Entities and relationships

- **entity** is a record in a table in the database
- **relationship** is a connection between two or more entities
- Database designers often draw **ER diagrams** like the above to represent the entities and relationships in their databases
The SQL **INSERT** statement

```sql
INSERT INTO table VALUES (value, value, ..., value);
```

**SQL**

```
INSERT INTO Student VALUES (789, "Nelson", "muntz@fox.com");
```

- adds a new row to the given table
- How would we record that Nelson took CSE 190M and got a D+ in it?

The SQL **UPDATE** statement

```sql
UPDATE table
SET column = value,
    ...
WHERE column = value;
```

**SQL**

```
UPDATE Student
SET email = "lisasimpson@gmail.com"
WHERE SID = 888;
```

- modifies an existing row(s) in a table

The SQL **CREATE TABLE** statement

```sql
CREATE TABLE name (  
    columnName type constraints,  
    ...  
    columnName type constraints
);
```

**SQL**

```
CREATE TABLE Student (  
    SID INTEGER UNSIGNED NOT NULL PRIMARY KEY,  
    name VARCHAR(20),  
    email VARCHAR(32)
);
```

- adds/deletes an entire new table from this database
- you can add constraints such as **NOT NULL** for a field that cannot be blank or **PRIMARY KEY** for a column that must be unique for every row
- related commands: **CREATE DATABASE**, **DROP TABLE**
SQL data types

- BOOLEAN
- INTEGER
- DOUBLE
- VARCHAR: a string
- DATE, TIME, DATETIME
- BLOB: binary data
- quick reference