

## Database Management for Data Scientists

### Project Tips & Tricks

The following guidance will help you create your database project and avoid common pitfalls observed in previous submissions.

#### 1. Report

##### 1.1. Prepare structure

Tip: Set up your report document early and include the required structure.

Reason: Many project teams overlook one or more chapters, which results in zero points for those sections.

##### 1.2. Add requirements to the structure

Tip: List the required content for each section as bullet points within your report outline. Replace these points step by step as you write.

Reason: Important elements are often missing, such as the Execution Plan in the Performance chapter. By listing all required items upfront, you can systematically complete your report and ensure all criteria are met—otherwise, you risk losing points.

##### 1.3. Clearly separate team member reflections

Tip: Create a dedicated subsection for each team member's reflection.

Reason: Each member must include their own individual insights and learnings as required. Points will be deducted if the entire team submits a single, shared reflection.

##### 1.4. Commonly missing information

Tip: The following elements are frequently missing from project reports:

- Entire Performance chapter
- Execution Plans and indexes within the Performance chapter
- System architecture description
- Individual team member reflections

##### 1.5. Readable screenshots

Tip: Ensure that screenshots clearly display all necessary information. If a screenshot includes code, the text must be easily readable.

Reason: Screenshots are often too small or taken in dark mode, making the text difficult to read. The reader should not need to zoom in or struggle to decipher the code.

### **1.6. Code snippets**

Tip: If your project includes a large amount of code, include short code snippets in the main report to illustrate your approach. Place the complete code in the appendix.

Reason: This keeps the main report concise and focused while still providing full technical details for reference.

## **2. Performance chapter**

### **2.1. Use a filter**

Tip: In the Performance chapter, one requirement is to improve a query. Apply an effective filter using a WHERE clause to return only a subset of the data (for example, only the year 2025 instead of all years, or one country instead of all).

Reason: Many teams attempt to optimize queries that process the entire table, such as grouping all data by a criterion. In such cases, adding an index provides little improvement. By filtering the data to a smaller subset, indexes can deliver a much more noticeable performance gain.