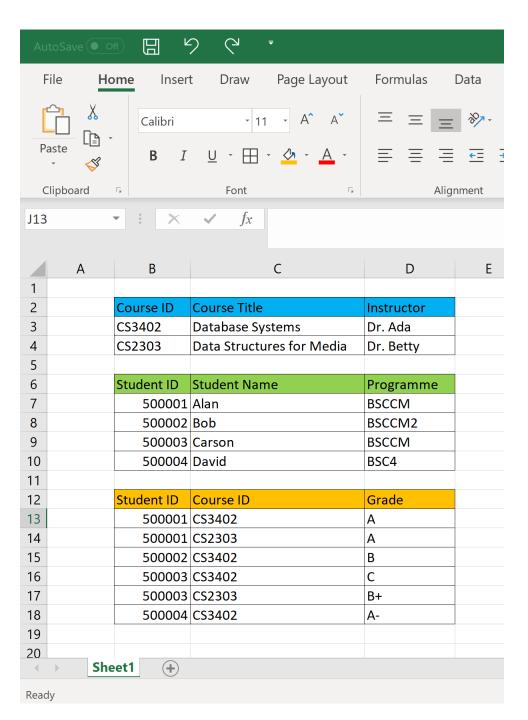# Tutorial 1: Entity-Relationship (ER) Model

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.

    a) Identify entity, entity set, attribute, relationship, relationship set in this application.

    b) Is there any integrity constraint in this application? If so, is it easy to make sure the constraint(s) is not violated in Excel?

Course ID	Course Title	Instructor
CS3402	Database Systems	Dr. Ada
CS2303	Data Structures for Media	Dr. Betty

Student ID	Student Name	Programme
500001	Alan	BSCCM
500002	Bob	BSCCM2
500003	Carson	BSCCM
500004	David	BSC4

Student ID	Course ID	Grade
500001	CS3402	A
500001	CS2303	A
500002	CS3402	B
500003	CS3402	C
500003	CS2303	B+
500004	CS3402	A-

Question 2

- Construct an ER diagram for a car insurance company. Identify the key entities, relationships and their attributes in the ER diagram.
    a) A customer owns at least one car.
    b) A car may be owned by more than one customer.
    c) An accident involves at least one car.
    d) 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.

  a) The hospital has a set of patients and a set of medical doctors.

  b) A patient may be treated by more than one doctor.

  c) A doctor may have a number of patients.

  d) Various conducted tests and results are associated with their corresponding patients.