#### **Project Name -** Project Daedalus (Temporary name)

#### **Team with Contact Information**

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#### **Project Purpose**

The problem my project will be solving is a personal one. I want to go into game development as a career, but I don’t have any experience to put into a portfolio or resume. Creating a game for this project will help solve that problem.

#### **Background/Prior Knowledge**

* I used Unreal Engine a bit about a year ago, but have not used it much since. I have, however, been involved in creating games through D&D with my friends. This game is inspired by dungeon crawls/exploration that you do in D&D, so my experience creating an entertaining experience draws from that.
  + I would consider myself a beginner at game development. I have the knowledge but not the experience to back it up.
* To really understand where I am coming from for my idea you really need to know that I just want to make something fun. I want to make something that I would have fun in for a while. A game doesn’t need to last forever, it just needs to bring joy, even if only for a short time.
  + I have been wanting to create a game for the last few years and have many ideas floating around in my head. This is a simpler version of a game idea I have been working on for a few years.
  + Not much coursework has been done in this specifically. However, I suspect that my recent projects will help a lot in managing my time so I can complete the project on time.

#### **Description**

* This project is a maze running game created using Unreal Engine 5. The game will have the player run around a maze and collect tokens in order to escape in the fastest time they can, all while attempting to avoid traps that will slow them down.
  + The tokens in the map will have semi-randomized locations so runs through the game are not the exact same. Essentially there will be a list of possible locations that the tokens can be and it will randomize the placements using those spots.
  + I want to try and make a global leaderboard with the fastest times saved so players can compete for the fastest time.
  + The game should be pretty accessible by not having many other mechanics besides running and jumping.
* Real-world Impact
  + The goal of the game is to provide entertainment and a place for friendly competition among the people who play.
* Audience
  + My primary audience will be gamers, likely aged 12 and up. Specifically those who like exploration and speedrunning.
  + Hypothetically there could be a global audience by releasing the game on a platform like Steam or Itch.io.
* *Completion criteria:*
  + A functional time-trial mode with traps and randomized token placements.
  + Stable gameplay mechanics with smooth navigation and intuitive controls and proper “set dressing” (make it look cool).
  + A polished interface and clear feedback for players (e.g., timer, token collection progress, etc.).
  + Release-ready packaging for Steam or itch.io
  + Stretch Goals (if time permits): Implementation of global leaderboards and additional game modes, such as a puzzle-solving mode.

#### **Significance**

* My dream job is to work on video games as a career. Creating a game for my senior project lets me have time each week to actually work on a project I have been wanting to do for a long time. Having a video game in my portfolio will also help me show companies that I can make games.

#### **New Computer Science Concepts**

* Things to learn:
  + Development through Unreal Engine
    - Using Blueprint for game logic and easy prototyping
    - Using the physics system for realistic movement
  + Leaderboard
    - Implementing a database to keep track of completion time and nicknames
  + UX and Interfaces
    - Creating a menu with settings that can be changed
  + Randomization
    - Creating an algorithm to randomly place the tokens without placing multiple on the same spot
* *Preliminary research:*
  + Unreal Engine Development
    - Blueprint - 1 or 2 weeks
    - Physics - 1 week (learn at same time as Blueprint)
  + Leaderboard
    - 2-3 weeks for a global leaderboard
  + UX and Interfaces
    - 2-3 Weeks to learn and implement but will likely change constantly depending on needs
  + Randomization
    - 1-2 weeks

#### **Interestingness**

* This project is interesting to me because I have always wanted to make a game. This project finally gives me the push I needed because I was scared to fail at it. However, having a class let me focus on making a game will motivate me to keep working on it.
* In particular I have always enjoyed D&D and this game is inspired by the dungeon and exploration theme of it.

#### **Milestones, Tasks, and Schedule**

* *Full semester effort: ~126 hours/person (9 hours/week).*
* Milestone 1: Setup and research, Deadline: Week 3 (12-18 hours)
  + Install UE 5.5
  + Prototype maze layout
  + Create gameplay flow map
  + Set up github
* Milestone 2: Core gameplay, Deadline: Week 7(40-50 hours)
  + Implement map layout in UE
  + Create basic trap mechanics (spikes, pits, etc.)
  + Implement player movement around map
  + Develop token placement and randomization
* Milestone 3: Polish looks and gameplay, Deadline: Week 10 (20-30 hours)
  + Refine mechanics of traps and tokens (make sure things are possible)
  + Implement leaderboard
  + Add sounds and music?
  + Implement menus
* Milestone 4: Playtesting and final touches, Deadline Week 13 (20-30 hours)
  + Playtest and implement feedback
  + Create deployable package and deploy somewhere
* Stretch goals
  + Puzzles in the maze
  + More diverse traps
  + Non timed mode with all tokens

#### **Resources**

* Unreal Engine
  + Will only need a license if I sell more than 1 Million dollars worth
* Desktop computer
  + I have a good desktop that can easily run UE
* UE tutorials
  + Likely will use Youtube tutorials to help refresh and relearn things in Unreal Engine

#### **Dependencies**

* Languages and IDEs
  + Unreal Engine
  + UE Blueprints
  + Maybe C++
* Platforms
  + Unreal Engine
  + Target release for Windows
* Testing environments
  + UE Editor for personal testing
  + Other hardware to test with for performance
* Support needed
  + Assets
    - UE marketplace
  + Feedback
    - Playtesters
  + Professor Support
    - Global leaderboard integration (I have no idea how to do this)

#### **Risks**

* I have used Unreal Engine before, but it has been a decent amount of time. I will likely need to relearn a lot of things, but that should be quicker than before.
* I am working and taking classes this semester so making sure I take the time to work on this assignment as well as do my job might take some time to balance
* I am newish to making games so I might get ahead of myself and try to do too many things, basically scope creep