# SIT773

## Database Fundamentals

Learning Summary Report

YUPENG WEN
S224212855

Self-Assessment Details
The following checklists provide an overview of my self-assessment for this unit.

| | Pass (D) | Credit (C) | Distinction (B) | High Distinction (A) |
|---|---|---|---|---|
| Self-Assessment | | | | ✓ |

Self-Assessment Statement

| Checklist | Included |
|---|---|
| Learning Summary Report | ✓ |
| All tasks required for the target grade completed | ✓ |
| Evidence of any additional task(s) or activities completed | ✓ |

## Declaration

I declare that this portfolio is my individual work. I have not copied from any other student's work or from any other source except where due acknowledgment is made explicitly in the text, nor has any part of this submission been written for me by another person.

Signature: **YUPENG WEN**

## Portfolio Overview

Start with a statement as
"This portfolio includes work that demonstrates that I have achieve all Unit Learning Outcomes for <SIT772> <Database Fundamentals> to a **High Distinction** level."

I began my journey by grasping the foundational concepts of relational databases, including tables, primary keys, and foreign keys. I started by designing simple databases and writing basic SQL queries to retrieve, update, and manipulate data. A key milestone was mastering normalization, which enabled me to structure databases more efficiently and eliminate redundancy. Learning to use joins and subqueries to handle complex datasets was initially challenging, requiring precise logic.

As I advanced, I explored triggers, procedures, and functions, which revealed the diverse capabilities of databases. In the 3.2 HD task, I learned about NoSQL databases, broadening my understanding of various database models and their applications in large-scale, flexible data storage. This journey is guiding me toward opportunities in database management, development, and data analysis. Overcoming hurdles like advanced queries and performance optimization has strengthened my problem-solving skills, and I am eager to apply these fundamentals in real-world projects.

# Reflections

## The most important things I learnt:

The most important thing I learned is normalization, because it plays a crucial role in structuring databases efficiently by eliminating redundancy and ensuring data integrity. Through normalization, I gained the ability to break down complex data structures into simpler, more organized forms, which not only improves performance but also makes the database easier to manage and update. In task 4.2C, I used normalization to design a well-defined database, which reduced data duplication and improved query efficiency.

## I feel I learnt these topics, concepts, and/or tools really well:

SQL Queries: I am confident in writing and optimizing complex SQL queries, including joins, subqueries, and aggregate functions.
Normalization: I understand and can confidently apply different normalization forms to reduce redundancy and optimize database performance.

## I found the following topics particularly challenging:

The most challenging part of the unit was mastering complex SQL queries and understanding how to efficiently use joins, subqueries, and advanced functions to retrieve data from multiple tables. Initially, it was difficult to grasp the logic behind these operations, especially when working with large datasets and ensuring query optimization. However, through persistent practice and reviewing real-world examples, I have now gained confidence in writing and troubleshooting these queries. I learned that I am capable of overcoming challenges through consistent effort and seeking clarity when needed. My ability to break down difficult concepts and approach problems step by step helped me tackle these challenges effectively.

## I found the following topics particularly interesting:

The most interesting thing I learned from this unit was SQL, particularly how powerful and versatile it is for managing and querying data. I found it fascinating how SQL allows you to retrieve, manipulate, and analyze large datasets efficiently using commands like joins, subqueries, and aggregate functions. Learning how to write optimized queries and use

advanced SQL features gave me a deeper appreciation for database management and its real-world applications. It was exciting to see how a well-structured query could simplify complex data retrieval and enhance overall system performance.

## I still need to work on the following areas:

I still need to work on improving my skills in advanced SQL optimization and database performance tuning, particularly when dealing with very large datasets. While I have a solid foundation in writing queries, I want to deepen my understanding of how to make them even more efficient, especially in complex systems. Additionally, I aim to explore database security and backup strategies, which are critical for maintaining data integrity and protecting against data loss.

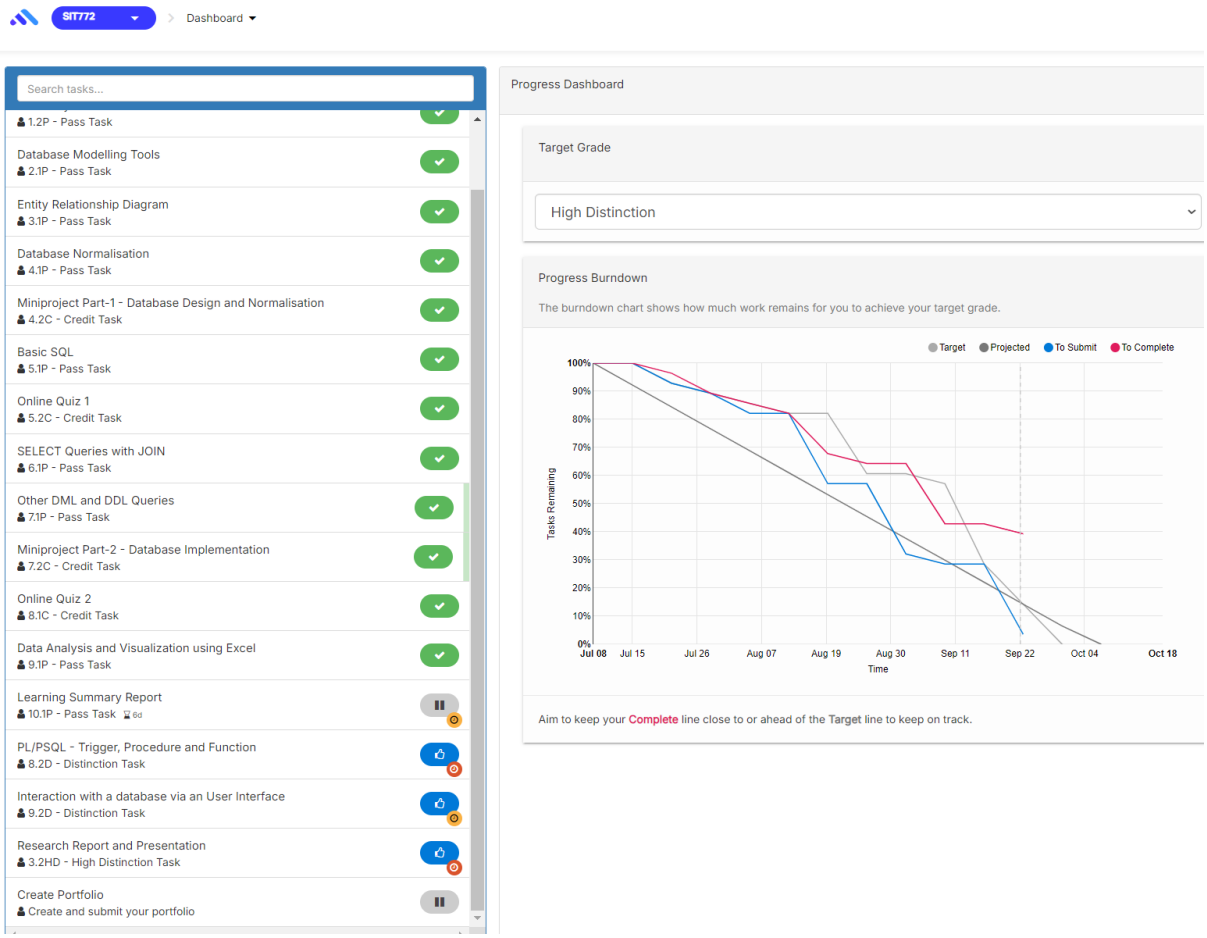
Moving forward, I will continue building on what I've learned by practicing real-world scenarios, taking on more challenging database projects, and staying updated with the latest advancements in database technologies. Developing these skills will help me become a more proficient database professional and prepare me for future roles in data management and analysis.

## The things that helped me most were:

The most helpful resource was video tutorials from YouTube. They provided clear, visual explanations of complex database concepts and SQL techniques, making it easier to understand and apply what I learned. The step-by-step demonstrations and practical examples helped me grasp difficult topics more effectively and reinforced my learning through real-world scenarios.

## My progress in this unit was …:

I have finished all tasks in this unit.




## If I did this unit again, I would do the following things differently:

If I did this unit again, I would start practicing the concepts earlier and engage in hands-on projects to reinforce my understanding sooner. I would also use a wider range of resources, including textbooks and forums, in addition to video tutorials, to gain a more comprehensive view of the material. Participating more actively in discussions and setting specific learning goals for each topic would help me stay focused and address areas of difficulty more effectively. In the future, I will apply these strategies to enhance my learning experience and achieve better outcomes.

## Other…:

This unit has significantly shaped my understanding of database fundamentals and has highlighted the importance of data management in the IT field. Through mastering SQL and database design principles, I have gained valuable skills that are essential for any IT

professional. The challenges I faced taught me resilience and the value of continuous learning, reinforcing my commitment to staying updated with emerging technologies.