

DATABASE - ASSIGNMENT 1

1. Exercise 1

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.
- i.
- j.

2. Exercise 2

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.

1. Exercise 1

a.

```
CREATE TABLE LECTURER (  
  StaffNO CHAR(8) UNIQUE NOT NULL PRIMARY KEY,  
  Title VARCHAR(50) NOT NULL,  
  FName VARCHAR(50) NOT NULL,  
  LName VARCHAR(50) NOT NULL,  
  Address TEXT,  
  Salary INTEGER NOT NULL,  
  ResearchArea TEXT  
);  
  
CREATE TABLE SUBJECT (  
  SubjectCode CHAR(8) NOT NULL PRIMARY KEY,  
  Name TEXT NOT NULL,
```

```

    Prerequisite TEXT,
    Credit INTEGER NOT NULL
);

CREATE TABLE LECTURE (
    LectureCode VARCHAR(8) UNIQUE NOT NULL PRIMARY KEY,
    SubjectCode CHAR(8) UNIQUE NOT NULL REFERENCES SUBJECT(SubjectCode),
    StaffNO CHAR(8) UNIQUE NOT NULL REFERENCES LECTURER(StaffNo),
    Semester CHAR(8) NOT NULL,
    LectDay DATE NOT NULL,
    LectTime DATETIME NOT NULL,
    Venue TEXT NOT NULL
);

```

b.

```

SELECT * FROM STUDENT
WHERE StudentStatus = 'C';

```

c.

```

SELECT * FROM LECTURE
WHERE LectDay ILIKE '%monday%';

```

d.

```

SELECT * FROM STUDENT, SUBJECT, STUDENT_ENROLMENT, LECTURE
WHERE STUDENT.StudentNO = STUDENT_ENROLMENT.StudentNO
AND STUDENT_ENROLMENT.LectureCode = LECTURE.LectureCode
AND LECTURE.SubjectCode = SUBJECT.SubjectCode
AND SUBJECT.Name = 'Database';

```

e.

```

SELECT * FROM LECTURER
WHERE ResearchArea LIKE '%Network Management%';

```

f.

```
SELECT StudentNo, LName, FName, DOB, StudentStatus
FROM STUDENT, SUBJECT, STUDENT_ENROLMENT, LECTURE
WHERE STUDENT.StudentNO = STUDENT_ENROLMENT.StudentNO
AND STUDENT_ENROLMENT.LectureCode = LECTURE.LectureCode
AND LECTURE.SubjectCode = SUBJECT.SubjectCode
AND SUBJECT.Name = 'Database'
ORDER BY LName ASC;
```

g.

```
SELECT * FROM LECTURER
WHERE StaffNO NOT IN
(SELECT LECTURE.StaffNO
FROM LECTURE JOIN SUBJECT ON LECTURE.SubjectCode = SUBJECT.SubjectCode);
```

h.

```
SELECT AVG(Salary) FROM LECTURER;
```

i.

```
SELECT StaffNO, FName, LName FROM LECTURER
JOIN LECTURE ON LECTURER.StaffNO = LECTURE.StaffNO
JOIN SUBJECT ON SUBJECT.Subjectcode = LECTURE.SubjectCode
HAVING COUNT(DISTINCT LECTURE.SubjectCode) >= 3;
```

j.

```
SELECT SUBJECT.SubjectCode, LECTURE.StaffNO, COUNT(DISTINCT STUDENT_ENROLMENT.StudentNO)
FROM LECTURER
JOIN LECTURE
ON LECTURER.StaffNO = LECTURE.StaffNO
JOIN STUDENT_ENROLMENT
ON LECTURE.LectureCode = STUDENT_ENROLMENT.LectureCode
GROUP BY LECTURE.StaffNO;
```

2. Exercise 2

a.

```
CREATE TABLE Hotel (  
    Hotel_No CHAR(5) UNIQUE NOT NULL PRIMARY KEY,  
    Name TEXT NOT NULL,  
    Address TEXT NOT NULL  
);  
  
CREATE TABLE Room (  
    Room_No CHAR(3) UNIQUE NOT NULL,  
    Hotel_No CHAR(5) NOT NULL REFERENCES Hotel(Hotel_No),  
    Type VARCHAR(10) NOT NULL,  
    Price FLOAT(2) NOT NULL,  
    CONSTRAINT room_pk PRIMARY KEY(Room_No, Hotel_No)  
);  
  
CREATE TABLE Guest (  
    Guest_No CHAR(5) UNIQUE NOT NULL PRIMARY KEY,  
    Name TEXT NOT NULL,  
    Address TEXT NOT NULL  
);  
  
CREATE TABLE Booking (  
    Hotel_No CHAR(5) NOT NULL REFERENCES Hotel(Hotel_No),  
    Guest_No CHAR(5) NOT NULL REFERENCES Guest(Guest_No),  
    Date_From DATE NOT NULL,  
    Date_To DATE NOT NULL CHECK (Date_From < Date_To),  
    Room_No CHAR(3) NOT NULL REFERENCES Room(Room_No),  
    CONSTRAINT booking_pk PRIMARY KEY(Hotel_No, Guest_No, Date_From)  
);
```

b.

```
SELECT * FROM Hotel,  
WHERE Address ILIKE '%london%';
```

c.

```
SELECT * FROM Room  
WHERE (TYPE = 'Double' or TYPE = 'Family') AND (Price < 40.00)  
ORDER BY Price;
```

d.

```
SELECT * FROM Room
JOIN Booking
ON Booking.Room_No = Room.Room_No
WHERE (Date_From NOT BETWEEN '2016-06-01' AND '2016-06-30')
AND (Date_To NOT BETWEEN '2016-06-01' AND '2016-06-30');
```

e.

```
SELECT AVG(Price) FROM Room;
```

f.

```
SELECT COUNT(DISTINCT Guest_No) FROM Booking
WHERE (Date_From BETWEEN '2016-08-01' AND '2016-08-30')
AND (Date_To BETWEEN '2016-08-01' AND '2016-08-30'));
```

g.

```
SELECT * FROM Booking
JOIN Hotel
ON Booking.Hotel_No = Hotel.Hotel_No
WHERE (SELECT NOW() BETWEEN Date_From AND Date_To)
AND Hotel.Name = 'GrosvenorHotel';
```

h.

```
SELECT COUNT(Hotel_No) / COUNT(DISTINCT Hotel_No)
FROM Booking
WHERE (Date_From BETWEEN '2016-08-01' AND '2016-08-30')
AND (Date_To BETWEEN '2016-08-01' AND '2016-08-30'));
```