Simple SELECT Queries

Today we will work on the database about a university. All this work should be done in the MySQL database management system. Download the file `university.sql`, which contains the data definition SQL code and the SQL code that populates the tables, from KEATS and save it into the `db` directory you created last week.

1. Restore the contents of the university database using the file you have just downloaded:

```
mysql -u yourUserName -p -h nmsdvm999956.nms.kcl.ac.uk yourDatabaseName < ./db/
    university.sql
```

2. Connect to your database:

```
mysql -u yourUserName -p -h nmsdvm999956.nms.kcl.ac.uk yourDatabaseName
```

3. Select the contents on the table module to check that the data has been restored properly (there are 1749 rows in that table):

```
SELECT * FROM Module;
```

   Note that all SQL statements must be first on line and end with a semicolon ';'. An SQL statement may be entered over more than one line, and it's not until the semicolon is entered that the client sends the statement to the server to read and process it. To cancel an SQL statement once it's started, enter '\c' instead of a semicolon.

1 Database Schema

The entity-relational model for the university database is depicted in Figure 1. The structure of the University is as follows:

assessment (assessmentID, moduleID, weight, typeID, name, description)
assessmentType (typeID, name)
Course (courseID, name, departmentID, years, credits)
department (departmentID, name, numCourses, city, address, postalCode)
mark (assessmentID, studentID, score, timestamp)
module (moduleID, name, course_id, credits, year)
student(studentID, fname, lname, dateOfBirth, phoneNo, address, city, postCode)
takesCourse(studentID, courseID)

2 Activities

2.1 Simple Queries

1. List full details of all students.
2. List all the assessment types.
3. List department names (remove duplicates).
4. List the course_id and name of all modules
5. Produce a list of all marks showing their score (you should name this column as mark), day (you should name this column as Day) and month (you should name this column as Month) in which they have been introduced. (Clue the functions DAY and MONTH return the day and month from the date passed as parameter)

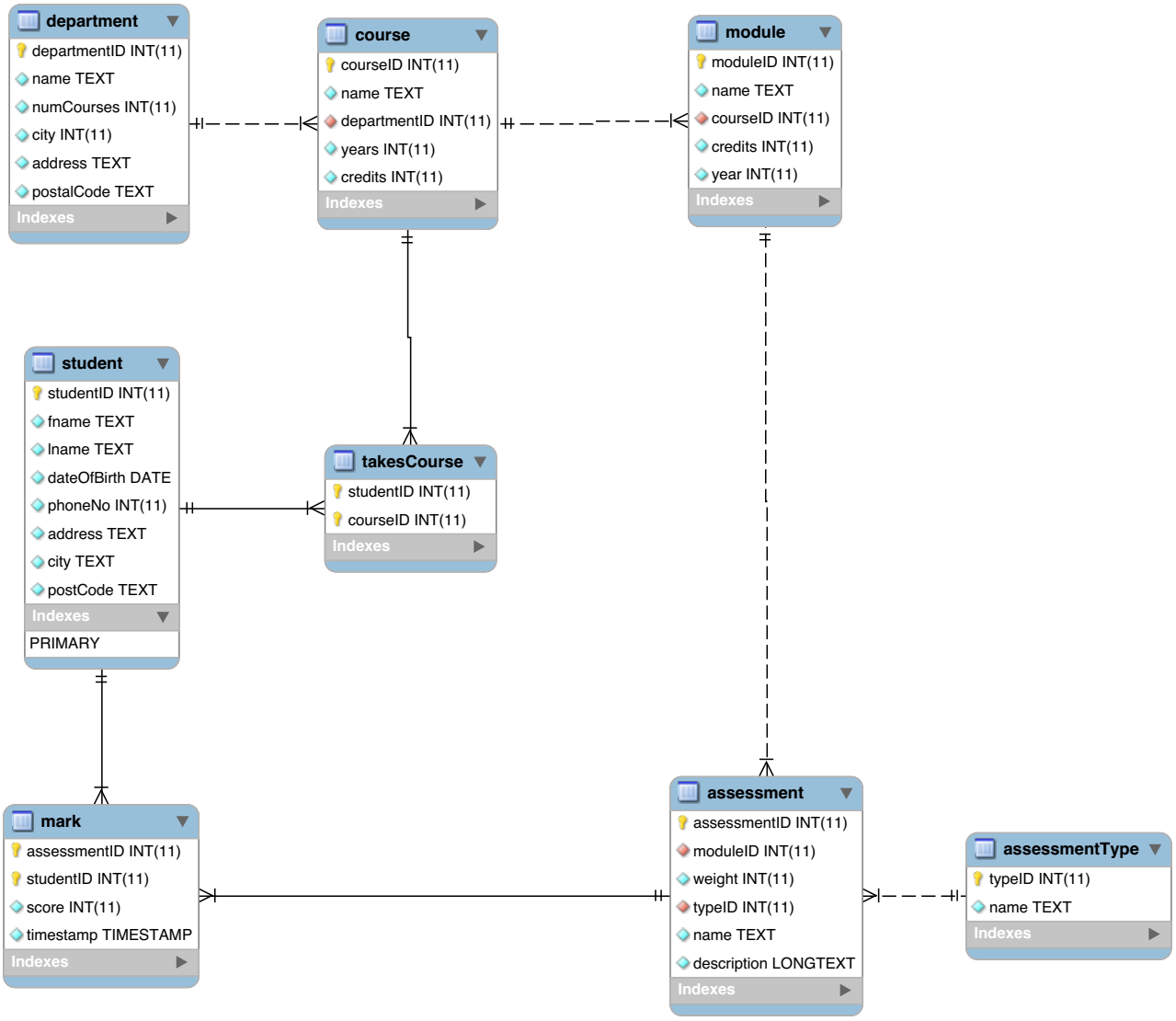

Figure 1: Entity-Relationship Model for the University Database

2.2 WHERE Clause

1. List full details of all students living in London.
2. List all students in alphabetical order of surname, and then name.
3. List all department whose name contains the word 'Science' or 'science' in alphabetical order of address.
4. List the names and date of birth of all students living in London, alphabetically in an ascending order of address.

5. List full details of all B marks; i.e., marks where the score is greater or equal 60 and lower or equal 69. (Note there are 705 marks that meet these criteria).
6. List full details of assessments which weight is lower than 30 and their type is not 1. (Note there are 2605 assessments that meet these criteria).
7. List the name, and city of all students that live in a city that starts with an 'A'. (Note there are 15 students that meet these criteria).
8. List the name, and city of all students living in London, Bolton or Cambridge.

2.3 Aggregate Functions

1. How many students are there?
2. What is the total number of students taking course 203?
3. How many different assessments have been marked?
4. Which is the average score for all the assessments?
5. Which is the maximum mark obtained by a student?
6. Which is the lowest mark obtained by a student?

2.4 Grouping and Having

1. How many modules has each course
2. How many students come from each city?
3. How many different PhD courses are given in each department?
4. Which is the average score for each assessment?
5. List the ids of modules that have more than three assessments. (Note there are 643 modules that meet these criteria)
6. How many students have been born in each year. (Clue the function YEAR returns the year from the date passed as parameter)
7. Which is the number of courses taken by each student?

3 Personal Study

Personal Study If you finish these activities early then you can start this personal study in the lab, otherwise you should be working on these tasks in your own time.

1. There are many other functions that can be used in queries. Please read the information about the most important MySQL functions:
   `http://www.tutorialspoint.com/mysql/mysql-useful-functions.htm`