

Progress Report
- Increment 2 -
Group #12

1) Team Members

Abigail Centers -- alc16j, GitHub ID: abbeyLC

Jason Hamilton -- jvh16, GitHub ID: Jakuu

David Song -- ds15g, GitHub ID: Sawwas99

Paul Santora -- ps15f, GitHub ID: LeavepaulS

2) Project Title and Description

Project Title: Maze Game Using the Unity Engine

Description:

This 2D computer game will allow the player to move about each maze level while collecting timers, health, and powerups. Timers will add more time to the allotted time for that level and health will allow the player to recover from an enemy encounter. The player must dodge any enemies that move about the maze and power-ups will increase the player's overall score. Every level will begin with the player avatar at the start position of a new maze. With limited visibility of the maze, the player's main objective is to use the arrow keys to navigate the maze and find the exit within the allotted time while also completing any challenges for that level.

For example, to successfully win the game, the player might be prompted to collect a hidden item. If this objective is not completed first, the player cannot win. A scoring system will also be used to measure the player's overall performance for each level, which will be primarily based on the number of power ups collected during that level. A leaderboard will also be used to store the top 10 highest scores.

3) Accomplishments and overall project status during this increment

Jason H. (Increment 2)

Implemented an objective tracker, this lets the player see all requirements they need for completing the level, as well as view their progress towards completion. The tracker automatically scales its size and layout to support multiple objectives so it does not have to be manually refitted to the UI if additional objectives are added in the future. This tracker updates automatically as the player progresses towards their goal. Also implemented an additional objective type that extends the IObjective interface further. Converted objective tracker and certain object triggers to Unity "pre-fabs" to aid in reusability across level.

Abbey C. (Increment 2)

Abbey implemented player score tracking, power-ups, and collectable timers. Every timer that is collected will add 5 seconds to the game clock and power-ups will add to the player's overall score. This was designed through the use of various tilemaps, tile palettes, and Unity's available sprite assets. She also experimented with player-triggered game object animations and found various implementations for maze exit barriers. Barriers can be used to block the user from exiting the maze until that level's objective is complete. If we decide to add multiple exits to the maze (each with its own barrier), our current setup can be used to draw any number of obstacles using the Barriers tilemap. A reference to this tilemap can be

used to modify or remove obstacles from the scene once the player has achieved that level's objective. Abbey also researched different scoreboard implementations and found a valuable resource that will be helpful during the third increment of this project. This online resource offers detailed explanations and reliable source code that will likely fit well into our project.

David S. (Increment 2)

Accomplished development of Enemy sprites with unique movement, studied tutorials to learn the different types of movement and how to implement them to be automated. Added health and damage functions to the Player gameObject, allows for death animation and respawn at the start of a level. Learned how to use physics materials to adjust physical properties of GameObjects. Learned how to adapt Serializedfields and Tile maps to create more efficient movement code. Added a death animation to the player. Animations can be done through creating an Instantialized object (temporary copy) that is destroyed after usage.

Paul S. (Increment 2)

Added full functionality to the UI systems in the game including the title menu and pause menu. All menus include a set of menuButton prefabs that animate as the player iterates between them. The buttons have different functionality like sending the player to the options menu for instance. There is an animation for selected, deselected, and pressed. Began to draw and animate sprites for final game, including the player, enemies, walls, a goal and background. Also in charge of editing the project video.

4) Challenges, changes in the plan and scope of the project and things that went wrong during this increment

We experienced problems with graphics resolutions, animation updates, and customized sprite designs. It was also difficult to learn how tile-maps can be used to modify one or more sprite assets (ex. power-ups, clocks). With increasing project size, there have been more merge conflicts and problems with keeping imports/assets consistent across project versions.

We have also decided to stop pursuing Multiplayer and online capability, in order to focus on refining the single-player aspects of the project. Scope of our levels has changed as well to a focus on level quality over level quantity, goal to make 5-10 more levels.

5) Team Member Contribution for this increment

Discussed and Wrote Progress Report, RD document, and IT document as a group.

*a) the **progress report**, including the sections they wrote or contributed to*

Project Title and Description- Abbey C., Accomplishments and Overall Project Status- Jason H. Abbey C., Challenges changes in the plan and scope of the project and things that went wrong- Abbey C. Jason H., Plans for the next increment- Everyone

*b) the **requirements and design document**, including the sections they wrote or contributed to*

Overview- Abbey C., Functional Requirements- Everyone, Non-Functional Requirements- Everyone, Use Case Diagram- David S. Abbey C., Class Diagram- David S., Abbey C., Sequence Diagram- David S., Operating Environment- Everyone, Assumptions and Dependencies- Everyone

*c) the **implementation and testing document**, including the sections they wrote or contributed to*

Programming Languages- Abbey C., Other technologies used- Everyone, Execution-based functional testing- Everyone, Execution-based non-functional testing- Everyone, Non-execution based testing- Everyone.

- d) **the source code** (be detailed about **which** parts of the system each team member contributed to and **how**)

Abbey Centers (Increment 2)

Abbey contributed to the following scripts in order to implement player score tracking, power-ups, collectable timers, and player-triggered game-object animations: KeyTrigger.cs, ScoreCount.cs, PlayerStats.cs, PowerUp.cs, and Clock.cs. Abbey also researched for different score-board implementations and found a script that will likely fit well into our current implementation, named HighscoreTable.cs. The KeyTrigger script is used to determine whether or not the player has achieved all objectives for the current level. The ScoreCount script is used to update the player's score, which is visible at the top right hand corner of the screen while navigating the maze. The PlayerStats script is responsible for tracking the player's current score. The Clock and PowerUp scripts are used to hide any collectables that the player has collided with and appropriately update the game timer and player score.

Jason Hamilton (Increment 2)

Contributed to: KeyTrigger, ButtonTrigger, ItemObjective, and ObjectiveTracker scripts. Created new Objective Text framework for the UI to display objectives required to complete the level. KeyTrigger and ButtonTrigger are both scripts attached to interactable objects within the level, primarily for objects used as a part of quests. Objective tracker is the framework that fetches requirements attributes from the quest objects attached to the script in order to display them in the UI and fetch status/completion of the objective. ItemObjective behavior was modified to properly return the "requirements" attribute when called so the UI will properly update with quest text.

Paul Santora (Increment 2)

Contributed to the scripts -- MenuButton, MenuController, PauseMenu, PauseMenuButton, and TitleScreen. The combination of the MenuButton and MenuController add the ability to increment through menu options. This is true for the pause equivalents as well. The PauseMenu and TitleScreen scripts also add functionality to the button, what they do when the player presses them. This includes, shutting down the game, starting the game, changes menus, going to specific levels, resuming the game while paused, and quitting the game and going back to the main menu. The button scripts also control what animations are played when certain events trigger them, like selecting or pressing a button.

David Song (Increment 2)

Contributed to: PlayerMovement(health, respawn, enemy collision detection), Enemy and Enemy movement scripts, GameOver script. Created death animation for player Sprite (Instantiated Object). The new Enemy Sprite is an adaptable Sprite that can be applied in different forms to affect the player. EnemyMovement uses Transform.position variable to create automated movement, so far Directional movement has been implemented. Reducing the player's health to 0 (collision with enemy) will cause a death animation and the player to respawn at a set Spawn point. The Game Over screen will appear on death that will redirect to different options (Restart level, Quit game, etc). Added new character materials values that affect physical properties (bounciness, friction).

- e) **the video or presentation**

Paul Santora- Video Editing, Gameplay Demo, Jason Hamilton- General Overview, Abigail Centers- Short description of Project state and what was accomplished during this increment. David Song- Describe any changes in the scope from the initial proposed project plan, and Describe goals/plans for the next project increment.

6) Plans for the next increment

For the final increment of the project our goals include implementing more challenges (complete levels, objectives in the maze to complete before reaching the goal), difficulty (game speed including timer length, player and enemy movement; more complex mazes), collectable health items, settings (game, effects, music volume; player controls). Music for the title menu and for each level. Sound effects for certain interactions.

We will add more levels to have a total of about 5 based on our currently implemented features for level 1, and a leaderboard for the top 10 scores for each level.

Some possible goals to complete: Add more animations to game objects, like player, enemies, items.

7) Link to video

https://youtu.be/Y_J-HpXo798