**Part A:**

1. Software development progress:

in this project I would choose the Agile software development process, particularly the Scrum method, for the development of Apache Airlines' reservation systems. This methodology provides the appropriate adaptability and cooperation for a project which could develop over time when new needs appear, such as the optional reservation reference system suggested in Part B.

here are the reasons behind choosing the Agile Scrum for this project:

1. Collaboration with Customers and Modifying Requirements

The main rationale for selecting Agile is its focus on building strong connection with the consumer. Given that Apache Airlines has already provided further information following the original request, which include the need for a booking reference, it is seen that their requirements might keep changing and expanding. Agile's flexible structure and its focus on quick, manageable development cycles (sprints) lets the developing team to adapt to these updates without affecting the project's performance in general.

1. Quicker delivery of a product which might be implemented

With Scrum, we could begin by releasing the initial stage of the booking system that provides the most crucial tasks, such as displaying which seats are available, taking reservations, and releasing seats. This means the airline may begin applying a functional product earlier, even before all advanced features are deployed . Every new sprint may then include upgrades or additional features, such as the addition passenger databases or booking references.

1. Content feedback and quality control

Agile supports testing and suggestions frequently which is a great way to find mistakes quickly, especially in a system that customers will be using. In order to make sure that we remain on their plan, we can organise a review session with the stakeholders at Apache Airlines each time a sprint is done. This continuous a feedback system allows us to make rapid adjustments if anything isn't functioning as planned and helps guarantee a high-quality, and user-friendly system.

A diagram of a company

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5. a common functionality that may be available in a airline booking system which is finding the nearest available seat. So, in this part of the project, I have included an extra function called “Find Nearest Available Seat”, an important feature used in real airline booking systems. This function enables airline employees easily find the nearest available seat to a client's selected selection. If a consumer requests a seat “15A” but it is already reserved, the system can recommend other available seats, such as “15B” or “16A.” This function makes the system easier to use by minimising the amount of time it takes to manually check for free seats, particularly for last-minute reservations or for groups of people who want to sit next to each other. The feature operates by first scanning the row of the wanted seat, then extending the search to include the rows above and below, extending up to three rows in each direction. It ignores seats identified as aisles (“X”) or storage (“S”) and only recommends seats that are available for booking (“F”).

Technically, the function pulls the row number and seat letter from the chosen seat entry. Then it iterates throughout surrounded rows, checking each seat to identify the nearest one that has been set as available(Free). When identified, it shows the recommended seat number to the customer. If no seats are identified within the search range, the customer will be told that there are no closest seats available.

A diagram of a company

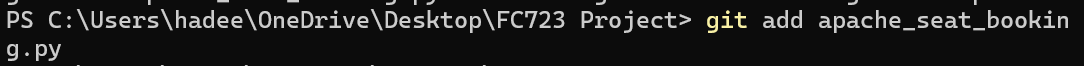
AI-generated content may be incorrect.The updated diagram after adding the new option "Find Nearest Available Seat “in the main menu, which displays the closet seat available or message saying there are no seats nearby.

6. link to my repository: <https://github.com/Hadeelalbalushi/FC723-Seat-Booking>

To manage and share my Apache Airlines seat booking system to GitHub, I used Git version control and followed a set of instructions. This enabled me for tracking changes to my code and share it online professionally. I have followed these steps:

1. I have created a project folder on my computer called: C:\Users\hadee\OneDrive\Desktop\FC723 Project

And I have moved my python file (apache\_seat\_booking.py) to this folder so everything will be organised.

1. I have Opened PowerShell in the Folder, by right clicking in the folder and it open the terminal in the folder .
2. Initialized git: so I turned the folder into a Git repository by running:This command created a hidden. git folder inside my project. It enabled Git to track all changes I make in the folder (like adding, deleting, or editing files).
3. Adding my python file to Git. – before committing changes, I needed to tell Git which file to track. I used the following commanBy doing this, the file was configured and ready to be stored in Git's history.
4. And I wanted to check the status of the file, so I used this command :

A screen shot of a computer program

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We can see that the green file is tracked, and the red one’s are untracked.

1. Commit the File

Next, I wrote this to save a copy of the file in Git:

A screen shot of a computer

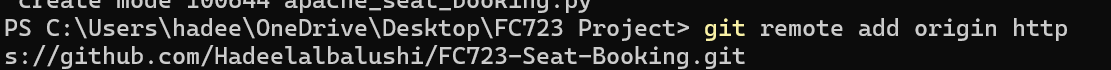
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This created a log entry in the repository so I can go back to this version anytime in the future.

1. Create a Repository on GitHub
   1. Opened my web and went to <https://github.com/> and login to my account
   2. Scroll down until you find " Start a new repository for Hadeelalbalushi” and here we create a new repository
   3. Named it FC723-Seat-Booking
   4. Put it as a public repository
   5. Clicked “Create repository”

Then GitHub gave me a remote URL for my new repository.

1. Connect my local project to GitHub, by using this command :



This tells Git where to push my code.

1. Pushing my code to GitHub

A screen shot of a computer program

AI-generated content may be incorrect.

1. Checking if my python file was uploaded: <https://github.com/Hadeelalbalushi/FC723-Seat-Booking>