In today's tutorial (8th November) and in the last few classes, the running example to illustrate SQL queries has been the EMPLOYEE database taken from Elmasri (Fundamentals of Database Systems Seventh Edition), the reference textbook for the course.

You can access the database yourself from the following link:
https://github.com/tolgahanakgun/Elmasri-Database/blob/master/Employee_Database_Script.sql

1. Make sure to first create a new database. You can call it `employee_db`.
2. Download the SQL file from the link above and make sure you are in the directory where you saved it.
3. Run the terminal command:
   ` sudo mysql employee_db < Employee_Database_Script.sql`
   to initialize your database with the SQL file. Note that the exact command will depend on how exactly you start up mysql on your system, `employee_db` should be replaced with the name of your newly created (empty) database and `Employee_Database_Script.sql` should be replaced with the sql file name (if changed).

We have provided a list of queries that you can run on the above database. We highly recommend checking (at least some of) them out to gain a better understanding of SQL queries. As mentioned in the tutorial, it's most beneficial to deconstruct these queries, and add conditions one by one to really appreciate how SQL works.

```
SELECT Fname, Lname, Address
FROM EMPLOYEE, DEPARTMENT
WHERE Dname='Research' AND Dnumber=Dno;

SELECT Pnumber, Dnum, Lname, Address, Bdate
FROM PROJECT, DEPARTMENT, EMPLOYEE
WHERE DNUM=DNUMBER AND Mgr_ssn=Ssn AND
Plocation = 'Stafford';

Select Ssn
FROM EMPLOYEE;

SELECT SSN, DNAME
FROM EMPLOYEE, DEPARTMENT;

SELECT *
FROM EMPLOYEE
WHERE Dno = 5;

SELECT *
FROM EMPLOYEE, DEPARTMENT
WHERE Dname='Research' AND Dno=Dnumber;

SELECT *
FROM EMPLOYEE, DEPARTMENT;
```

```sql
SELECT ALL Salary
FROM EMPLOYEE;

SELECT DISTINCT Salary
FROM EMPLOYEE;

(SELECT DISTINCT Pnumber
FROM PROJECT, DEPARTMENT, EMPLOYEE
WHERE Dnum=Dnumber AND Mgr_ssn=Ssn
        AND Lname='Smith')
UNION
(SELECT DISTINCT Pnumber
FROM PROJECT, WORKS_ON, EMPLOYEE
WHERE Pnumber=Pno AND Essn=Ssn
        AND Lname='Smith');

Select fname, lname from EMPLOYEE where super_ssn IS null;

Select fname, lname from EMPLOYEE where super_ssn IS NOT null;

Select distinct pNumber from PROJECT where pnumber IN (select pnumber from PROJECT,
DEPARTMENT, EMPLOYEE where dnum = dnumber and mgr_ssn = ssn and lname = 'smith');

SELECT  DISTINCT        Pnumber
FROM    PROJECT
WHERE   Pnumber IN
                (SELECT         Pnumber
                FROM    PROJECT, DEPARTMENT, EMPLOYEE
                WHERE   Dnum = Dnumber AND
                Mgr_ssn = Ssn and Lname = 'Smith')
                OR
                Pnumber IN
                (SELECT         Pno
                FROM    WORKS_ON, EMPLOYEE
                WHERE   Essn = Ssn AND Lname = 'Smith');

SELECT  DISTINCT        Pnumber  FROM  PROJECT WHERE  Pnumber IN            (SELECT         Pnumber
                FROM    PROJECT, DEPARTMENT, EMPLOYEE            WHERE   Dnum = Dnumber AND
        Mgr_ssn = Ssn and Lname = 'Smith')           OR           Pnumber IN            (SELECT
        Pno     FROM    WORKS_ON, EMPLOYEE            WHERE   Essn = Ssn AND Lname = 'Smith');

Select distinct essn
From WORKS_ON
Where (pno, hours) IN (Select pno, hours from WORKS_ON where essn = '123456789');

Select essn
From WORKS_ON
Where (pno, hours) IN (Select pno, hours from WORKS_ON where essn = '123456789');

Select lname, fname, salary from EMPLOYEE where salary > all (select salary from EMPLOYEE
where dno = 5);
```

```sql
Select lname, fname, salary from EMPLOYEE where salary > any (select salary from EMPLOYEE
where dno = 5);

Select lname, fname, salary from EMPLOYEE where salary >= some (select salary from EMPLOYEE
where dno = 5);

Select lname, fname, salary from EMPLOYEE where salary >= any (select salary from EMPLOYEE
where dno = 5);

Select lname, fname, salary from EMPLOYEE where salary > some (select salary from EMPLOYEE
where dno = 5);

Select e.fname, e.lname from EMPLOYEE as e where e.ssn in (select essn from DEPENDENT as d
where e.fname=d.DEPENDENT_name and e.sex=d.sex);

SELECT E.Fname, E.Lname FROM EMPLOYEE AS E, DEPENDENT AS D WHERE E.Ssn=D.Essn AND E.Sex=D.Sex
AND E.Fname=D.Dependent_name;

SELECT Fname, Lname FROM EMPLOYEE WHERE EXISTS (SELECT *
FROM DEPENDENT WHERE Ssn= Essn) AND EXISTS (SELECT    *
FROM DEPARTMENT WHERE Ssn= Mgr_Ssn);

SELECT Fname, Lname FROM EMPLOYEE WHERE EXISTS (SELECT *
FROM DEPENDENT WHERE EMPLOYEE.Ssn= DEPENDENT.Essn);

SELECT Fname, Lname FROM EMPLOYEE WHERE NOT EXISTS ( (SELECT  Pnumber FROM PROJECT WHERE
Dno=5) EXCEPT (SELECT   Pno  FROM WORKS_ON WHERE Ssn= ESsn));

SELECT Fname, Lname FROM EMPLOYEE WHERE NOT EXISTS (SELECT  Pnumber FROM PROJECT WHERE
Dnum=5);

SELECT DISTINCT Essn FROM WORKS_ON WHERE    Pno IN (1, 2, 3);

Select e.lname as EMPLOYEE_name, s.lname as supervisor_name from EMPLOYEE as e, EMPLOYEE as s
where e.super_ssn = s.ssn;

Select fname, lname, address from (EMPLOYEE join DEPARTMENT on dno=dnumber) where
dname='research';


select E.Lname AS EMPLOYEE_Name, S.Lname as Supervisor_Name from EMPLOYEE as E left outer join
EMPLOYEE as S on E.Super_ssn=S.Ssn;

SELECT SUM(Salary), MAX(Salary), MIN(Salary), AVG(Salary) FROM EMPLOYEE;

SELECT SUM(Salary) AS Total_Sal, MAX(Salary) AS                Highest_Sal, MIN(Salary) AS
Lowest_Sal, AVG(Salary) AS Average_Sal FROM EMPLOYEE;
SELECT SUM(Salary), MAX(Salary), MIN(Salary), AVG(Salary) FROM (EMPLOYEE join DEPARTMENT on
dno=dnumber) where dname='research';

Select count(*) from EMPLOYEE;

Select count(*) from EMPLOYEE, DEPARTMENT where dno=dnumber and dname='research';
```

```sql
SELECT Dno, COUNT(*), AVG(Salary) FROM EMPLOYEE GROUP BY Dno;

SELECT Pnumber, Pname, COUNT(*) FROM PROJECT, WORKS_ON WHERE Pnumber=Pno GROUP BY Pnumber, Pname;

SELECT Pnumber, Pname, COUNT(*) FROM PROJECT, WORKS_ON WHERE Pnumber=Pno GROUP BY Pname;

SELECT Pnumber, Pname, COUNT(*) FROM PROJECT, WORKS_ON WHERE Pnumber=Pno GROUP BY Pnumber HAVING COUNT(*) > 2;

Create view WORKS_ON1 as select fname, lname, hours from EMPLOYEE, PROJECT, WORKS_ON where ssn=essn and pno=pnumber;

Create view dept_info(dept_name, no_of_emps, total_sal) as select dname, count(*), sum(salary) from DEPARTMENT, EMPLOYEE where dnumber=dno group by dname;


SELECT  E.Fname, E.Lname, 1.1 * E.Salary AS Increased_sal
FROM  EMPLOYEE AS E, WORKS_ON AS W, PROJECT AS P
WHERE  E.Ssn=W.Essn AND W.Pno=P.Pnumber AND P.Pname='ProductX';
```