Deakin University

Database Fundamentals

OnTrack Submission

Learning Summary Report

Submitted By:
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Outcome	Weight
Fundamental concepts of database	♦♦♦♦♦
Relational Database Modelling	♦♦♦♦♦
Structured Query Language (SQL)	♦♦♦♦♦
Reflection	♦♦♦♦♦
Research and critical review	♦♦♦♦♦

I have been able to completely written down my understanding as to what I have learnt in this unit.

May 20, 2025

SIT772

Database Fundamentals

Learning Summary Report

Prakhar Pandey
STUDENT ID: 223638985

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	Yes
All tasks required for the target grade completed	Yes
Evidence of any additional task(s) or activities completed	Yes

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: **Prakhar Pandey**

Portfolio Overview

This portfolio includes work that demonstrates that I have achieved all Unit Learning Outcomes for **SIT772 – Database Fundamentals** to a **High Distinction level**.

At the beginning of this unit, I had a basic understanding of relational databases, data structures, and SQL syntax. However, I lacked confidence in applying this knowledge in practical settings and had limited exposure to tools like ERD modelling software, database normalisation techniques, or data security frameworks. Through sustained engagement with the unit content, practical assignments, and structured feedback, I have developed a comprehensive and applied understanding of database design, implementation, analysis, and security.

My learning journey has been defined by continuous growth. I started with conceptual exercises on relational schema and progressively worked through database normalisation (to 3NF), schema design, SQL queries, and ER diagrams. Over time, I became proficient with core DDL and DML operations and improved my ability to design robust, scalable databases. I also developed my analytical mindset—especially when dealing with complex JOIN queries, aggregate functions, and the practical use of primary/foreign keys.

The most significant milestone for me was applying theoretical knowledge in real-world simulations. Designing the **Database as a Service (DBaaS)** research report allowed me to connect academic frameworks to modern industry practices. I demonstrated the ability to go beyond course material by including original **comparison tables** and a **Lucid chart**-generated architecture diagram, both created from my own understanding. This extended effort reflects my initiative to critically analyse systems beyond textbook models and to apply visual communication effectively—a key skill in any professional database role.

Another key achievement was in the database security assessment **(10.1P).** I critically analysed a scenario involving operational vulnerabilities and extended this by researching and writing a fully referenced, media-based case study on the **Optus data breach (2022).** This activity helped me understand the broader implications of poor system design and access control, while improving my skills in technical writing, policy evaluation, and applied cybersecurity awareness. It also showed that I could reflect on technical failures and translate them into preventative strategies—evidence of maturity in my analytical thinking.

Throughout the trimester, I have demonstrated consistent performance and responsibility by completing all assigned tasks, meeting deadlines, and incorporating feedback. I have marked myself a 5 across all Unit Learning Outcomes (ULO1–ULO5) because I have not only achieved competence but have also taken the initiative to extend my learning beyond the scope of the core material. My work shows originality, critical reflection, independent problem-solving, and practical proficiency with database tools and technologies.

Evidence of Extended Effort Includes:

- Custom-built comparison tables analysing DBaaS providers and traditional DBMS
- An original Lucid chart workflow diagram demonstrating DBaaS architecture and automation
- An Optus case study with real-world data breach analysis and APA-style referencing

This unit has strengthened my confidence in working with databases in professional environments and has also enhanced my presentation, research, and data governance skills. I now feel well-equipped to undertake more complex projects involving data modelling, integrity, and security—skills directly relevant to industry roles in data analytics, business intelligence, or systems design.

Given the depth, originality, and consistency of my engagement with this unit, I respectfully submit that my portfolio warrants a High Distinction grade.

Reflections

The most important things I learnt:
Throughout SIT772, I gained a comprehensive understanding of core database concepts—from relational modelling to SQL execution and modern data security frameworks. I learnt not just how databases work, but how to design, normalize, and optimize them for real-world applications. The mini projects helped me appreciate the practical aspects of database planning and implementation. The DBaaS assignment especially deepened my knowledge of cloud-based architectures and their security implications, while the 10.1P data breach task brought ethical and compliance issues into focus.

I feel I learnt these topics, concepts, and/or tools well:
I feel highly confident in writing complex SQL queries, using JOINs, subqueries, and DDL/DML commands efficiently. I'm also confident with ER diagrams, database normalization, and evaluating cloud services such as DBaaS. Lucid charts helped me visualize workflows better, and my skills in critical analysis improved, especially while researching and writing the Optus breach essay. I can now independently assess database architectures and their risks.

I found the following topics particularly challenging:
Database normalization was initially difficult to grasp, understanding functional dependencies and breaking large datasets into 3NF took effort. Additionally, transitioning from desktop-based to cloud-based services (DBaaS) involved learning new concepts like provisioning, vendor lock-in, and automated scaling. However, through repeated practice, feedback, and visual tools, I was able to overcome these challenges.

I found the following topics particularly interesting:
Exploring data breaches and regulatory frameworks like GDPR and PCI-DSS was particularly eye-opening. I found the balance between functionality and security in database design fascinating. The concept of automating database provisioning via DBaaS and understanding its benefits for scalability and resilience was intellectually rewarding.

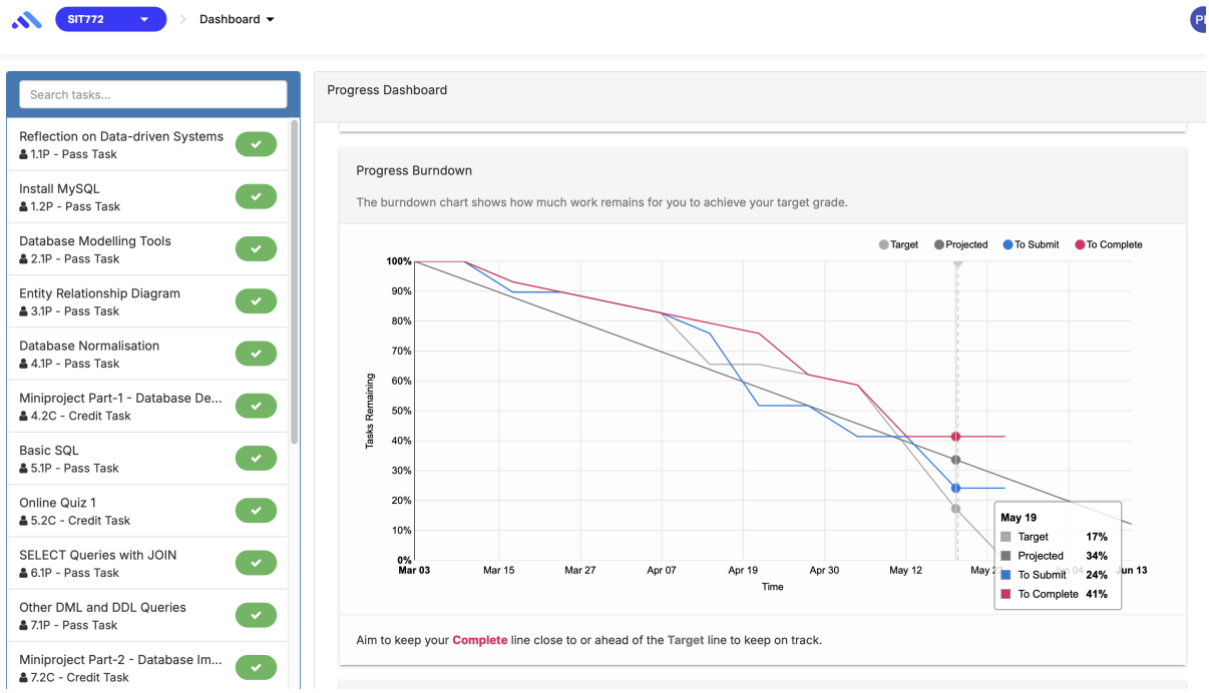
I still need to work on the following areas:
While I've made significant progress, I'd like to continue developing my skills in query optimization and performance tuning, especially for large-scale or real-time systems. I also want to further explore topics like indexing strategies and distributed databases, which will be critical for my future as a data professional.

The things that helped me most were:
The breakdown of tasks in OnTrack was very helpful in pacing my learning. The feedback I received on SQL queries and mini projects allowed me to refine my work incrementally. Visual tools like Lucid charts and the curated datasets in exercises made abstract concepts easier to grasp. Instructor and peer feedback was crucial in improving the quality of my outputs.

My progress in this unit was:

The OnTrack progress dashboard shows that I stayed consistently ahead of the target line. The burndown chart reflects my effort to complete tasks ahead of deadlines, which helped reduce pressure during peak submission weeks. Many of my tasks were marked “Complete,” with some in “Working on It” or “Ready for Feedback”, indicating a strong and steady engagement throughout the trimester.

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



I would start reflective journaling earlier—keeping brief notes during each task would have made writing this reflection easier. I would also explore external datasets or case studies beyond those provided, to apply my learnings more broadly.

Other:

This unit has shaped my mindset around data-driven decision-making and technical accountability. I now view databases not just as storage systems, but as strategic assets that require ethical handling, security planning, and design thinking. These learnings will guide my career in data analytics and system design.