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College of Computer and Information Sciences
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LangExpand

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Introduction

In the last few years, the usage of smart devices has increased significantly, this increase comes with many threats to the young generation such as lack of concentration and mental distraction,

Our game solves this problem, it has multiple levels each level represents a word, you will have to guess a word that start with that letter, the second level will start with the last letter of the previous level.

Objectives

Creating a smooth bug-free fully functioning game that is entertaining and easy to use for everyone and have a simple and unique user interface which will help in expanding the individual's vocabulary and helps learning the correct spelling for words.

Target audience

The game targets children, and people who want to develop a strong vocabulary base to help memorize different words.

Vision

Our aim is to create a game that improves the overall vocabulary of individuals and enhances the cognitive ability of our users to help them expand their knowledge while using our app, therefore we have created this app-like game.

Stakeholder

The stakeholder of this project is an elementary school who dedicate their time and effort in teaching children the language base.

Clients

- **Ms. Jackson**
- **Ms. Taylor**
- **Mr. Jack**

User Requirements

- **Users should be able to create an account (Sign Up) to access the game.**
- **The registration process should be user-friendly and secure.**
- **Users should be able to insert and remove letters during gameplay.**
- **A hint feature should be available to assist users.**
- **Users should be able to check the correctness of their answers.**
- **A clear indication of the end of a stage should be provided.**
- **Users may have the option to turn on/off in-game sound.**
- **Feedback and information should be provided when the user reaches the end of the game.**
- **Users may be congratulated on achieving score milestones.**

System requirements

- **The system must support secure and user-friendly account creation.**
- **The system must support the initiation of new game sessions.**
- **The system should display the current level and stage information.**
- **The system must calculate and update the player's level based on their progress.**
- **Access to different stages should be managed by the system.**
- **The system should handle the insertion and removal of letters during gameplay.**
- **A hint feature should be implemented to assist users.**
- **The system must verify the correctness of user-provided answers.**
- **The system should trigger a clear indication of the end of a stage.**
- **A menu bar with various options and features should be integrated into the system.**
- **Sound control features (turn on/off) should be implemented.**

Functional requirements

Feature #	Feature name	Priority
1	Sign Up	High
2	Start Game	High
3	Display Stages	High
4	Display Level	Medium
5	Back Forward	Medium
6	Calculate Player Level	Medium
7	Access Stages	High
8	Generate Words	High
9	Insert Letter	High
10	Remove Letter	Medium
11	Hint Player	Medium
12	Check Answer	High
13	Change Word	Medium
14	End of Stage	High
15	Popup Screen	Low
16	Menu Bar	Medium
17	Turn On Sound	Low
18	Turn Off Sound	Low
19	Display Trip Progress	Medium
20	The End of the Game	Medium
21	Congrats Score	Medium
22	Download Trip Info	Low

Non-functional requirements

Feature #	Feature name	Priority
1	Colored background	Medium
2	Easy-to-read font	Medium
3	Well-designed UI	High
4	Progressively hard levels	High
5	Sound effects	High
6	Smooth transitions	High

Project Features

- **Educative**
- **User-friendly**
- **No wi-fi required**
- **Free-to-play**
- **No in-game advertisements**

Sprint planning

Sprint – 1

Status	Actual Hours	Expected Hours	Task	Name
Done	2	1	Registration	Suliman Humaidi
Done	1	2	Start a new game	Abdullah Almutairi
Done	1	1	Display stages	Ali Al-suhibani
Done	1	1	Display level	Mohammed Almogherah
Done	1	1	Back forward	Abdullah Alaskar

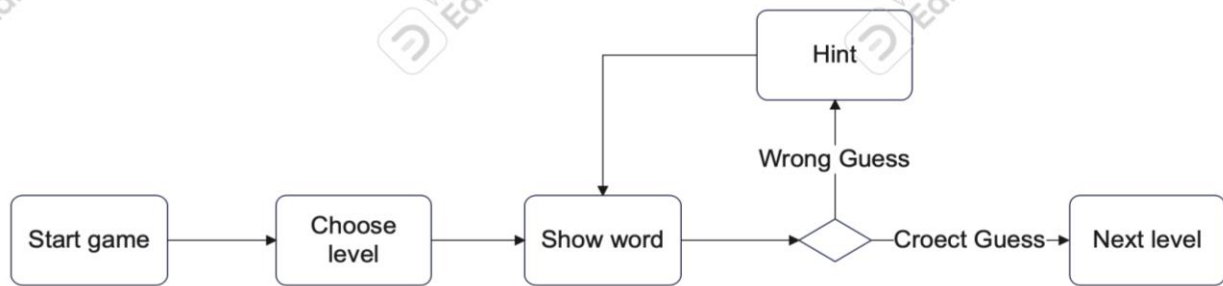
Sprint – 2

Status	Actual Hours	Expected Hours	Task	Name
Done	2	2	Calculate score	Suliman Humaidi
Done	2	3	Check if user is allowed to play a certain stage	Abdullah Almutairi
Done	3	4	Generate words	Ali Al-suhibani
Done	1	2	Insert letters	Mohammed Almogherh
Done	2	2	Remove letters	Mohammed Almogherh
Done	2	3	Hints	Abdullah Alaskar
Done	1	1	Check answer	Abdullah Alaskar
Done	3	3	Change word	Abdullah Almutairi
Done	2	2	Save stage progress	Abdullah Almutairi

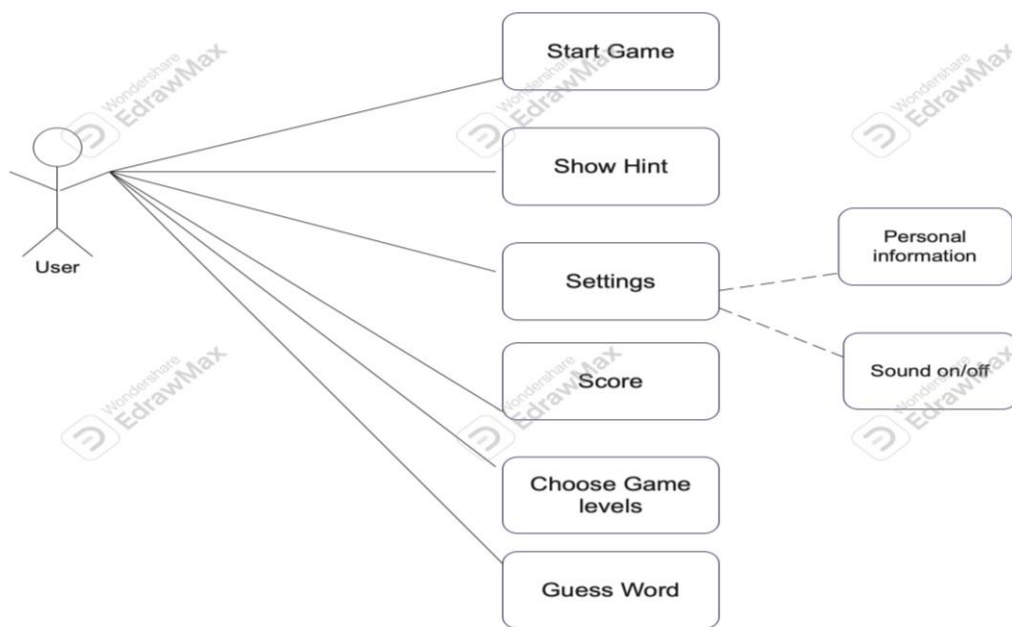
Sprint – 3

Status	Actual Hours	Expected Hours	Task	Name
Done	2	3	Display popups	Mohammed Almogherh
Done	2	2	Option menu	Ali Al-suhibani
Done		1	Enable sound	Abdullah Alaskar
Done		1	Disable sound	Abdullah Alaskar
Done		2	Show progress	Suliman Hunaidi
Done		3	Save game progress	Abdullah Almutairi
Done		1	Display score & Congratulations message	Abdullah Alaskar
Done		1	Download journey data	Ali Al-Suhibani

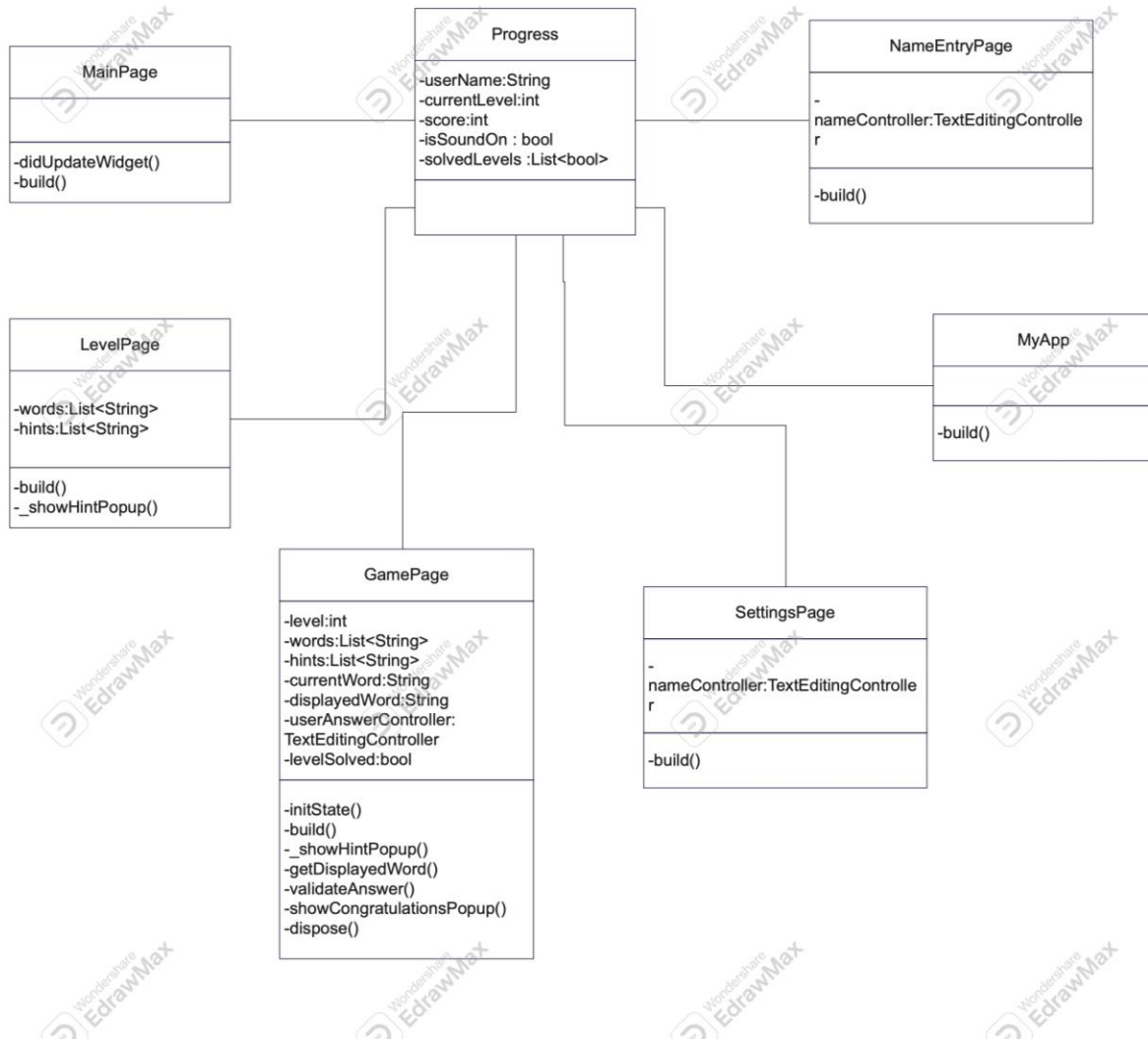
Activity Diagrams:



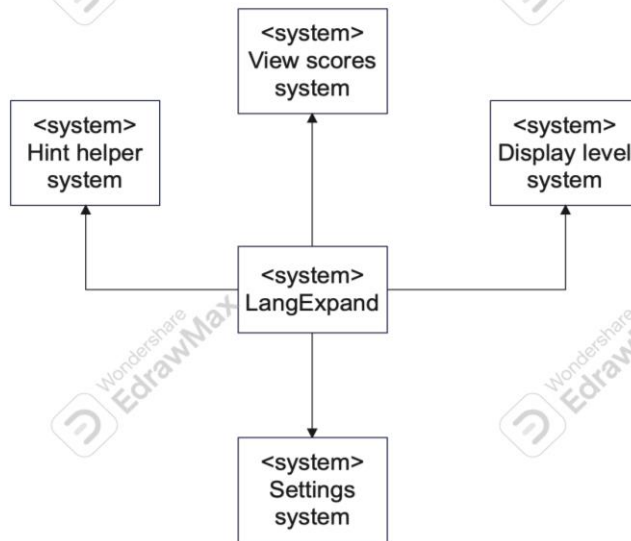
Use Case Diagram:



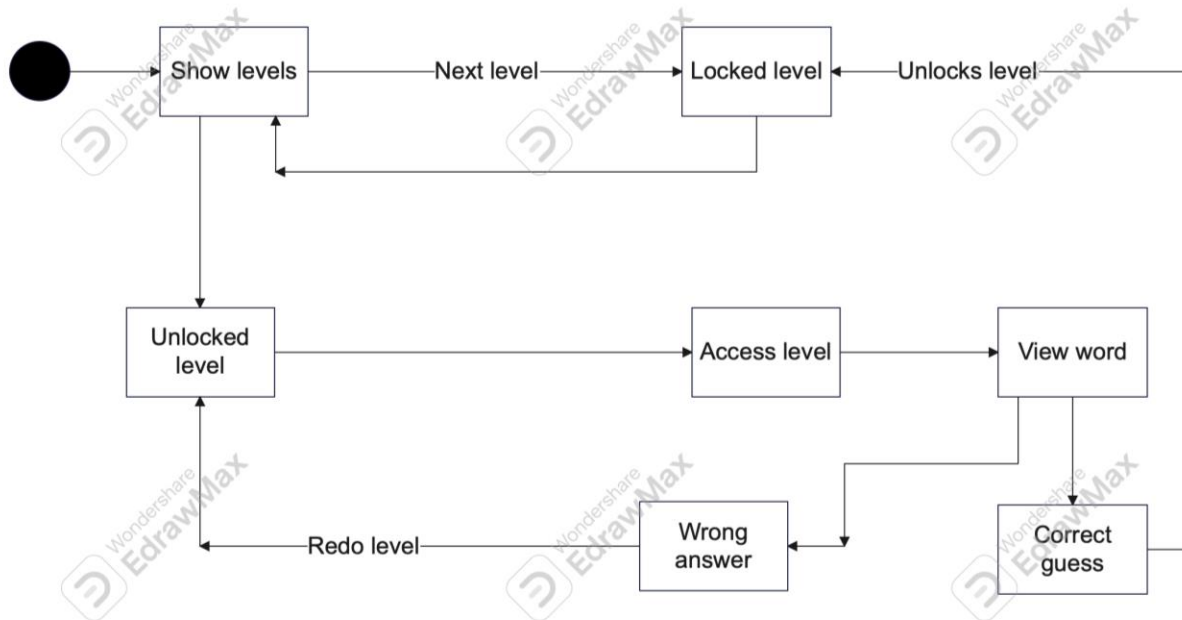
Class Diagram:



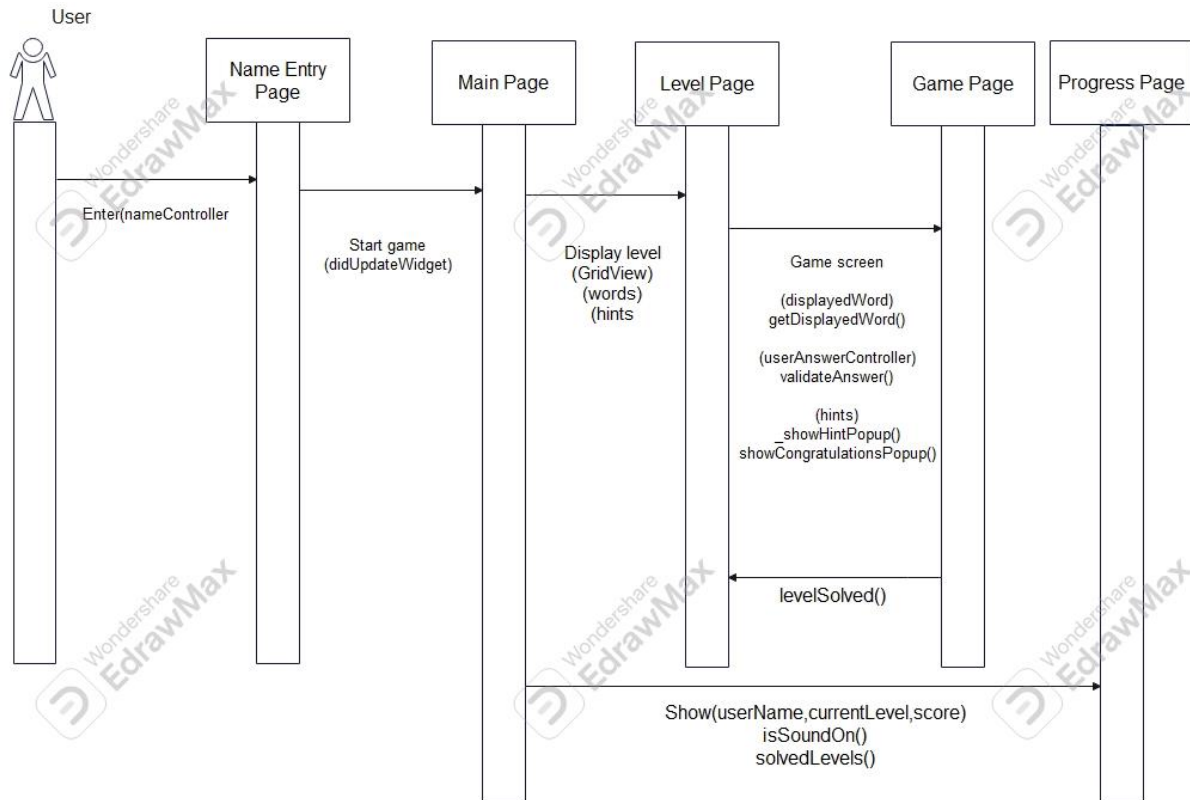
Context Diagram:



State Diagram:



Sequence Diagram:



Sprint 2 Report:

Meeting

Our scrum master arranged a meeting for a team which helped every member know their role as we distributed all the work across the members and managed to do it all in time.

Coding

We have used flutter for our coding base to do all the work including the design of the app which ended up so well, we had faced some issues during the use of flutter but, we have overcome them and gained experience over it.

Design

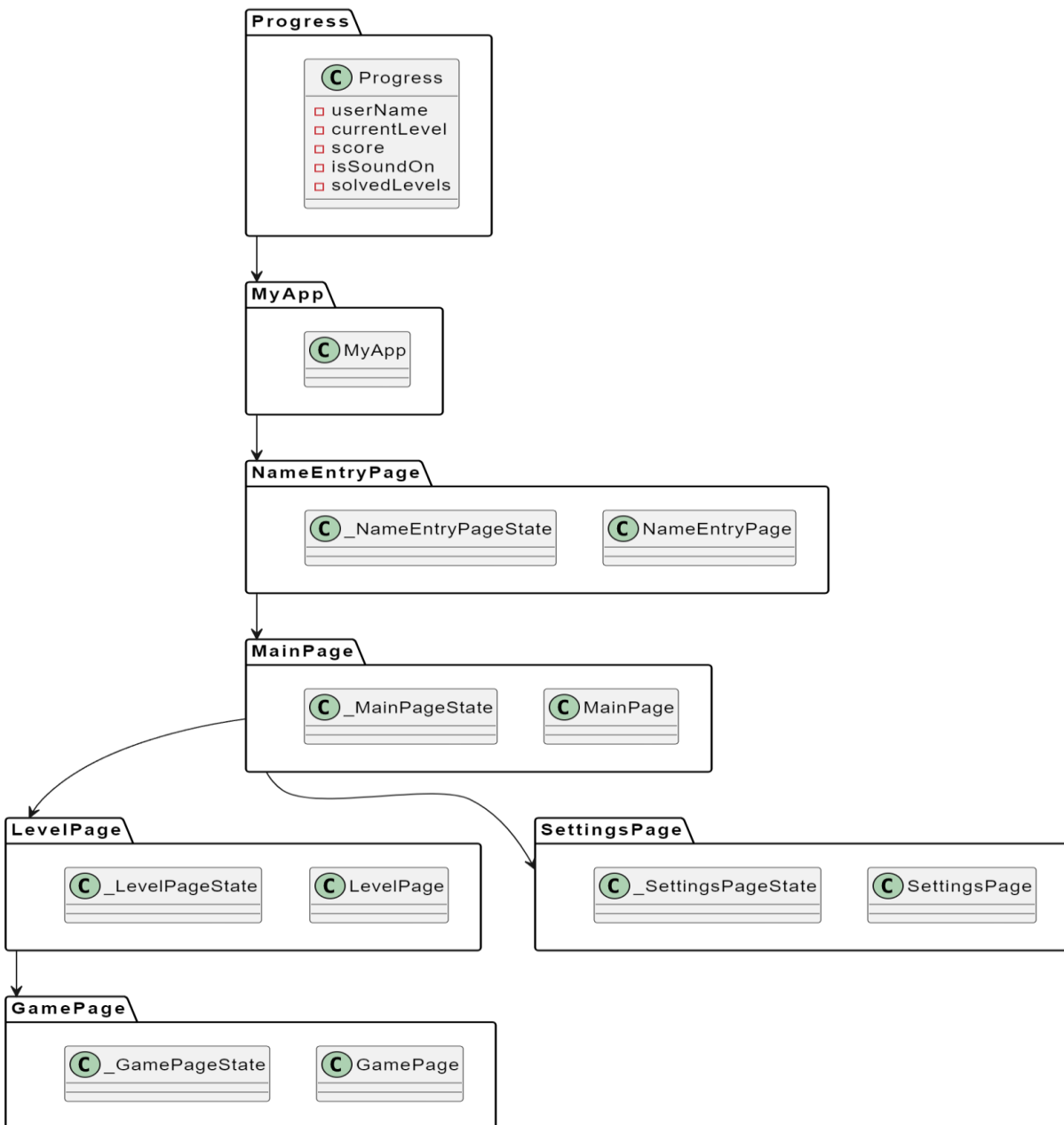
Our base for designing was Edrawmax which helped us shape different diagrams for clear vision of the internal functions and outer aspect of the user.

Documentation

We have updated our documentation as we have entered phase two which we met a lot of new requirements that was a challenge for us but we have overcome it with all the details done and documents.

Sprint 3 Report:

Architectural Design



The project took a long time to create, but we have finally achieved our goal in a fully working game-like app that satisfies our clients and get their needs done.

Lessons Learned

The project was a great training for our team management skills and cooperation in general, it helped us improve not only our teamwork but coding skills, documentation skills, and even communication between the members and the way they handle each task which was smoothly going and well-handled.

Challenges Faced

The challenges we have faced throughout our journey were tough at first, but we have managed to deal with each challenge together as a team, one challenge was what words would suit our users? At first it was difficult to search among all the words, but the collection process went smoothly.

Another challenge we have faced is how we get all the hints and make sure they are clear enough and become reasonable for the user to guess the word, we have made sure that the hints were matching perfectly and well-explained.

The use of flutter was not quite easy at first, we have faced a lot of issues and challenges dealing with flutter as it was our first time using this tool, not mentioning that it was a great tool in the complete of our project as it helped a lot and gained a lot from it.

The coding part was not done at ease, especially of how you keep the progress tracked along with the score, it was a little bit of a challenge to figure it out, but we have managed to make it fully functioning

Conclusion

In conclusion, the project was rich in experience for the students, as it helped us improve a lot and gain a lot in terms of making projects, team cooperation, improve coding, learning new tools such as flutter which played a big role in the complete of this project.