Learning Summary Report

DATABASE, ANALYSIS AND DESIGN / INF10002

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Lecturer: Mr. Pham Thai Ky Trung

Contents

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

	Included
Learning Summary Report	✔
Test 1 and Test 2 are Completed (at least 10/20)	✔
5 Pass tasks are Complete	✔

Minimum Pass Checklist

	Included
5 Credit tasks are Complete	✔

Minimum Credit Checklist (in addition to Pass Checklist)

	Included
Distinction task are Complete	✔
Test 3 is Completed	✔

Minimum Distinction Checklist (in addition to Credit Checklist)

	Included
High Distinction task is completed	✔
Custom project meets HD requirements	✔

Minimum High Distinction Checklist (in addition to Distinction Checklist)

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: **Hai Hoang Le**

Course Overview

In the INF10002 course, we gained knowledge about the fundamental principles of designing and utilizing databases for creating, storing, organizing, and distributing data. We explored the concept of information and were introduced to modern tools and techniques for managing, retrieving, utilizing, and presenting data. Our learning encompassed comprehending knowledge modeling and design methodologies, as well as exploring the emerging possibilities offered by big data, social media, data analytics, and unstructured data. Our focus was on both commercial and open-source management tools.

Major learning Topics

1. Microsoft Access
2. Microsoft Power BI Desktop
3. Structured Query Language (SQL)
4. Entity Relationship Diagrams (ERD)
5. Normalization
6. No SQL database
7. Data warehouse (DW)
8. Transactions

Work Overview

This section of the report provides a comprehensive overview of the INF10002 course, including its key topics and tasks that we had to complete each weekend to achieve different levels of performance - pass, credit, and distinction. It also highlights the various challenges I faced during the course, my expectations, techniques, and methods I used to understand each unit and complete the tasks to the best of my ability, including achieving a high distinction. It is important to acknowledge the invaluable contribution of our lecturer, Mr. Trung, who shared his passion, experience, and knowledge to support us throughout the course. His real-life examples helped us to grasp the workings of an organization's database and provided us with practical learning experiences.

Week 1 - 3: Introduction to Microsoft Access Database

In the first week of the INF10002 course, we received an introduction to database concepts, including the relational model, relational database management system (RDMS), and Microsoft Access. Our lecturer, Mr. Trung, explained the difference between a database and a storage device and demonstrated how data is stored in two-dimensional tables, with each dimension having its own attributes. He also showed us how to create a table in Access, set up names and data, and assign a primary key to each table. In week two, we began practicing with Access and learned about primary and foreign keys, which are essential for table relationships. We were tasked with running queries to test and retrieve data from the tables provided. In week three, we learned how to import and export CSV and TXT files, which will be useful for future work. We also learned about calculation functions like Delete, Update, and SUM queries to count data in tables. Although we gained some knowledge of working with data in Access over the first three weeks, we recognize the need for more practice and exploration to fully grasp the capabilities of Access.

Week 4: Introduction to Microsoft Power Bi

In the fourth week of the INF10002 course, we were introduced to Power Bi, a popular application used in business for creating charts, diagrams, and tables to visualize data in a more engaging way

for analysis and review by data analysts. Initially, we had no prior knowledge of Power Bi, but Mr. Trung provided us with some demonstrations and instructed us to download the application to complete the task. However, we found the application challenging to use and it took us a few days to understand how to create visualizations. Despite its popularity, we expected the application to be more user-friendly. Nonetheless, we recognize the need for more practice to improve our visualization skills.

Week 5 – 9: SQL and ERD

In week five of the INF10002 course, we reached the halfway point and began focusing on the main topics of the course. We learned many new concepts used in business systems, such as the Entity-Relationship Diagram (ERD), attributes, entities, composite attributes, and composite primary keys. Through course videos, we gained confidence in understanding how an ERD of a simple business works and how their database is organized. We learned to create ERDs from a narrative provided in the task. Additionally, we learned about the two relationship types in an ERD - Many-to-Many (M: M) and One-to-Many (1:M). Task 5 required us to draw an ERD for a motorbike maintenance company. Another important topic covered in this week was Structured Query Language (SQL). Swinburne University provided us with access to the iSQL database portal for students to practice and complete the task. Although it was challenging to understand SQL code at first, through reading the provided documents on Canvas and watching the recorded lectures, we eventually understood the steps to create tables, attributes, primary keys, foreign keys between tables, and insert records to test our code. Once we understood the logic behind SQL, it became easier to work with.

Week 10 - 12: Normalization – NoSQL – JSON – WD – Transaction

In week 10 of the INF10002 course, we learned about the concept of Normalization, a database design technique that involves breaking down larger tables into smaller ones connected by relationships. We also learned about NoSQL database servers, their popularity in today's world, and their working mechanism. Additionally, Mr. Trung introduced us to JSON and Data Warehouse (DW). We were also introduced to the topic of transactions in the banking system, which involves multiple SQL statements being updated when depositing, withdrawing, or sending money.

Learning Outcomes

- Using Microsoft Access
- Importing and exporting data between databases
- Identifying and setting up primary keys for new tables
- Using queries and SQL code to search and filter data
- Analyzing data to identify problems and solutions
- Using Power Bi to create visualizations such as tables and charts
- Creating and inserting data using SQL
- Understanding the meaning of Entity-Relationship Diagrams (ERDs) in business
- Drawing ERDs for different types of businesses with 1:M or M:M relationships
- Combining multiple tables using SQL

Reflection

Part 1

The most challenging port of the course now is the Entity Relationships Diagram (ERD) where each type of business I need a different a ERD which is best suit for that business and it also based on the aim from that organization which they want to focus on profit, on customer. In my opinion, the most inspired me is learning about the SQL when it is very practical not only in the course but also for the future when I would become a data analyst and I would appreciate it if I learned the basics that is SQL. The most interesting thing is how the data is related to each other by using the primary key between tables, just using SQL or Query I can look up the information I want immediately.

Part 2

In my desire to get High Distinction grade, I had completed and submitted all 5 pass and 5 credit tasks, 3 test with the score at least 10/20 for the first time. It is suitable for students to take time to understand and finish. Although there are some technical problems in some steps I quickly search for solution and finish the task on time.