

# **Tutorial 1: Entity-Relationship (ER) Model**

**CS3402 Database Systems**

# Question 1

➤ An instructor Peter does not know relational database management systems. He uses an Excel file to store university data. Here are some sample data stored in the Excel file.

- Identify entity, entity set, attribute, relationship, relationship set in this application.
- Is there any integrity constraint in this application? If so, is it easy to make sure the constraint(s) is not violated in Excel?

	A	B	C	D	E
1					
2		Course ID	Course Title	Instructor	
3		CS3402	Database Systems	Dr. Ada	
4		CS2303	Data Structures for Media	Dr. Betty	
5					
6		Student ID	Student Name	Programme	
7		500001	Alan	BSCCM	
8		500002	Bob	BSCCM2	
9		500003	Carson	BSCCM	
10		500004	David	BSC4	
11					
12		Student ID	Course ID	Grade	
13		500001	CS3402	A	
14		500001	CS2303	A	
15		500002	CS3402	B	
16		500003	CS3402	C	
17		500003	CS2303	B+	
18		500004	CS3402	A-	
19					
20					

## Question 2

- Construct an ER diagram for a car insurance company. Identify the key entities, relationships and their attributes in the ER diagram.
  - A customer owns at least one car.
  - A car may be owned by more than one customer.
  - An accident involves at least one car.
  - A car may have a number of recorded accidents associated with it.

# Question 3

- Construct an ER diagram for a hospital. Identify the key entities, relationships and their attributes in the ER diagram.
  - The hospital has a set of patients and a set of medical doctors.
  - A patient may be treated by more than one doctor.
  - A doctor may have a number of patients.
  - A log of the various conducted tests and results is associated with each patient.