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**1. Executive Summary**

*This report presents the alternatives considered by Student 5 to meet the requirements of D02. Unlike D01, this deliverable involved more tasks, each with a higher level of complexity. Consequently, a more detailed analysis of possible approaches was carried out to ensure that the requirements were met effectively.*

**2. Revision Table**

| Revision number | Date | Description |
| --- | --- | --- |
| 1 | 02/03/2025 | The report was created |
|  |  |  |

**3. Introduction**

*This analysis report presents an evaluation of the approaches and alternatives considered to meet the requirements of the project deliverables. It provides a detailed overview of the decision-making process, including the strengths and weaknesses of different solutions explored.*

*Additionally, the report highlights the steps taken to ensure the most effective and efficient implementation, focusing on key considerations and challenges faced throughout the process.*

**4. Contents**

**4.1 Analysis Log**

***Task 3****: The technicians care of aircraft maintenance by conducting regular inspections, per-forming repairs, and carrying out other maintenance tasks. The system must store the following data about them: a license number (unique, pattern "^[A-Z]{2-3}\d{6}$"), a phone number (pattern "^+?\d{6,15}$"), their specialisation (up to 50 characters), whether they have passed their annual health test or not, and their years of experience. Optionally, the system may store their certifications (up to 255 characters). For this task, the* ***Technician*** *entity was implemented with attributes such as license number, phone number, specialization, annual health test status, and years of experience. Validations were defined to ensure that values follow the required formats (e.g., license number and phone number patterns). Optional certifications were included, and data integrity within the system was verified.*

***Task 4:*** *Maintenance records are comprehensive records of activities performed on a given aircraft throughout its operational life. The system must store the following data about them: the moment when a maintenance takes place, its status ("PENDING", "IN PROGRESS", "COMPLETED"), the next inspection due date, an estimated cost, and some optional notes (up to 255 characters). The MaintenanceRecord entity was created to store information about maintenance records. Attributes such as the moment when maintenance occurs, its status (PENDING, IN\_PROGRESS, COMPLETED), the next inspection date, and the estimated cost were defined. Validations were applied to ensure that the maintenance moment is in the past and the next inspection is in the future.*

***Task 5:*** *Maintenance records rely on tasks. A task is a specific predefined operational duty carried out by a technician on aircrafts. The system must store the following data about tasks: their type ("MAINTENANCE", "INSPECTION", "REPAIR", "SYSTEM CHECK"), a description (limited to 255 characters), a priority (ranging from 0 to 10), and an estimated duration (in hours). The Task entity was developed to represent individual tasks within maintenance records. Attributes such as task type (MAINTENANCE, INSPECTION, REPAIR, SYSTEM CHECK), a description of up to 255 characters, a priority ranging from 0 to 10, and an estimated duration in hours were defined. A relationship between tasks and maintenance records was implemented to reflect their dependency.*

***Task 6:*** *Produce assorted sample data to test your application informally. The data must include two technician accounts with credentials “technician1/ technician1” and “technician2/ technician2”. Create an additional technician account with credentials “technician3/ technician3” that represents a technician with no data, but his or her profile. Test data was generated in CSV format to validate the correct functionality of the system. Three technicians were included with predefined credentials: technician1 / technician1, technician2 / technician2, technician3 / technician3 (this technician was created without associated data to test the case of an empty profile).  
 The test data included maintenance records and associated tasks to conduct functional tests in the application.*

***Task 15:*** *The system must handle technician dashboards with the following indicators:*

* *The number of maintenance records grouped by their status.*
* *The maintenance record with the nearest inspection due date, provided that he or she is involved in any tasks that need to be performed as part of that maintenance.*
* *The top five aircrafts with higher number of tasks in their maintenance records.*
* *The average, minimum, maximum and standard deviation of the estimated cost.*
* *The average, minimum, maximum and standard deviation of the estimated duration of the tasks in which he or she is involved.*

*A* ***dashboard for technicians*** *was implemented, displaying key indicators:*

* *The number of maintenance records grouped by status.*
* *The maintenance record with the nearest upcoming inspection.*
* *The top five aircraft with the highest number of tasks in their maintenance records.*
* *Statistics on estimated costs and task duration (average, minimum, maximum, and standard deviation).  
   Aggregate queries were used to calculate these values and present them in an accessible format for technicians.*

***Task 16****: Produce a UML domain model regarding the information requirements in your project. A UML model was designed to represent the data structure and relationships within the system. Entities such as* ***Technician, MaintenanceRecord, Task, and InvolvedIn*** *were defined. The model was adjusted to reflect the many-to-many relationship between tasks and maintenance records using an intermediate entity (****InvolvedIn****). UMLlet was used to generate the diagram.*

***Task 26****: The system is required to have a notice board to advertise courses for technicians. A web service must be used to populate this entity with information about courses. Thus, the exact data to store depends on the chosen service, and it is the students' responsibility to define them accordingly. It is also the students’ responsibility to find the appropriate service; no implicit or explicit liabilities shall be covered by the University of Seville or their individual affiliates if the students hire pay-per-use services! The students are strongly advised to ensure that the service they choose is free of charge.*

***Task 7:*** *Provide a link to your planning dashboard in GitHub to review the tasks, their cur-rent status, and your schedule. A link to the* ***planning dashboard in GitHub*** *was provided, where all tasks, their current status, and the project schedule can be viewed. Dependencies between tasks were documented, and progress tracking was performed.* ***Task 27:*** *Produce an analysis report. A detailed analysis report was drafted, outlining the approach taken for each requirement, design decisions, applied validations, and challenges encountered. This document justifies the choices made and evaluates potential future improvements.*

***Task 28:*** *Produce a planning and progress report. A planning and progress report was created, comparing estimated and actual time spent on each task. The main challenges encountered were analyzed, and strategies were proposed to optimize project management in future iterations.*

Tasks 7, 27 and 28 mainly focus on documentation. These tasks require recording and detailing the implemented processes, decisions, and functionalities clearly and accurately, ensuring that all relevant information is properly organized and accessible for future reference or audits.

**5. Conclusions**

Does not apply

**6. Bibliography**

Does not apply