CS 210: Final Project Proposal
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TOWER DEFENSE

Summary

- I always loved the old tower defense games from the 90s and early 2000s. Sadly, I don't see people making them now days, so I'd like to create one for this project.

- After class last Thursday, I began learning to use the pygame module; the video on the title slide is what I created from Thursday night through Saturday afternoon.

- **Main Objectives**:
  - At least two maps, 10 waves of enemies, 1 set of towers (10 different towers in the set), tower upgrades, a perk tree and player resources.

- **Stretch Goals**
  - Multiple maps, additional sets of towers (10 in each), more enemy waves, selection marquee, audio, hero unit that the player controls.
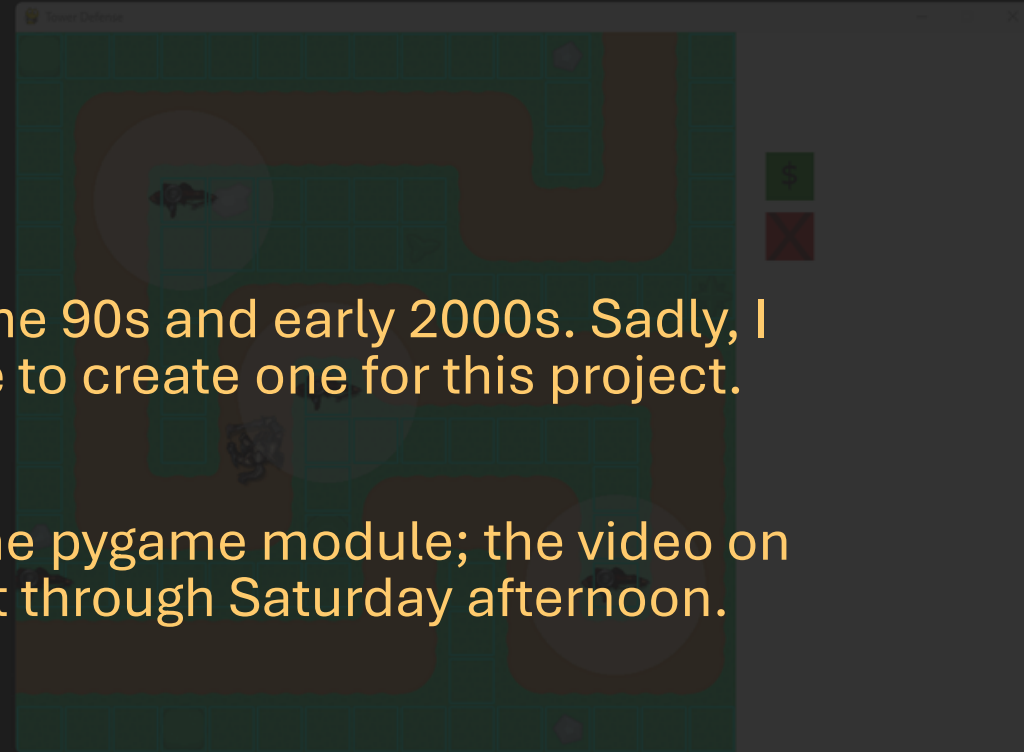
Data Structures/Algorithms and Usage

- Lists
  - Map tiles (array)
  - Enemy movement waypoints (arrays/List/Sets)
  - Tower upgrades (linked list)
- Stack
  - Temporary tower upgrades/enemy downgrades
- Queue
  - High Scores (stretch goal)
  - Enemy spawns
- Hash Table
  - Available tiles for the player to build on
  - Player resources
  - Tower/Enemy properties

- Tree
  - Perk tree
- Graph
  - Uncertain, but relationships between towers and/or enemies will likely be involved
- Searching
  - Linear search to initialize buildable tiles
- Sorting
  - Uncertain, still considering
- GUI
  - Pygame
  - Free and paid assets
  - Custom assets created/modified in GIMP