

Individual Project Proposal

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Snakes&Apples

**Summary:** Summary of the project you are proposing – 1-2 paragraphs

Hungry Snake is a web game where a line segment (the snake) is moved with the WASD or arrow keys across a screen. The objective of the game is to eat as many “apples” (dots on gameboard) to extend the snake length. Any collision with walls or other parts of the snake causes the game to end. Any time an apple is eaten, a new one will randomly spawn on the board. For my individual project, I wish to learn Python in the form of PyGame. I will create a more advanced version of Hungry Snake with additional gameplay modifiers such as powerups or walls. The game will be called Snakes&Apples.

**Technologies:** Give the development environment you expect to be working in, and list the technologies related to software and or hardware development that you will learn about.

I plan to use Eclipse with the PyDev plugin. I would also like to test the PyCharm IDE as it is said to be widely used in the professional Software Engineering environment. During this project I will have to learn about PyGame and its functionality in facilitating Python game programming. Additionally, I plan to use GitHub to manage my version control.

**Development Plan:** Discuss your plan for the project: list what sources of information you plan to use and provide a list of steps/intermediate goals that will allow you to make progress towards completing the project. I expect you to make steady progress on your project and there will be occasional in-class progress reports/demos (Milestones), along with a final report. See Assignment 4 for the Milestone dates and details and Assignment 9 for details on the final report.

Developing Python games is completely new to me so I will need to pull from many external sources for information. As such, I will need a list of reliable sources to browse for information. Some websites I plan to use are <https://www.askpython.com/>, <https://www.w3schools.com/python/>, and <https://www.geeksforgeeks.org/pygame-tutorial/>. Furthermore, as I will be using GitHub for version control, I will use <https://git-scm.com/> for any information I will need regarding GitHub. With any good project there are milestones/goals that must be met over the course of the project to ensure steady progress. Some of my milestones for my project will be:

1. Create game environment/board
2. Create characters that display on board (sprites)
3. Add movement functionality to game pieces
4. Handle game collisions
5. Handle Win/Lose conditions
6. Finalize aesthetics of game
7. Spice up the game with additional features such as powerups

## 8. Bug testing

### Mandatory Presentation Milestones:

1. Baseline Prototype (02-28) In-Class
2. 50% working project (03-21) In-Class
3. Final project demo (04-04) In-Class
4. Final project report (04-05) Marmoset

**Challenges:** Describe the challenges you expect to face/overcome during development of the project. List any NUDs (new, unique, difficult) issues you perceive that the project contains. This is to get you to reflect on the challenges that lie ahead of you

I will face many new challenges on my journey to create a python game. Some foreseeable challenges will be Collision detection, learning new syntax, managing version control, and dealing with updating frames/creating a game that runs at a reasonable speed (ex. 60fps).

The most daunting issue to me is collision detection. Collision detection was difficult for me the one or two times I programmed a game in Java, and I expect the same of Python. Dealing with collision detection could be difficult due to the game pieces needing collision to progress the game. Therefore, not only must I recognize collisions on screen and prevent element overlap, but I must also update variables based on game collisions.

Learning new Python syntax will be the simplest challenge I will face. A new syntax is confusing at first, however, the more time I dedicate to my project the more fluent I will become with the Python syntax. As such I will need to be cautious will programming my game in the beginning to avoid syntax errors such as misplaced semicolons. Additionally, I will need to be very vigilant when diagnosing my code to pick up on any small syntax errors I make.

Managing version control is a necessary step for any programming project. However, it's been a few years since I have used GitHub for version control. Therefore, I will need to relearn the GitHub version control process and techniques. This challenge should be easy to conquer as version control techniques will begin to comeback to me once I brush the dust off that information.

Handling game frame rate was a challenge in my Java game development experience. Dealing with game frame rate may also be a massive challenge in Python however, from what I have been able to research it seems handling game frame rate is much simpler in Python than Java.

Overall, there are only a few challenges I will face over the progress of this project. The most important challenge will be meeting deadlines and ensuring steady progress.