ANSI «
Sequel / eS Queue eL

Oracle → Oracle

Microsoft → MS Access, MS SQL Server

NCR → Teradata

IBM → DB2

Sun Microsystems → Sun Solaris, OpenOffice, Java, MySQL → MariaDB, Percona

MySQL Workbench

Apache, MySQL, PHP

AMP Stack

Linux	L
Windows	W
Mac	M

XAMP

SQL

- DDL
- DML
- DCL

DDL → Data Definition language
plays with the structure of Data
- → Create
- → Use
- → Drop
- → Alter

DML → Data Manuplation Language
plays with data in the database

DCL → Data Control Language
plays with the database management
- → Backup & Recovery
- → Transactions
- → Checkpoints
- → Access Control
- → User Mgmt

Datatypes in SQL

- Numeric
  - Integer
    - TINYINT → 0 - 127
    - SMALLINT → ± 32767
    - INT → 4 byte ± 4 Billion
    - LONG → 8 byte ± 2^{64}
  - Decimal
    - FLOAT
    - DOUBLE

TINYINT(1)

INT(5)

Double(5,3)

- Text/String
  - Fixed → CHAR(5)
  - Variable Length → VARCHAR(20)

- Bool

- Date/Time/DateTime

- Binary → BLOB
  - TINYBLOB → 256 Bytes
  - SMALLBLOB → 65 KB
  - BLOB → 4MB
  - LARGEBLOB → 2 GB
  - HUGEBLOB → ~ TB

```
-- which databases are available
show databases;

-- create a new database
create database dbd11;

-- how to delete a database
drop database dbd11;

-- all future commands hsould be executed against dbd11
use dbd11;

-- whcih tabels are available
show tables;
SHOW DATABaSeS;            -- sql is not case sensitive

-- add a new table in the db
Create table Student
(
        sid INT(5),
    sName VARCHAR(20),
    gpa FLOAT(3,2),
    sex CHAR(1)
 );

-- whats is the structure of table
describe Student;

-- discard the table and the data in the table
DROP table Student;
CREATE Table Student
(
        sid INT(5) NOT NULL UNIQUE,
    fName varchar(10),
    lName varchar(10),
    dob DATE,
    phone CHAR(11),
    gpa float(3,2) NOT NULL,
    Sex CHAR(1) DEFAULT 'M',
    PRIMARY KEY(SID)
);
```

```
-- Adding Data in the Table
Insert into Student VALUES(1, 'Ali', 'Ahmad', NULL, '12345678901',
3.33, NULL);

-- Show the data in the table
Select * from Student;


-- Add data in Sepcific Columns and different ordser
Insert Into Student (SID, lName, fName, Phone, GPA, DOB) VALUES
                (2, 'Saleem', 'Farooq', '98765432101', 3.67, '2000-07-18');

-- Adding multiple data
Insert Into Student (SID, lName, fName, Phone, GPA, DOB, Sex) VALUES
                (3, 'Ali', 'Fatima', '98765432101', 3.67, '2000-07-18', 'F'),
        (4, 'Hakeem', 'Abdul', '96385274109', 3.0, '2001-01-18', 'M'),
        (5, 'Shakir', 'Parveen', '96385274109', 3.0, '2001-01-18', 'F');
```

7th Edition

Structure → pg 164
Data → pg 162
Help → pg 181

} Assign 1 part 1 Submission Wednesday 26th Apr 10:00 AM

```
select * from student where sex = 'F' AND sid < 4;
```

```
SELECT * FROM Customers;

SELECT * FROM Customers where COUNTRY = 'Germany';

SELECT * FROM Customers where COUNTRY = 'Germany' OR Country = 'France';

SELECT * FROM Products where Price = 20;

SELECT * FROM Orders where OrderDate = '1996-07-08';

SELECT * FROM Products where Price <= 18;

SELECT * FROM Products where Price >= 18 and Price <= 22;

SELECT * FROM Customers where Country = 'France' AND City = 'Paris';

SELECT * FROM Customers where Country != 'France';

SELECT * FROM Customers where Country <> 'Germany';

select * from Products where (price > 15 and price < 22)
                or (supplierid <= 10 and supplierid > 5)


select CustomerID, CustomerName, City, Country from Customers;


select CustomerID, CustomerName, City, Country from Customers where Country = 'Germany


select  Country, CustomerID, CustomerName from Customers where
                Country = 'France' and City = 'Paris';

select  City , Country from Customers;

select  distinct City , Country from Customers;


select  CustomerID, ContactName as President, City, Country from Customers

Select * from Customers where Country > 'Sweden'

Select * from Customers where Country = 'France'
                OR Country = 'Germany' OR country = 'Sweden';

Select * from Customers where Country IN ('France','Germany', 'Sweden');
```

Select * from Products where price >= 10 AND price <= 15

Select * from Products where price BETWEEN 10 AND 15;

Select * from Products where price < 10 OR price > 15;

Select * from Products where price NOT BETWEEN 10 AND 15;

Wildcards
% any 0 or more length string
_ exactly 1 character

Show customers whose name start with L
Select * from Customers where ContactName LIKE 'L%';

Show customers whose 2nd name start with L
Select * from Customers where ContactName LIKE '% L%';

Name end with n
Select * from Customers where ContactName LIKE '%n';

2nd laster letter is o
Select * from Customers where ContactName LIKE '%o_';

name contains 2 n
Select * from Customers where ContactName LIKE '%n%n%';

Select * from Customers where ContactName NOT LIKE '%n%n%';

Select * from Customers where Country IS NULL

Select * from Customers where Country IS NOT NULL

Find the ids of the Employees whose name start with 'J'

Select ssn from Employee where Fname LIKE 'J%';

```
    SSN
-----------
123456789
987654321
453453453
888665555
```

Find the ids of the Employees who have a male Dependent

Select ESSN from Dependent where Sex = 'M';

```
    ESSN
-----------
333445555
987654321
123456789
```

Find the Ids of the Employees whose name start with J
or thay have a male dependent

Select ssn from Employee where Fname LIKE 'J%'

UNION

Select ESSN from Dependent where Sex = 'M';

```
    SSN
-----------
123456789
987654321
453453453
888665555
333445555
```

Union Compatibility

1. No of Columns/Attributes in the sets should be same
2. Corrosponding pairs of colums/attributes should have same datatype / domain

Find the Ids of the Employees whose name start with J
and thay also have a male dependent

```
Select ssn from Employee where Fname LIKE 'J%'
INTERSECT
Select ESSN from Dependent where Sex = 'M';
```

MY SQL

```
Select ssn from Employee where Fname LIKE 'J%'
    AND SSN IN (Select ESSN from Dependent where Sex = 'M');
```

Find the Ids of the Employees whose name start with J
but thay do not have a male dependent

```
Select ssn from Employee where Fname LIKE 'J%'
EXCEPT
Select ESSN from Dependent where Sex = 'M';
```

MY SQL

```
Select ssn from Employee where Fname LIKE 'J%'
    AND SSN NOT IN (Select ESSN from Dependent where Sex = 'M');
```

(x, z)

A : {a, b, c} B = {1, 2, 3}

Cross Product

a z '

A x B = { (a,1), (a,2), (a,3)
(b,1), (b,2), (b,3)
(c,1), (c,2), (c,3) }

Find the names of female employees and details of their dependents

Select fname, lname, ssn from Employees where sex = 'F';

FEMALE_EMPS

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
Alicia	J	Zelaya	999887777	1968-07-19	3321Castle, Spring, TX	F	25000	987654321	4
Jennifer	S	Wallace	987654321	1941-06-20	291Berry, Bellaire, TX	F	43000	888665555	4
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5

EMPNAMES

Fname	Lname	Ssn
Alicia	Zelaya	999887777
Jennifer	Wallace	987654321
Joyce	English	453453453

DEPENDENT

Essn	Dependent_name	Sex	Bdate	Relationship
333445555	Alice	F	1986-04-05	Daughter
333445555	Theodore	M	1983-10-25	Son
333445555	Joy	F	1958-05-03	Spouse
987654321	Abner	M	1942-02-28	Spouse
123456789	Michael	M	1988-01-04	Son
123456789	Alice	F	1988-12-30	Daughter
123456789	Elizabeth	F	1967-05-05	Spouse

EMP_DEPENDENTS

Fname	Lname	Ssn	Essn	Dependent_name	Sex	Bdate	...
Alicia	Zelaya	999887777	333445555	Alice	F	1986-04-05	...
Alicia	Zelaya	999887777	333445555	Theodore	M	1983-10-25	...
Alicia	Zelaya	999887777	333445555	Joy	F	1958-05-03	...
Alicia	Zelaya	999887777	987654321	Abner	M	1942-02-28	...
Alicia	Zelaya	999887777	123456789	Michael	M	1988-01-04	...
Alicia	Zelaya	999887777	123456789	Alice	F	1988-12-30	...
Alicia	Zelaya	999887777	123456789	Elizabeth	F	1967-05-05	...
Jennifer	Wallace	987654321	333445555	Alice	F	1986-04-05	...
Jennifer	Wallace	987654321	333445555	Theodore	M	1983-10-25	...
Jennifer	Wallace	987654321	333445555	Joy	F	1958-05-03	...
Jennifer	Wallace	987654321	987654321	Abner	M	1942-02-28	...
Jennifer	Wallace	987654321	123456789	Michael	M	1988-01-04	...
Jennifer	Wallace	987654321	123456789	Alice	F	1988-12-30	...
Jennifer	Wallace	987654321	123456789	Elizabeth	F	1967-05-05	...
Joyce	English	453453453	333445555	Alice	F	1986-04-05	...
Joyce	English	453453453	333445555	Theodore	M	1983-10-25	...
Joyce	English	453453453	333445555	Joy	F	1958-05-03	...
Joyce	English	453453453	987654321	Abner	M	1942-02-28	...
Joyce	English	453453453	123456789	Michael	M	1988-01-04	...
Joyce	English	453453453	123456789	Alice	F	1988-12-30	...
Joyce	English	453453453	123456789	Elizabeth	F	1967-05-05	...

Multi Table Select

columns

Select E.fname, E.lname, E.ssn, D.* from

tables

Employee E, Dependent D where

E.sex = F and E.ssn = D.ESSN;

Condition on data — condition for connection

Join

Select E.fname, E.lname, E.ssn, D.* from

Employee E JOIN Dependent D

on E.ssn = D.ESSN

where

E.Sex = 'F';

25/5/2023

If you use multitable select in SQL in any Assignment, Quiz, Final, or lab after the above mentioned date you will be awarded 0 (zero) marks

1. Show the names of the managers and the names of their departments

Select D.dname, E.fname, E.lname
from
Department D JOIN Employee E
on D.mgr_ssn = E.SSn

2. Show details of departments located in Houston.

Dept JOIN DeptLocations D.DNumber = DL.DNumber DL.DLoc = Houston

3. Show names of dept's and name & salaries of male employees working in these depts.

D.DName, E.fname, E.lname, E.salary Department D JOIN Emp E D.Dnumber = E.DNo

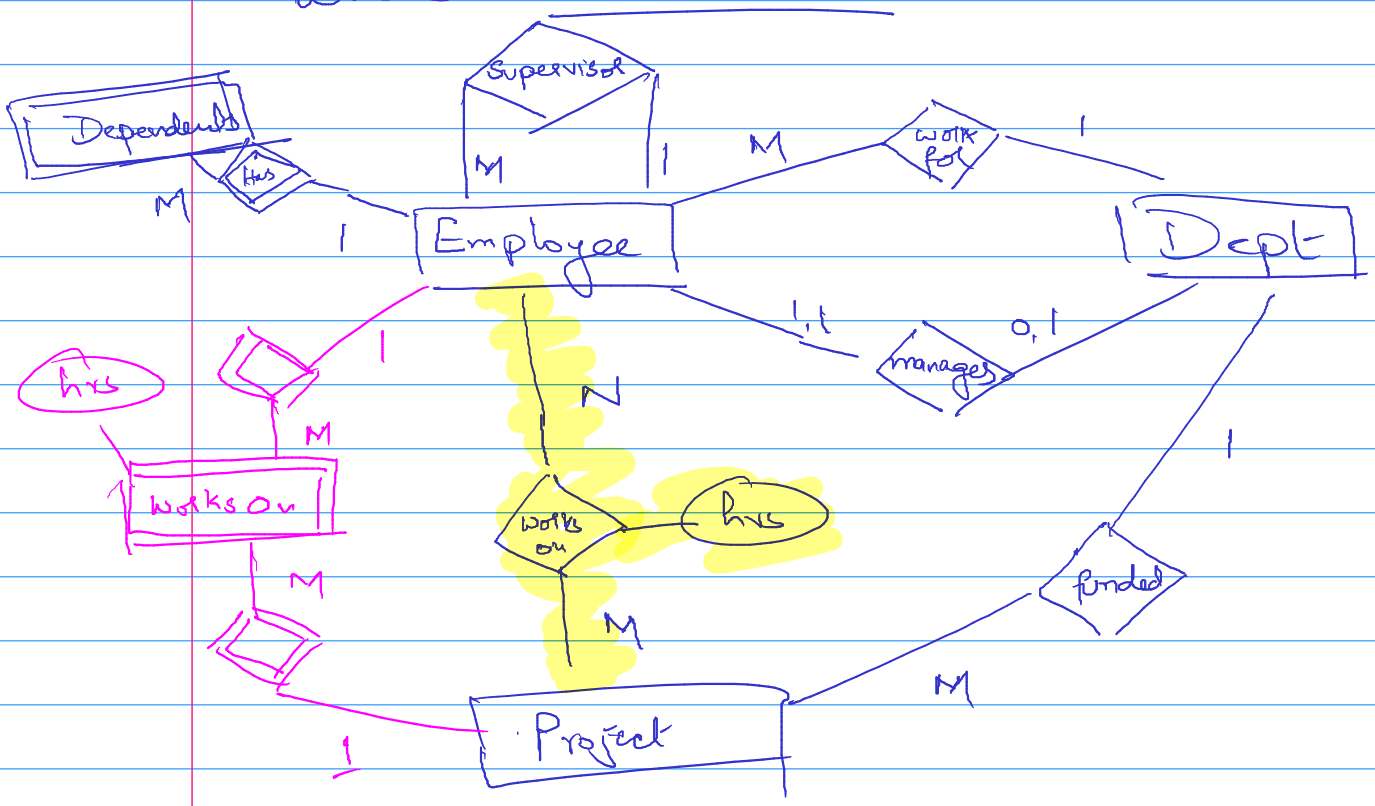
4. Show the names of the employees along with names of their supervisors.

5. Show the names & salaries of female employees along with the names of the projects where they have spent more than 10 hrs

6. Show names of dependents whose parents have worked on some project located in Houston or Stafford.

7. Show the names of the projects managed by the department where James Borg is the manager

Select ___ from
(A JOIN B on A.w = B.x)
JOIN C on B.y = C.z
where



6	1	8
7	5	3
2	9	4

```
Select E.FName, E.Lname, E.Salary, P.PName, W.Hours
From (Employee E JOIN Works_On W on E.SSN = W.ESSN)
JOIN Project P ON W.PNo = P.Pnumber
where E.Sex = 'F' and W.Hours >= 10
and P.Plocation = 'Sugarland';
```