assignment, where I would have a fully realized game to present, but I recognize that I might spend 2 months making a game, and still not be satisfied.
   3. There are 2 technical risks involved in making a game with arcade:
      1. First, it’s understanding how the Arcade API communicates with my written code. I already have experience with arcade by making an asteroids game, but I tried to avoid using arcade as much as possible doing that project. Now I’m completely relying on the arcade scripts. The tutorials don’t explain how more advanced games can be made; they only explain different foundational parts of the API.
      2. When I integrated the Pymunk physics engine, I opened a whole new can of worms. Even though I already have 4 levels that the player can pass through right now, I’m stuck on the first level, and most of my code that involves tracking the player sprite becomes broken. The way that the player and other elements are passed into the physics engine, the physics engine becomes the new owner of the game. I cannot move on without learning everything I can about the Pymunk API. Level progression and respawn after death have to be written differently to work.
      3. The Pymunk physics also messed up my moving platforms… At least the issue where the player gets stuck got solved. I learned it is a hitbox problem. To fix this use hit\_box\_algorithm=”Dynamic”
3. Create a schedule for yourself to complete this module in the two weeks required. The schedule should include milestones with dates. Milestones are activities that you need to complete related to research, implementation, testing, and documentation.

First, I needed to learn how everything is drawn and created, so I learned the basics of the tiled map editor.

* I used different tile sizes.
* I found software and open resources for game resources (including all of Kenny’s assets)
* I became aware of the problem where the player will get stuck on any edge and crash the game.
* I learned how to draw different layers to make secrets, visual environment effects like animations made using the tiled map.
* Different coins have different ‘Point’ values

Second, I needed to learn more about adding the animations, this part was much more straightforward.

* There are 2 ways to do this: first is to use the ‘on-update()’ function, but I’m forced to update ‘1/60’ or ‘1/120’ frames. This makes the sprite animate really fast. Second, I can track how far the player has traveled and restart the animation loop after a counter reaches a limit. This produces a much smoother animation. I know that there are other ways to do this, but I needed to move on.
* Third, I tried to find out how why the sprite keeps getting stuck, I originally thought that the problem could be solved by including more adaptive code using a physics engine to control collisions, but that just ended up breaking some parts of the game. Later I found that it’s a hitbox problem, I’m working on a simpler solution to this problem in my team project.

NOTE: I made 2 different versions of my game, for now. One version is the non-physics version, this one works the best for moving platforms, level progression, and player respawn after death events (without reloading the entire game). The second version is the physics version, this one is fun to play around with, the player doesn’t get stuck (making infinite loops), and there are some objects to interact with… just don’t die.