Zain Rizwan – StudyQuest

Introduction

StudyQuest is a social application devised to solve the challenges associated with motivation and focus by both connecting users with their social groups and offering scientifically backed methods of gamification to engage them in the content they are attempting to learn for their exams. At present, StudyQuest consists of two prototypes, one of which is a UI prototype based in Figma, while the other is a coded command-line prototype based in C#.

Problem & Objectives

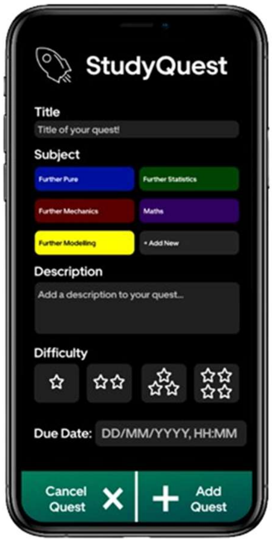
Many students face challenges when it comes to revising or studying effectively for exams. With the increasing demands of academic curricula and the prevalence of distractions in this digital age [1], students often struggle to maintain focus and motivation during study sessions, while most students are not able to even do study sessions themselves. This issue is significant because effective revision and studying are crucial for academic success and long-term retention of content. Thus, without adequate preparation, students may experience heightened stress levels, lower grades, and a lack of confidence in their abilities. There are different ways in which this can manifest across different subjects, for example in History it may result in a student not being able to effectively write their essays or recall facts/information about the subject matter, whereas a more problem-solving based subject such as Maths or Physics may display this problem with a student becoming completely stumped upon a problem, thus leading them to lose marks not only on that problem but also on subsequent problems due a decrease in time, or a lack of required information. Such repercussions may also result in impacted future career developments or personal development in one’s subject area.

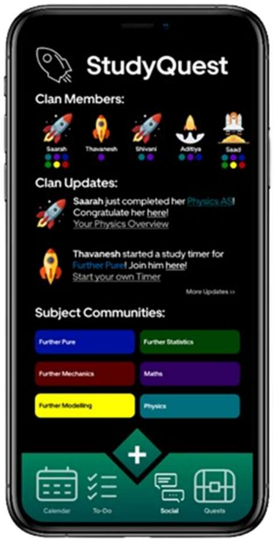
To combat this problem, I intend to design a mobile app that gamifies the studying process to make it more engaging and rewarding [2]. Users can set study goals, earn points for completing tasks, and track their progress over time. The app could feature interactive quizzes, flashcards, and challenges to test knowledge and reinforce learning. Incorporating elements of competition, such as weekly challenges or multiplayer quizzes, could further motivate users to stay committed to their study routines. Also, the app could further incorporate multiplayer elements by allowing users to form groups, chat and send things to each other i.e. show off items they have collected. The users would be able to add their academic tasks/goals to the app in the form of “Quests”, which award rewards depending on the assigned difficulty of quest. These awards could be in the form of player statistics, or items for the player as mentioned prior. The reminders for these quests, i.e. topics leading up to an exam, would be done in accordance with active recall [3].

Solution Description

The prototype for this project is separated into two separate prototypes; a Figma project to show the UI/UX design that the application will incorporate, and a command-prompt prototype to show the underlying logic behind the quest system. The aims of the code prototype were to allow the user to add quests, mark quests as completed, show all quests in a reasonably legible manner, and notify the user if a quest is overdue. The aims of the Figma prototype were to explore the possible aesthetic(s) of the app, which ended up as a minimalist experience with an ongoing theme of space-exploration due to its connotations of progression, which is a desired characteristic of the solution – it is made to stimulate the progress of a given student or group of students that use it.

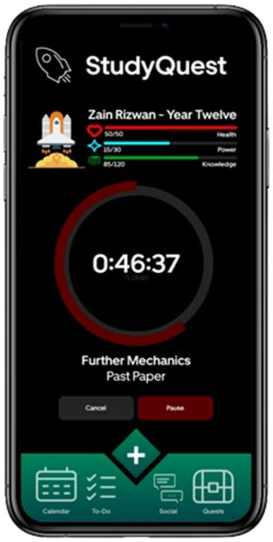
Snippets from Figma prototype:

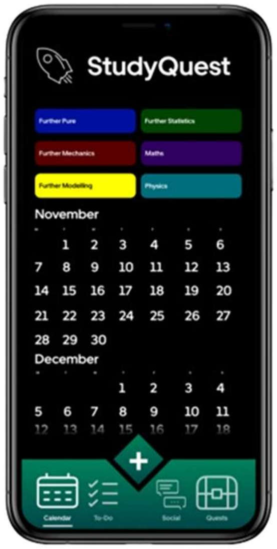




Saarah just completed her Physics AS! Congratulate her here!
Your Physics Overview

Thavanesh started a study timer for Further Pure! Join him here!
Start your own Timer





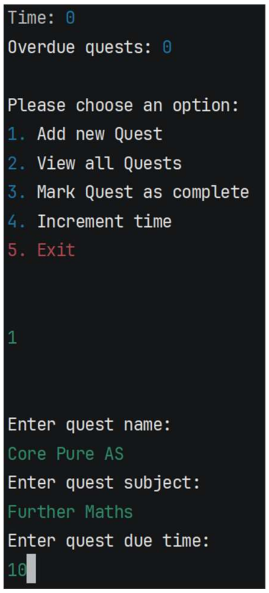
App icon:

(Logos [4])

Teal was chosen for the main colour due to Gen-Z gravitating particularly to it as per [5], and all major parts of the app are made accessible from the home bar at the bottom, allowing users to quickly access & use the app with one hand. This is useful to ensure that users do not become stuck using the app for long period of time i.e. due to fiddly UI elements or a crowded home bar. In the same. Furthermore, the app uses a different colour for each individual subject added to it, allowing users to interpret a larger amount of information without having to take up large amounts of space with labels/icons. This also allows the interface to be less cluttered and sleeker, meaning that users will like using the app more and thus be more likely to recommend it to their friends. This is important, as a large portion of the app's functionality relies on many people using the app, forming groups, and contributing resources. While this is not a full prototype, it serves its purpose as a look into what a fully developed version of the solution may look like and allowed me to build upon my existing UI/UX design skills in order to build a framework by myself.

Snippets from code output – multiple screenshots as console clears itself after input for ease of use:

(Adding multiple Quests with different details) & (Displaying Quests in a legible manner)

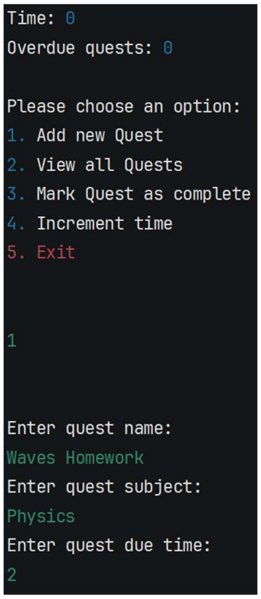


```
Time: 0
Overdue quests: 0

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit


1


Enter quest name:
Core Pure AS
Enter quest subject:
Further Maths
Enter quest due time:
10
```

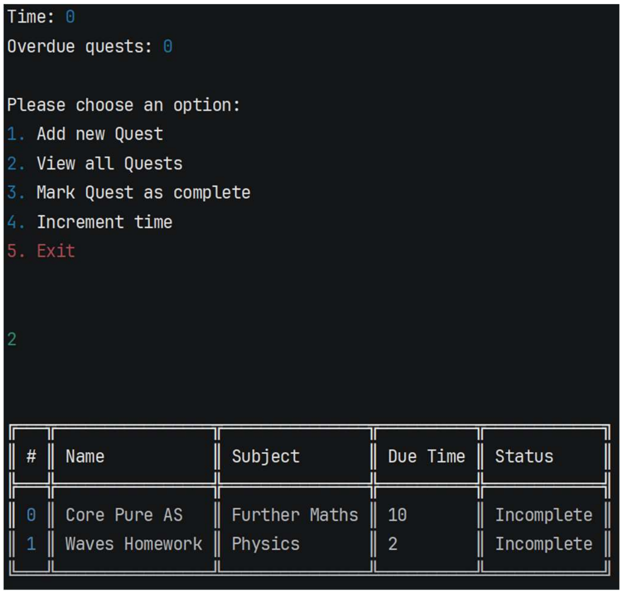


```
Time: 0
Overdue quests: 0

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit


1


Enter quest name:
Waves Homework
Enter quest subject:
Physics
Enter quest due time:
2
```



```
Time: 0
Overdue quests: 0

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit


2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║ # ║ Name           ║ Subject       ║ Due Time ║ Status     ║
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║ 0 ║ Core Pure AS   ║ Further Maths ║ 10       ║ Incomplete ║
║ 1 ║ Waves Homework ║ Physics       ║ 2        ║ Incomplete ║
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```
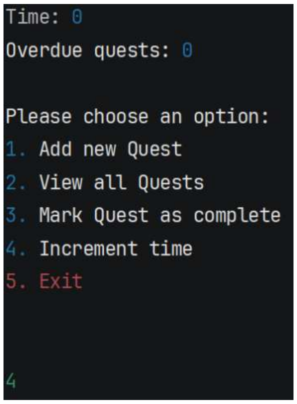
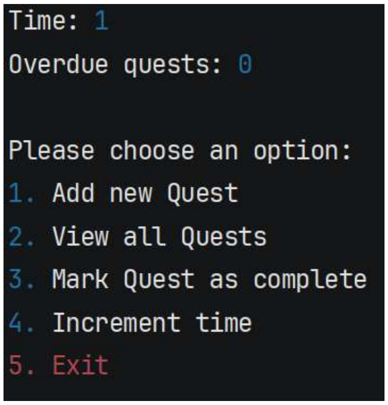

(Incrementing time – for simulation purposes)

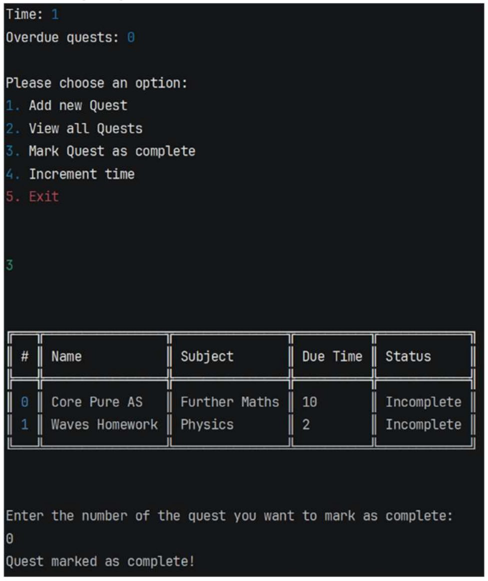


```
Time: 0
Overdue quests: 0

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit


4
```



```
Time: 1
Overdue quests: 0

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit
```

(Changing Quest Status)



```
Time: 1
Overdue quests: 0

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit


3


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║ # ║ Name           ║ Subject       ║ Due Time ║ Status     ║
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║ 0 ║ Core Pure AS   ║ Further Maths ║ 10       ║ Incomplete ║
║ 1 ║ Waves Homework ║ Physics       ║ 2        ║ Incomplete ║
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Enter the number of the quest you want to mark as complete:
0
Quest marked as complete!
```

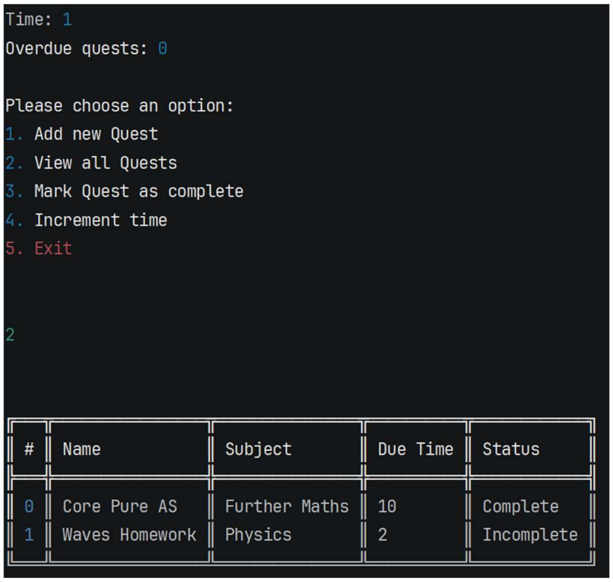

```
Time: 1
Overdue quests: 0

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit


2


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║ # ║ Name           ║ Subject       ║ Due Time ║ Status     ║
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║ 0 ║ Core Pure AS   ║ Further Maths ║ 10       ║ Complete   ║
║ 1 ║ Waves Homework ║ Physics       ║ 2        ║ Incomplete ║
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```
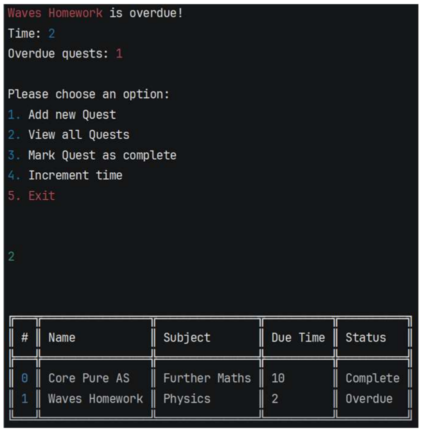

(Quest overdue notification(s))



```
Waves Homework is overdue!
Time: 2
Overdue quests: 1

Please choose an option:
1. Add new Quest
2. View all Quests
3. Mark Quest as complete
4. Increment time
5. Exit



2


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║ # ║ Name           ║ Subject        ║ Due Time ║ Status   ║
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║ 0 ║ Core Pure AS   ║ Further Maths  ║ 10       ║ Complete ║
║ 1 ║ Waves Homework ║ Physics        ║ 2        ║ Overdue  ║
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```
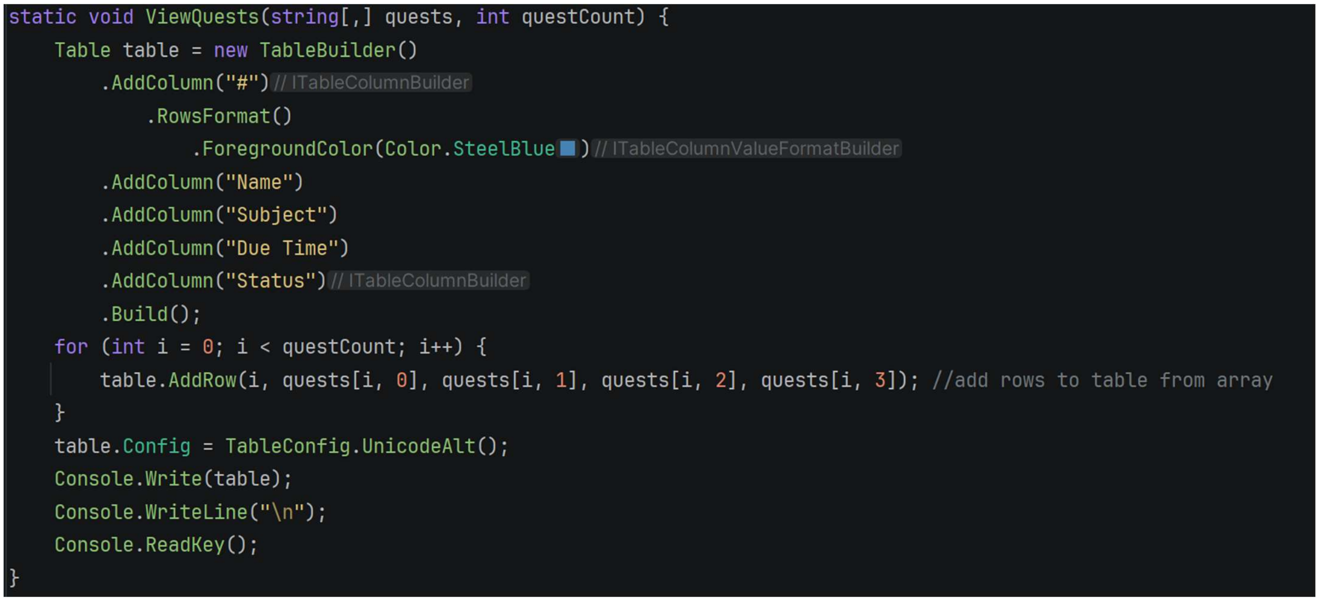

GitHub repo here.

One of the major skills I learned during this section of the project was using libraries, in this case to draw tables in the console:



```
static void ViewQuests(string[,] quests, int questCount) {
    Table table = new TableBuilder()
        .AddColumn("#") // ITableColumnBuilder
            .RowsFormat()
                .ForegroundColor(Color.SteelBlue ■) // ITableColumnValueFormatBuilder
        .AddColumn("Name")
        .AddColumn("Subject")
        .AddColumn("Due Time")
        .AddColumn("Status") // ITableColumnBuilder
        .Build();
    for (int i = 0; i < questCount; i++) {
        table.AddRow(i, quests[i, 0], quests[i, 1], quests[i, 2], quests[i, 3]); //add rows to table from array
    }
    table.Config = TableConfig.UnicodeAlt();
    Console.Write(table);
    Console.WriteLine("\n");
    Console.ReadKey();
}
```

While a simple implementation, this section of the project enabled me to learn how to refer to and use documentation, which is a majorly important skill in the world of computer science/programming due to the number of external code/APIs/libraries used.

Future Work

Some future work that could be undertaken on both prototypes in order to progress it further towards being the finished product would be to more fully flesh out both prototypes, i.e. making the rest of the pages for the Figma UI showcase while constructing a more efficient backend and adding more features to the frontend for the code prototype. For example, the code above creates a new table every time the subroutine is called, but this can be made more effective by simply having a main table that is added to every time that the user adds a quest and edited along with the 2D array whenever the program edits quests. As another example, I could allow the user to add and select from different subjects when a quest is made (as in the Figma prototype), instead of typing it out manually. Furthermore, the Figma prototype is missing the more game-focused aspects of the solution, which need to be added as the main premise of the solution is the gamification of study as per [2]. There are multiple other ways to improve the project, however the prototypes serve (some) of their intended purpose in their current state, showing what a complete solution could look like.

Conclusion

In conclusion, I identified a problem where students would often become stuck and unmotivated to continue studying due to their devices and the increasingly digital nature of study [1]. I then formed a solution using the gamification of study to keep users engaged [2], adding competitive and social elements to ensure the users feel like they are part of a larger community. I made prototypes to show the underlying programming behind some of the functionality of the solution and the aesthetics drawing users to use it [4]. While developing the prototypes, I learnt multiple key skills in the world of computing and software development, such as using libraries, using GitHub, or building upon existing UI/UX skills – Figma is a well-established application used for UI/UX development, being used to develop applications, such as Uber [6].

Bibliography

[1] **-** Hollis, R.B. and Was, C.A., 2016. Mind wandering, control failures, and social media distractions in online learning. Learning and Instruction, 42, pp.104-112.

[2] - Codish, D. and Ravid, G., 2014. Academic course gamification: The art of perceived playfulness. Interdisciplinary Journal of E-Learning and Learning Objects, 10(1), pp.131-15.

[3] - Xu, J., Wu, A., Filip, C., Patel, Z., Bernstein, S.R., Tanveer, R., Syed, H. and Kotroczo, T., 2024. Active recall strategies associated with academic achievement in young adults: A systematic review. Journal of Affective Disorders.

[4] - www.svgrepo.com. (n.d.). SVG Repo - Free SVG Vectors and Icons. [online] Available at: https://www.svgrepo.com.

[5] - Mythili, R. and Kiruthiga, V., Scrutiny on Colour Psychology by Utilising Colour Wheel to Determine Its Effect on Gen Z for Website Design. *International Journal of Health Sciences*, (III), pp.2687-2700: Colours, according to the … likability by gen z, magenta, vermillion, chartreuse, violet, **teal** are most preferred.

[6] - Figma. (2018). *Designers use Figma to bring Uber to the unbanked | Figma Blog*. [online] Available at: https://www.figma.com/blog/designers-use-figma-to-bring-uber-to-the-unbanked/ [Accessed 28 May 2024].