Part 1: Key Identification Exercises
Task 1.1: Superkey and Candidate Key Analysis

1. A **superkey** is any set of attributes that uniquely identifies a tuple in a relation. It's any combination of attributes that contains a candidate key. {EmpID}, {Email}, {EmpID, SSN}, {EmpID, Email}, {EmpID, Phone}, {SSN, Email}
2. A **candidate key** is a minimal superkey; it's a set of attributes that uniquely identifies a tuple, but if you remove any attribute from it, it no longer uniquely identifies the tuple. {EmpID}, {Email}, {SSN}.
3. **EmpID** is an ideal choice because it's an internal, system-generated identifier. It's less likely to change than personal information like an email address or a Social Security Number.
4. Yes, two employees can have the same phone number. A phone number is not a reliable unique identifier. Two family members working for the same company could share a home phone number, or an employee might share a business phone line.

1. The minimum attributes needed are **{StudentID, CourseCode, Semester, Year}**

Task 1.2: Foreign Key Design

Student Table

- AdvisorID in Student is a foreign key referencing ProfID in the Professor table. This links a student to their academic advisor.

Department Table

- ChairID in Department is a foreign key referencing ProfID in the Professor table. This identifies the professor who chairs the department.

Enrollment Table

- StudentID in Enrollment is a foreign key referencing StudentID in the Student table. This links an enrollment record to a specific student.
- CourseID in Enrollment is a foreign key referencing CourseID in the Course table. This links an enrollment record to a specific course.

Course Table

- DepartmentCode in Course is a foreign key referencing DeptCode in the Department table. This links a course to the department that offers it.