Maze Project

1. Project Overview

I'd do the maze game, find the path through the maze. The game will have many levels, the difficulty may vary to the level that you got (larger map, limited time) and also has an enemy and score.

2. Project Review

An existing project is a normal maze game. But mine is I'd use an algorithm to generate a maze map, I'd add the gift (free score) and the enemy to the game.

3. Programming Development

3.1 Game Concept

This is a maze game where the player find the path to the finished, But the game has 4 enemies spawn in each corner and there's a gift somewhere in the maze.The enemy will come to you and when it touch you, you're dead, and player have firearm that can shoot the enemy, the firearm will have a 1 second cool down with unlimited ammo and after you shoot some enemy the enemy will respawn in 1 minutes with madness, the speed of these madness enemy is x2 comparing to that enemy before death. This game also has a score system based on finished time, gift and how many do you kill the enemy. This game also has a level, if you pass you go to the next level, map larger, enemy walk faster.

3.2 Object-Oriented Programming Implementation

- Interface
    - Setting interface for the game e.g. text level, time position on screen
- Player
    - Setting how the player look and interact with the game
- Enemies

    - Setting how the enemy look and interact with the game
- Config
    - Setting in game value e.g. color. This value can be changed but after reopening the game the values will reset to initial value.
- Config_json
    - Setting game value but save the data in json format. This config can be changed in game settings, when the player opens the game next time the previous changes setting is going to be used.
- Maze_Gen
    - Made a maze map
- gift
    - Setting where to place the gift somewhere in the map
- Level
    - Setting the level of the game.
- Game
    - Run the game

3.3 Algorithms Involved

The algorithms that I think it may use in this game are pathfinding(A star) and Origin Shift, where pathfinding(A star) is to find the shortest path to arrive at the player and the Origin Shift is to create the map.

4. Statistical Data (Prop Stats)

4.1 Data Features

1. Movement : Track the position that player move e.g. up, down, left right
2. Time : Track how much time a player spends on each level.
3. Level : Track how many level player can passes through.
4. Score : Track how many score player can get when the game end.
5. Enemy : Track how many enemies got killed
6. Player : Track how many player killed (By?)
7. Bullet fired : track how many bullets can kill the enemy.

3.2 Data Recording Method

Those data will be collected in a csv file.

3.3 Data Analysis Report

I'd use the Mode, mean, median, range, IQR in this data and I'd present it in graph.

- Movement graph : to analyze the most direction that player move (histogram)
- Level and time : to analyze the time that player spend.
- Movement and level : to analyze that level affect the number of movement
- Enemy and level : to analyze that level affects the number of killed enemies.
- Time vs score : to analyze score and time relationship.
- Player and level : to analyze relationship between how many player died and level

4. Project Timeline

Week	Task
1 (10 March)	Proposal submission / Project initiation
2 (17 March)	Full proposal submission
3 (24 March)	Player should have movement, maze can be generated, interface (Game) should be ready
4 (31 March)	Level included, enemy has been add and can attack player and player can attack enemy, score included
5 (7 April)	Game playable, add setting and starting interface, fixing bug
6 (14 April)	Submission week (Draft)
7 (16 April)	50%
8 (23 April)	75%
9 (11 May)	100%

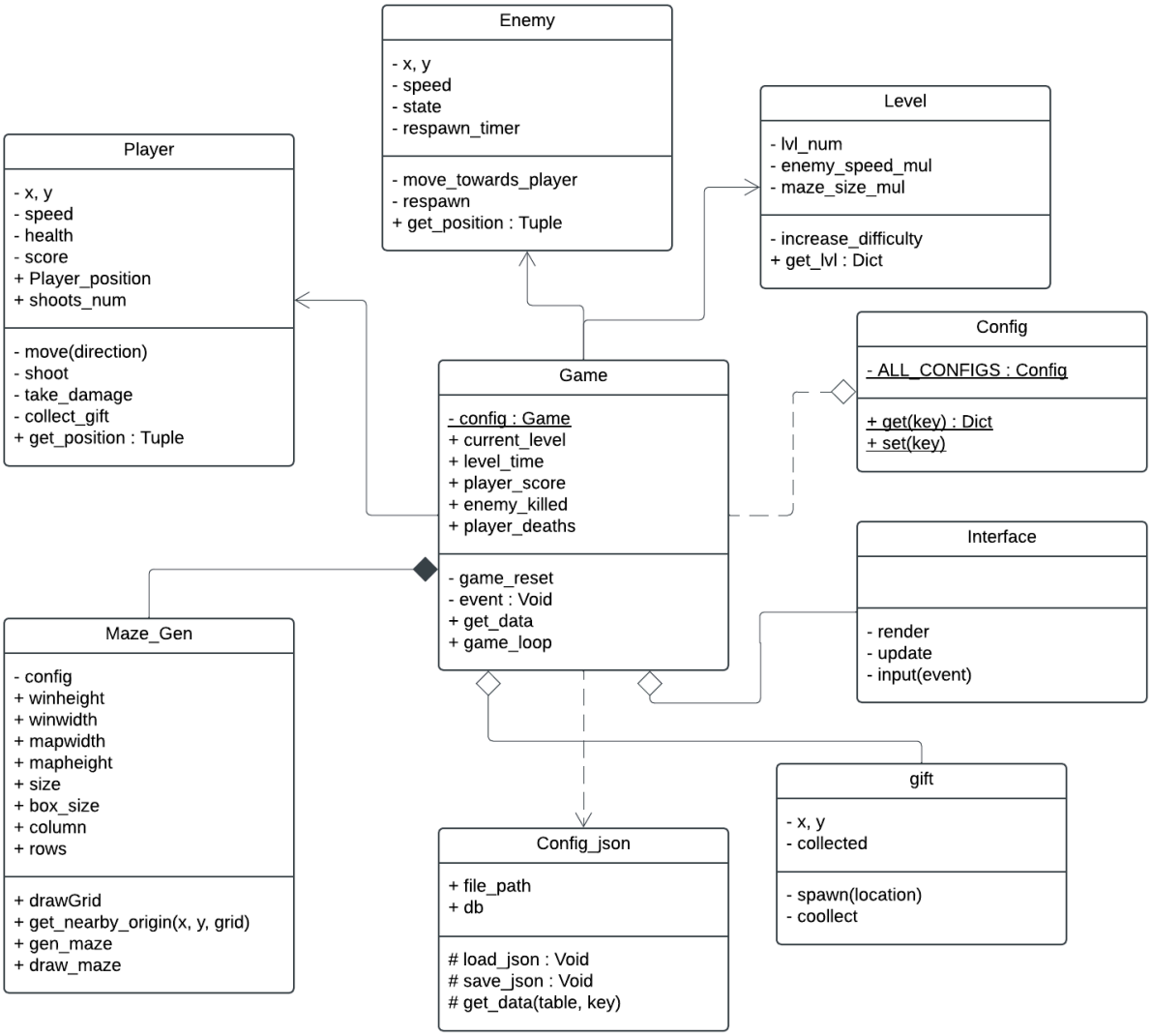
5. Document version

Version: *4.0*
Date: *31 March 2025*

6.

	Why it is good to have this data? What can it be used for	How will you obtain 50 values of this feature data?	Which variable (and which class will you collect this from?	How will you display this feature data (via summarization statistics or via graph)?
Movement	It can help to analyze player strategies and navigation pattern	I'd collect it in json file as a log. 50 value obtainsion can be from 3 - 4 game depend on player skilled	`Player_position` from `Player` class	Heatmap and may be the summarization.
Time	It's good for observe the difficulty of levels	Record time spent after finishing the level.	`level_time` from `Game` class	Bar chart or may be histogram
Level	Helps track game difficulty progression and player improvement	Count the highest level that players reached. For 50 rows i have to play 50 game. I'd considered with bot system	`current_level` from `game` class	Histogram or may be summarization
Score	Evaluate player performance	Final score from 50 complete game, stack the score from each lvl	`player_score` from `game` class	Boxplot or histogram
Enemy	Analyze player aggression and enemy AI effectiveness	Count an enemies killed per lvl	`enemies_killed` from `game` class	Bar chart
Player	Determine difficulty and effectiveness of enemies AI	Count player deaths across 50 playthroughs	`player_deaths` from `game` class	Pie chart or may be summarization.
Bullet fired	Help improve the bullet aiming system,	Count the number of times a player shoots	`shoots_num` from `Player`	Summarization

	effectiveness of bullet used.	their bullets.		



7. Statistical Data Revision

	Feature Name	Graph objective	Graph type	X-axis	Y-axis
Graph 1	Time	observe the difficulty of levels	heatmap	Horizontal position	Vertical position

Graph 2	Level	track game difficulty progression and player improvement	Histogram	Attempt	level
Graph 3	Score	Observe central value	Box plot	-	score
Graph 4	Enemy	Observe the proportions	Bar chart	level	Number of killed enemy
Graph 5	player	Observe the proportions	Pie graph	-	-

Date	**Name**	**Description of Revision, Feedback, Comments**
15/3	Phiranath	Don't forget to add the project name and time table. The overall idea is interesting, I know that this isn't finalized yet but it would be great if you add some attributes and methods in Class description. - Attributes and method in class description - Detail for the data analysis report outline
16/3	Rattapoom	Very good.
28/3	Phiranath	Overall it is good. 👍 Some of the classes such as Config and Config_json need some elaboration on their use cases. Some revisions are needed for the class diagram.