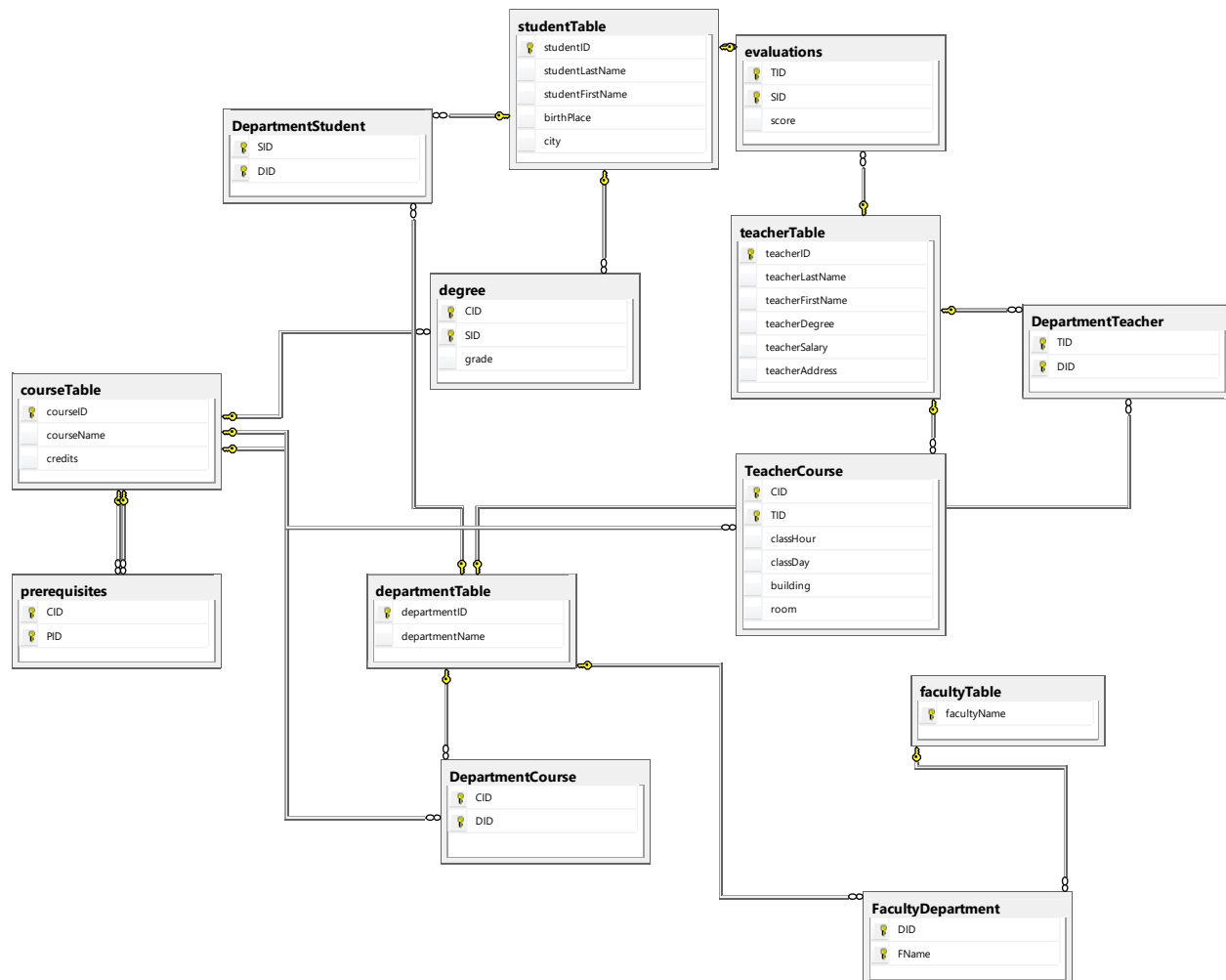


Database Systems 10127

Lab 8

Creating Databases

Below is a schema for a college database



1. Creating the database:
 - a. Open MySQL
 - b. Open a new query
 - c. Write "CREATE SCHEMA College" and run the query. A new database will be created.
 - d. Open a new query
 - e. Copy into it the contents of the file "College Lab partial keys.docx"
 - f. Run the query

2. Modifying the database

- Look in the navigation bar on the left and expand studentTable. Expand INDEXES and see the primary index. Click on it and see the information about it below.
- Now do the same with teacherTable. There is nothing in INDEXES. The table teacherTable does not have a primary key defined.
- Write a query that will add a primary key to teacherTable.
- The tables DepartmentTeacher, TeacherCourse, degree, evaluations and prerequisites do not have any keys defined.
- Based on the diagram of the schema, write SQL statements to add the missing keys to the database

Important Note:

Foreign keys only work in MySQL if you use the InnoDB engine.

In MySQL 8, InnoDB is the default engine.

If you use an earlier version, you need to state explicitly that you want to use InnoDB.

This is done by adding ENGINE = InnoDB after each CREATE TABLE command. See this example from the MySQL developer documentation in

<https://dev.mysql.com/doc/refman/8.0/en/create-table-foreign-keys.html>

```
CREATE TABLE parent (  
  id INT NOT NULL,  
  PRIMARY KEY (id)  
) ENGINE=INNODB;  
  
CREATE TABLE child (  
  id INT,  
  parent_id INT,  
  INDEX par_ind (parent_id),  
  FOREIGN KEY (parent_id)  
    REFERENCES parent(id)  
    ON DELETE CASCADE  
) ENGINE=INNODB;
```

3. Querying the database

- a. Open a new query. Copy into it the contents of the file "College Lab data.docx"
- b. Run the query. There should now be data in the database.
- c. Check that the data is inserted by printing out the contents of some tables.
- d. Write queries to answer the following questions:
 1. List details of all the departments included in the faculty of Natural Science
 2. List the hour, the day and the course names taught by the teacher Yona Haber
 3. Retrieve the names and the cities of the students in the Mathematics department
 4. List the department codes, the teacher names and the full address of teachers living in Tel-Aviv or in Jerusalem
 5. Same as the previous query but order the output list by department name and address
 6. List the names of the students taught by Moshe Levy (Moshe Levy is their teacher)
 7. List the names of the departments and the number of teachers in each department
 8. List the names and the salary of the teachers with a Dr. degree and their salary is greater than the salary of one Professor at least order by descending values of salaries
 9. List the courses names with their prerequisite courses (names), order by course name and prerequisite course name with adequate titles