COMP9331 – Computer Networks (Mock)
Task 1 – Simple Course Database

Context
You are asked to design and implement a small database to store information about students, courses, and enrolments in a university setting.

Learning goals
- Practice designing a relational schema from a brief description.
- Write basic SQL queries to retrieve and update data.
- Think about indexing and simple performance considerations.

Part A – Schema design (20 marks)
1. Draw a relational schema for a database that stores:
   - students (id, name, program, email),
   - courses (course_code, title, term, convenor),
   - enrolments (student_id, course_code, grade).
2. Identify all primary keys and foreign keys.
3. Briefly explain (2–3 sentences) how your design avoids unnecessary redundancy.

Part B – SQL queries (20 marks)
Assume the schema has been created in a PostgreSQL database.
Write SQL statements for the following tasks:
1. List all students enrolled in COMP9331 in Term 1, ordered by student name.
2. Count how many courses each student is currently enrolled in.
3. Update the grade of a specific student in a specific course.

Part C – Indexing and performance (10 marks)
1. Suggest ONE index that could improve the performance of an important query above.
2. Explain in 2–3 sentences why this index is useful and when it might not help.

Submission
- Submit a single PDF containing: your schema diagram, SQL queries, and short answers.
- The task is individual work; you may discuss ideas but your submission must be your own.