Car guessing racing

1. **Project Overview**
   - I will make a car racing and spelling game. As the race goes on, there will be a random definition appearing on the screen. You have to correctly guess the vocabulary from its definition so the car will continue to move.

2. **Project Review**
   - The inspiration for this is from https://play.typeracer.com/. Typeracer is a game where players have to compete in typing sentences. But my project will change from typing sentences to guessing the vocabulary correctly.

3. **Programming Development**

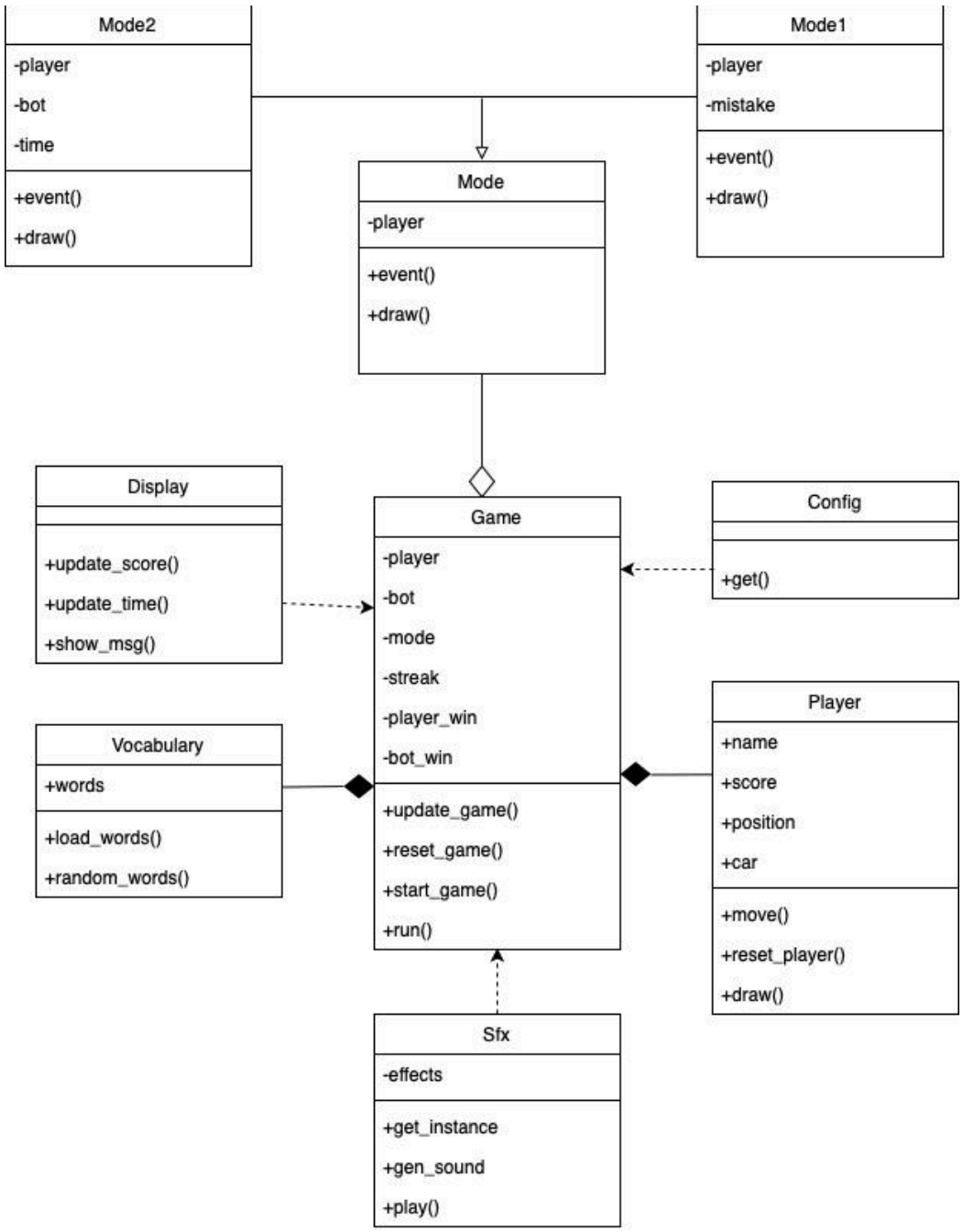
3.1 Game Concept

- There are two modes of the game.
- First, play until you get 5 mistakes, then you lose. In this mode there's no winning, just surpassing the old record. It's for the people who are bored and want to challenge themselves.
- Second mode, competing with a robot. There are 20 blocks in total. You will have to correctly guess vocabulary to move the car towards 1 block. The time limit for each round is 3 minutes. You will win this mode if you are the first to reach the finish line.
- All the vocabulary will be collected from an online public github that is already sorted words to use and stored as a csv file. It will randomly show up.

3.2 Object-Oriented Programming Implementation

Class name	Function	Attribute	Method
Player	Create player	name score position car	move() reset_player() draw()
Vocabulary	randomly get a definition from the database	words	load_words() random_words()
Config	Config pygame environment		get()
Mode	Run event	player	event() draw()
Mode1	Inherit from class Mode	player mistakes	event() draw()
Mode2	Inherit from class Mode	player bot time	event() draw()
Game	Combine all classes and run the game	player streak bot mode player_win bot_win	reset_game() start_game() update_game() run()
Sfx	Add sound effects	effect	get_instance() gen_sound() play()
Display	Show screen message		update_score() update_time() show_msg()

UML diagram



3.3 Algorithms Involved

- Binary search. Use to search the words and its definition.
- Sorting algorithm. Used to sort the score record.

- As the game is played. I will collect data of times for each word. Then that will be the amount of times it takes for an AI player to guess the word.

4. Statistical Data (Prop Stats)

4.1 Data Features

	Why is it good to have this feature 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 (via summarization statistics or via graph)?
Collecting time played for each round in the first mode.	Track player accuracy to help adjust the difficulty.	Record playtime from 50 rounds.	time in Mode2 class	summarization statistics and histogram
Collecting player scores for each round in the first mode.	Measure player speed and improvement over time. So the player can know their improvement.	Record score from 50 rounds.	score in Player class	Bar chart
Collecting times when the player wins.	Help analyze game balance and fairness.	Record who wins each round over 50 rounds.	Bot_win and player_win in Game class	Pie chart
Collecting average times it takes for each amount of letters for a word.	Find the average time it takes to guess each word based on its length. Then, adjust the bot's future behavior using this data to improve	Calculate average times for different word lengths over 50 rounds.	time in Mode2 and random_words () in Vocabulary class	histogram

	fairness.			
Collecting a maximum streak of words that spells correctly per each round.	Encourage player improvement and consistency.	Track correct streaks over 50 rounds.	Streak in Game class	Bar chart

4.2 Data Recording Method

- I will store the data in a CSV file. Since, it is easier to use and modify.

4.3 Data Analysis Report

- The **time played per round** will be displayed in a table and histogram, the **player score per round** will be shown using a **bar chart**, the **player vs. bot win counts** will be presented in a **pie chart**, the **average time to guess words by length** will be summarized in a **histogram**, and the **maximum correct streak per round** will be represented with a **bar chart**.

4.4 Data revision

1.1

A) Which feature you will use to present in the table
   - time played for each round showing mean, median,max, min, and sd.

B) What is the statistical value (for example, average, min, max, SD, percentile, etc.) of feature from (A) that you will present in the table

1.2

	Feature	Graph	Graph-type	X-axis	Y-axis

	name	objective			
feature1	Time played for each round	Track player engagement	histogram	Time	frequency
Feature2	player scores in the first mode.	To make the player know their score and improvement	Bar chart	score	frequency
feature3	times when the robot or player wins.	Visualize game balance/fairness	Pie chart (Player wins and robot wins)		
feature4	Time to guess each word length	Show how word length effects guessing time	histogram	Word Length	time
Feature5	maximum streak per each round.	Make player want to win more streak	Bar chart	Streak length	frequency

5. Project Timeline

Week	Task
1 (10 March)	Proposal submission / Project initiation
2 (17 March)	Full proposal submission , find vocabulary data
3 (24 March)	Develop core game
4 (31 March)	Develop core game
5 (7 April)	Adding game environment
6 (14 April)	Submission week (Draft)

26 March-2 April	Developing mode1, mode2, player class
3 April-9 April	Combining the first three with game class Adding score, time counting.
10 April-16 April	Adding streak count, win and loss counting.
17 April-23 April	Adding sound effect and color to the game.
24 April-11 May	Collecting data and making a final report.

List 50% of the tasks that you expect to complete by 16 April.

- Game core
- Player can move
- Finish mode1 and 2

List 75% of the tasks that you expect to complete by 23 April.

- Adding sound effect
- Decorating game environment

List the remaining 25% of the tasks that you expect to complete by 11 May.

- Collecting data and reports.

6. Document version

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

Date	Name	Description of Revision, Feedback, Comments

14/3	Pattapon	Don't forget to change the title to your project name! More information is needed as mentioned in the comments. Also, you can remove the questions from the template. I suggest making the game show more challenging words as the player continues to spell correctly or making difficulty tiers or categorizing words based on their difficulty level to make the game more challenging. :)
16/3	Phiranath	The proposal needs more detail in section 3.3 and 4.3, missing section 2 and the vocabulary dataset needs some more detail.
29/3	Pattapon	Don’t forget to fill in the project timeline table and there are some suggestions in my comments.
30/3	Phiranath	Don’t forget to fill in all of the project format and correct the class diagram both the arrow head and its direction.