Quickcast Technical Design Document

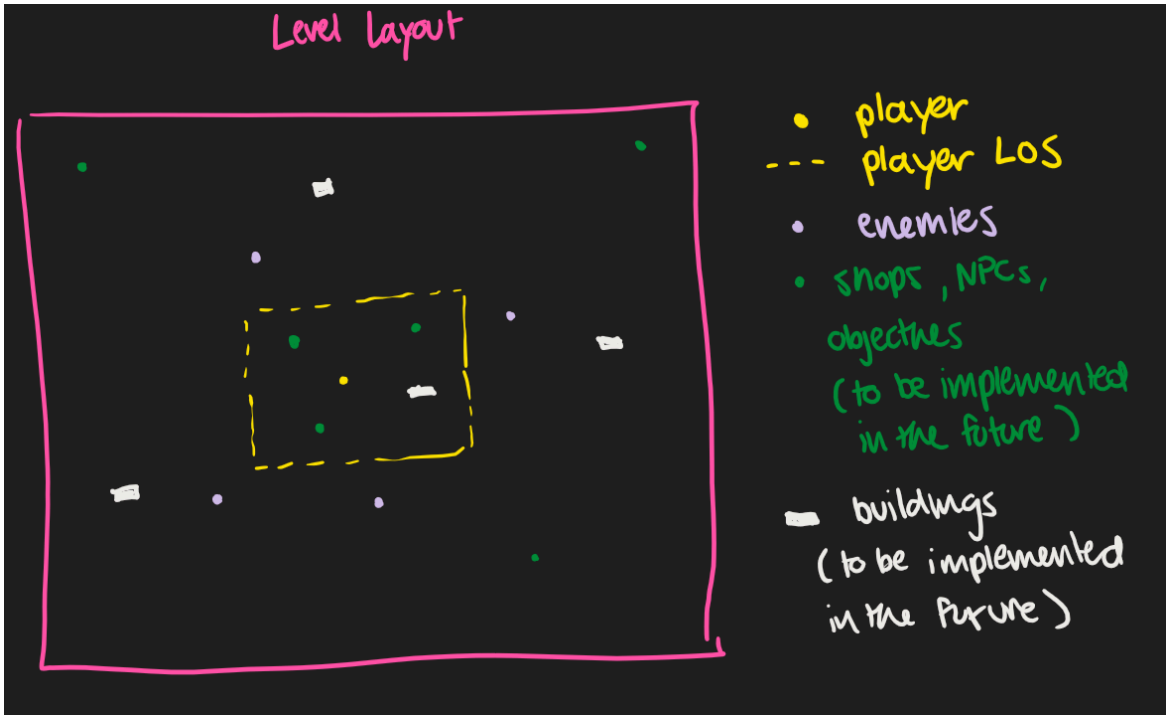
Features

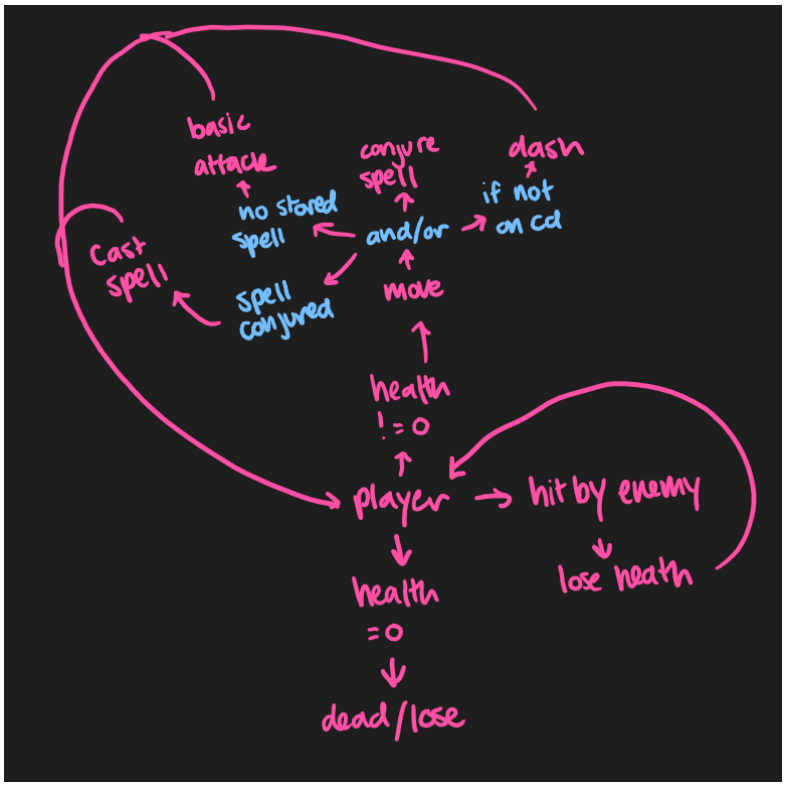
- Top down
- Game world, including
    - 2D objects
    - Characters (Player and enemies)
    - Weapons (Held by characters)
- One level (for now)
- Singleplayer
- Audio and sound effects
- One player
    - Casts spells by drawing shapes
    - Fire at enemies
    - Can move around
    - Dash
- Different enemies
    - Ranged
        - Will move towards player until being a certain distance from player
        - Will shoot projectiles at current player position in intervals
            - Either slow and high damage or slow and lower damage
    - Melee
        - Move towards player
        - Deal damage in intervals when close enough to the player
        - (Or in contact with hitbox)
- Comprehensive/informative HUD
- Menus
- Visual/light effects

Choice of Game engine

- Unity
    - 2D game framework
    - What we are learning in class
    - Has plugin needed for game mechanic

High level diagrams





Player Game State Diagram

Details about objects and terrain

- Characters
    - All Pixel Art
        - Will be using Photoshop to design
- Weapons
    - Pixel Art
        - Using Photoshop
- Terrain
    - Pixel Art
        - Using Photoshop

Use of Physics Engine

- No physics engine will be used
- Projectiles will follow a straight path
- Spells will either be straight projectiles or hitscan
- No enemy ragdolls will be made

Game logic/mechanics and artificial intelligence

- Spell casting and conjuring
    - Spell conjuring will rely on a PDollar Point-Cloud Gesture Recognizer
        - Unity asset: https://assetstore.unity.com/packages/tools/input-management/pdollar-point-cloud-gesture-recognizer-21660
        - Example game that uses package: https://www.youtube.com/watch?v=aZardg7nhRo
    - Using attack will cast spell if spellConjured == true
        - Else do basic attack
    - Conjured spells stored in array
        - For game to recognize what spell to cast
    - Buttons for spells (1…5) will pull up a diagram of what shape to draw out
        - Press the spell that you are aiming to cast
            - Gesture recognition only has to check if the drawn shape matches one shape
    - Spell combos
        - Combining spells will have different
    - Shooting
        - https://www.youtube.com/watch?v=-bkmPm_Besk
        - https://www.youtube.com/watch?v=Nke5JKPiQTw
        - https://www.youtube.com/watch?v=zuL2dBAb2Go
            - raycasting

        - Hit registration
            - https://youtu.be/DWj_mPUtuqw
- Movement
    - Movement will have a constant speed going left, right, up, down
        - https://www.youtube.com/watch?v=POcQy8aZ6Uw
    - Dash location is based on what direction the player is moving
        - Just based on the angle of a vector, dash has a set distance
        - https://www.youtube.com/watch?v=tH57EInEb58
- Health and damage
    - Enemies will do different instances of damage
        - Melee will do more damage than ranged, but will have more health
    - Health will be a numerical value rather than a # of times hit
- Knockback
    - https://www.youtube.com/watch?v=yna_u1OASy0
- AI
    - Melee enemies
        - Will run toward player
        - https://www.youtube.com/watch?v=XHrWtLZtzy8
    - Ranged enemies
        - Will move to be a certain distance from the player
        - Will shoot wherever the player currently is
- Enemy spawn
    - Enemies will spawn in waves, with the total number of enemies spawned increasing with each wave
- Aiming
    - Aim with mouse
    - https://www.youtube.com/watch?v=fuGQFdhSPg4
- Camera
    - Camera will slightly have some bias towards the cursor, will feel like Enter the Gungeon
        - https://www.youtube.com/watch?v=LFe017d-S58
- Sprite
    - https://youtu.be/NQN3rYGqqP8
- Tilemap
    - https://www.youtube.com/watch?v=PJLA1qSMYeE
    - https://pixivan.itch.io/top-down-forest-tileset
- List of spells
    - Basic attack
    - Large rock
    - Large laser that deals consicutive damage
    - Burst spell (need to add isShooting Boolean)
    - Grenade type spell

Audio and Visual details and specifications

- Audio
    - Free sounds from the internet
- Visual effects
    - Visual effects from the internet or made

Networking

- No networking is needed since singleplayer

Delivery platform and hardware/software requirements

- PC Windows
- Hardware requirements TBD

Schedule

- Movement
- Shooting
- Gesture Recognition

Done

- Movement
- Camera following mouse
- Have gesture recognition at least be implemented into the same scene, work with right click

TODO

- Dash
- Fire basic spell
- Enable spell conjure screen when spell button is pressed
    - Need to slow down time, change threshold of camera movement