Analysis Report - Student 5

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* **Date**: Thursday 12, March 2025

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# Executive Summary

This report takes into consideration the decisions made during the development of the deliverable. It shows the doubts that arose and how they were resolved. The mandatory requirements in this deliverable included developing a role Technician, entities as MaintenanceRecord and Task and producing sample data.

# Revision Table

|  |  |  |
| --- | --- | --- |
| **Revision Number** | **Date** | **Description** |
| 1.0 | Sunday 9, March 2025 | Initial draft including contents and tasks completed at that moment. |
| 2.0 | Wednesday 12, March 2025 | Final draft. |

# Introduction

This report analyzes the first deliverable of the Acme-ANS project, focusing on the requirements that required some examination.

# Contents

The requirements analysed in this report are:

R4: “*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).”*

R5: *“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). ”*

## 4.1 Relationship Between Technician and MaintenanceRecord

According to R4, the MaintenanceRecord (MR) stores a list of activities performed on an aircraft. Initially, I decided that the MR should only be related to the aircraft. However, thanks to a forum entry, I realized that the MR represents an instance of tasks performed on an aircraft. It is recorded by the technician who usually performs it, which may differ from the one originally assigned to the task. Based on this reflection, I decided that creating a ManyToOne relationship from MR to Technician was a good idea. [[2]](#_Conclusions)

## 4.2 Relationship Between Technician and Task

After drafting the initial relationships between entities, I concluded that there should be a ManyToOne relationship between Technician and Task, indicating the technician who performed the task. However, due to my limited understanding of the difference between Task and MaintenanceRecord (MR), it was challenging to determine whether the relationship I had proposed was correct.

Once again, the lecturer provided a solution to this problem. The following quote clarified the situation:

*"Technicians are responsible for performing maintenance. Each time a technician performs maintenance on an aircraft at a given moment, they record a Maintenance Record (MR) specifying which tasks they have completed. Tasks are selected from a catalog that is managed in a distributed manner by the technicians themselves. It is not necessary for the system to start with a predefined task catalog; technicians will register and publish tasks progressively. The task catalog includes all tasks that have been registered and published by the technicians. Of course, an unpublished task can be modified or deleted by the technician who created it, but once published, neither modifications nor deletions are allowed."* [[1]](#_Bibliography)

Thanks to this explanation, I realized that there is indeed a relationship between Task and Technician, but it involves the technician who created the task, rather than the technician who performs the task.

## 4.3 Relationship Between MaintenanceRecord and Task

When I first considered the relationships between **MaintenanceRecord (MR)** and **Task**, I initially drew a **Many-to-One** relationship. However, this was incorrect. I corrected it thanks to the lecturer's clarification of the requirement. Eventually, I established a ManyToMany relationship with an intermediate class called Involves. [[1]](#_Bibliography)

# Conclusions

Through the analysis and refinement of relationships between Technician, MaintenanceRecord (MR), and Task, I corrected initial misconceptions and improved the model. Initially, I misrepresented how technicians interact with tasks and maintenance records, but feedback from discussions and the lecturer’s clarification helped me adjust the relationships accordingly.

The final model establishes a ManyToOne relationship between MR and Technician to track who records maintenance. The relationship between Technician and Task was clarified to refer to the technician who created the task, not the one performing it. Lastly, the connection between MR and Task was revised from ManyToOne to ManyToMany, using an intermediate class, Involves.

This process highlighted the importance of understanding requirements before defining entity relationships, ensuring a more accurate system model.

# Bibliography

These are all the entries I studied when completing my requirements:

[1]<https://ev.us.es/webapps/discussionboard/do/message?action=list_messages&course_id=_89154_1&nav=discussion_board&conf_id=_426211_1&forum_id=_253522_1&message_id=_459653_1>

[2]<https://ev.us.es/webapps/discussionboard/do/message?conf_id=_426211_1&forum_id=_253522_1&course_id=_89154_1&action=list_messages&nav=discussion_board&message_id=_461415_1>