APPENDIX

Initial Project Plan (week 10, submission date: 31 May 2024)

<table>
<tr><td>Group Name</td><td>Super Saiyan</td></tr>
<tr><td>Members</td><td>
<table>
<tr><th>Name</th><th>Email</th><th>Phone number</th></tr>
<tr><td>MUHAMMAD ARIF AIMAN BIN MOHD HISAM</td><td>211981@student.upm.edu.my</td><td>019-527 1995</td></tr>
<tr><td>MUHAMAD ZUL AIMAN BIN MOHD AMRAN</td><td>211512@student.upm.edu.my</td><td>011-5424 4530</td></tr>
<tr><td>NURDIYANA ATHIRAH BINTI MOHD ASMAN</td><td>211641@student.upm.edu.my</td><td>013-387 6563</td></tr>
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</td></tr>
<tr><td>Problem scenario description</td><td>In a bustling metropolitan area, QuickDrop, a drone delivery service, aims to maximize profits by optimally scheduling delivery jobs. Each delivery job has a deadline and associated profit. The company needs to ensure timely deliveries to enhance customer satisfaction and operational efficiency.</td></tr>
<tr><td>Why it is important</td><td>Efficient job scheduling is crucial for QuickDrop to maximize revenue, improve delivery times, and maintain high customer satisfaction levels.</td></tr>
<tr><td>Problem specification</td><td>QuickDrop, a drone delivery service, faces the challenge of maximizing its total profit by optimally scheduling delivery jobs within their respective deadlines, ensuring timely deliveries and enhancing customer satisfaction.</td></tr>
<tr><td>Potential solutions</td><td>Greedy Algorithm, Dynamic Programming, Divide and Conquer, Graph Algorithms.</td></tr>
<tr><td>Sketch (framework, flow, interface)</td><td>Framework: Java for implementation.
Flow: Input jobs, sort by profit, schedule based on deadlines.
Interface: Command-line interface or simple graphical interface showing scheduled jobs and total profit.</td></tr>
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Project Proposal Refinement (week 11, submission date: 7 June 2023)

<table>
<tr><td>Group Name</td><td>Super Saiyan</td></tr>
<tr><td>Members</td><td>
<table>
<tr><th>Name</th><th>Role</th></tr>
<tr><td>MUHAMMAD ARIF AIMAN BIN MOHD HISAM</td><td>LEADER</td></tr>
<tr><td>NURDIYANA ATHIRAH BINTI MOHD ASMAN</td><td>DESIGNER</td></tr>
<tr><td>MUHAMAD ZUL AIMAN BIN MOHD AMRAN</td><td>DEVELOPER</td></tr>
</table>
</td></tr>
<tr><td>Problem statement</td><td>QuickDrop, a drone delivery service, faces the challenge of maximizing its total profit by optimally scheduling delivery jobs within their respective deadlines, ensuring timely deliveries and enhancing customer satisfaction.</td></tr>
<tr><td>Objectives</td><td>To develop a scheduling algorithm that efficiently allocates drone delivery jobs to maximize total profit while adhering to job deadlines and operational constraints, thus improving overall service efficiency and customer satisfaction.</td></tr>
<tr><td>Expected output</td><td>List of desired output for this project:
1. Scheduled Jobs: a list of job IDs that have been scheduled, maximizing the total profit.
a. example: ['A', 'C', 'B']
2. Total Profit: the sum of the profits of the scheduled jobs.
a. example: Total Profit: 146.
3. Scheduled Time Slots: the time slots in which the jobs are scheduled.
a. example: ['A' at Slot 1, 'C' at Slot 2, 'B' at Slot 3]</td></tr>
<tr><td>Problem scenario description</td><td>In a bustling metropolitan area, QuickDrop, a drone delivery service, aims to maximize profits by optimally scheduling delivery jobs. Each delivery job has a deadline and associated profit. The company needs to ensure timely deliveries to enhance customer satisfaction and operational efficiency.</td></tr>
<tr><td>Why it is important</td><td>Efficient job scheduling is crucial for QuickDrop to maximize revenue, improve delivery times, and maintain high customer satisfaction levels.</td></tr>
<tr><td>Problem specification</td><td>● Data Types: Jobs represented as a list of tuples with (job_id, deadline, profit).
● Objective Function: Maximize total profit by selecting jobs that can be completed within their deadlines.
● Constraints: Each job must be completed by its deadline; no two jobs can be scheduled at the same time slot.</td></tr>
<tr><td>Potential solutions</td><td>Greedy Algorithm, Dynamic Programming, Divide and Conquer, Graph Algorithms.</td></tr>
<tr><td>Sketch (framework, flow, interface)</td><td>Framework: Java for implementation.
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<td>Methodology</td>
<td>Step 1: Define the problem and collect data.
Step 2: Select and implement the appropriate algorithm.
Step 3: Test and debug the implementation.
Step 4: Analyze the results for correctness and efficiency.
Step 5: Prepare documentation and presentation.

<table>
<tr><th>Milestone</th><th>Time</th></tr>
<tr><td>scenario refinement</td><td>wk10</td></tr>
<tr><td>find example solutions and suitable algorithms. Discuss in group why that solution and the example problems relate to the problem in the project</td><td>wk11</td></tr>
<tr><td>edit the coding of the chosen problem and complete the coding. Debug</td><td>wk12</td></tr>
<tr><td>conduct analysis of correctness and time complexity</td><td>wk13</td></tr>
<tr><td>prepare online portfolio and presentation</td><td>wk14</td></tr>
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Project Progress (Week 10 – Week 14)

Milestone 1	Scenario Refinement
Date (week)	week 10
Description/ sketch	Research and discuss suitable algorithms for the project. Find and analyze example solutions related to the problem.
Role	Define the scope and details of the scenario. Arif | Diana | Zul Aiman Leader | Designer | Developer

Milestone 2	Find Example Solutions and Suitable Algorithms
Date (Wk)	week 11
Description/ sketch	Research and discuss suitable algorithms for the project. Find and analyze example solutions related to the problem.
Role	Collect and evaluate example solutions, discuss algorithm selection. Arif | Diana | Zul Aiman Leader | Designer | Developer

Milestone 3	Edit and Complete Coding, Debug
Date (Wk)	week 12
Description/ sketch	Implement the chosen algorithm, complete the coding, and debug the implementation.
Role	Coding and debugging tasks. Arif | Diana | Zul Aiman Leader | Designer | Developer

Milestone 4	Conduct Analysis of Correctness and Time Complexity
Date (Wk)	week 13
Description/ sketch	Analyze the correctness and time complexity of the implementation.
Role	Test and validate the algorithm, analyze its performance. Arif | Diana | Zul Aiman Leader | Designer | Developer

Milestone 5	Prepare Online Portfolio and Presentation
Date (Wk)	week 14
Description/ sketch	Create an online portfolio showcasing the project and prepare the final presentation.
Role	Prepare documentation, presentation materials, and online portfolio. Arif | Diana | Zul Aiman Leader | Designer | Developer