● CREATE TABLE AND INSERT DATA -

≫
CREATE TABLE Student(
     SID int,
  Name varchar(255),
  Department varchar(255),
  Gender varchar(255),
  DOB DATE,
  Address varchar(255),
  Country varchar(255),
  PostalCode int,
  PRIMARY KEY (SID)

);

CREATE TABLE Fees (
 SID int,
 Credit int,
 Total_Fee int,
 Due int,
 PRIMARY KEY (SID)
 );

INSERT INTO Student VALUES
('101', 'Shudipto', 'English', 'Male', '03/03/2000', 'Mirpur 11 , 'Bnagladesh', '1216'),
('102', 'Orin', 'Bangla', 'Female', '10/04/2005', 'Skagen 21', 'Norway', '4006'),
('103', 'Shuvo', 'Math', 'Male', '15/05/2007', 'Suite 3B', 'USA', '98128'),
('104', 'Ana', 'CSE', 'Female', '12/01/2008', 'Keskuskatu 45 , 'Finland', '21240'),
('105', 'Alfred', 'EEE', 'Male','23/06/2009', 'Filtrowa 68', 'Poland', '01012'),
('106', 'Munni', 'Chemistry', 'Female', '20/09/2006', 'Obere Str. 57', 'Germany', '12209'),
('107', 'Orbin', 'NFE', 'Male', '18/07/2003', 'Mataderos 2312', 'México', '05021'),
('108', 'Antonio', 'BBA', 'Male', '21/11/2002', '120 Hanover', 'UK', '30765'),
('109', 'Moreno', 'Civil', 'Male', '11/02/2001', 'Berguvsvägen 8', 'Sweden', '95822'),
('110', 'Familia', 'Philosophy', 'Female', '13/08/2010', '2, rue du Commerce', 'France', '51100'),
('111', 'Lila', 'Literature', 'Female', '13/06/2011', '25, rue du Commerce', 'France', '75016'),
('112', 'Tom', 'Economics', 'Male', '25/08/2012', '722 DaVinci Blvd.', 'USA', '98034'),
('113', 'Clover', 'Physics', 'Male', '22/09/2009', 'Luisenstr. 48', 'Germany', '44087'),
('114', 'Wilman', 'Pharmacy', 'Male', '14/12/2013', 'Torikatu 38', 'Finland', '90110');

INSERT INTO Fees VALUES

('101', '20', '20000', '5000'),
('102', '22', '24000', '0'),
('103', '23', '26000', '3000'),
('104', '40', '40000', '2000'),
('105', '30', '30000', '4000'),
('106', '34', '36000', '0'),
('107', '40', '40000' , '1000'),
('108', '40', '40000', '7000'),
('109', '34', '36000', '5500'),
('110', '20', '20000', '6000'),
('111', '22', '24000', '3500'),
('112', '223', '26000', '2500'),
('113', '30', '30000', '5500'),
('114', '23', '26000', '1000');

● **CHECK THE TABLE -**
≫
    a. SELECT * FROM Student;

SID	Name	Dep...	Gen...	DOB	Add...	Cou...	PostalCode
101	Shud...	English	Male	03/0...	Mirp...	Bnag...	1216
102	Orin	Bangla	Female	10/0...	Skag...	Norway	4006
103	Shuvo	Math	Male	15/0...	Suite...	USA	98128
104	Ana	CSE	Female	12/0...	Kesk...	Finland	21240
105	Alfred	EEE	Male	23/0...	Filtro...	Poland	1012
106	Munni	Che...	Female	20/0...	Ober...	Ger...	12209
107	Orbin	NFE	Male	18/0...	Mata...	Mexico	5021
108	Antonio	BBA	Male	21/11...	120 ...	UK	30765
109	Moreno	Civil	Male	11/02...	Berg...	Swe...	95822
110	Familia	Philo...	Female	13/0...	2, ru...	France	51100
111	Lila	Liter...	Female	13/0...	25, r...	France	75016
112	Tom	Econ...	Male	25/0...	722 ...	USA	98034
113	Clover	Physics	Male	22/0...	Luise...	Ger...	44087
114	Wilman	Phar...	Male	14/1...	Torik...	Finland	90110

b. SELECT * FROM Fees;

SID	Credit	Total_Fee	Due
101	20	20000	5000
102	22	24000	0
103	23	26000	3000
104	40	40000	2000
105	30	30000	4000
106	34	36000	0
107	40	40000	1000
108	40	40000	7000
109	34	36000	5500
110	20	20000	6000
111	22	24000	3500
112	223	26000	2500
113	30	30000	5500
114	23	26000	1000

● **LIKE** (FIND MATCHES BETWEEN DATA) -
≫

```
1 SELECT * FROM Student
2 WHERE name LIKE 'a%';
```

SID	Name	Department	Gender	DOB	Address	Country	PostalCode
104	Ana	CSE	Female	12/01/2008	Keskuskatu 45	Finland	21240
105	Alfred	EEE	Male	23/06/2009	Filtrowa 68	Poland	1012
108	Antonio	BBA	Male	21/11/2002	120 Hanover	UK	30765

≫

```
1 SELECT * FROM Student
2 WHERE name LIKE '%a';
```

SID	Name	Department	Gender	DOB	Address	Country	PostalCode
104	Ana	CSE	Female	12/01/2008	Keskuskatu 45	Finland	21240
110	Familia	Philosophy	Female	13/08/2010	2, rue du Com...	France	51100
111	Lila	Literature	Female	13/06/2011	25, rue du Co...	France	75016

≫

```
1 SELECT * FROM Student
2 WHERE name LIKE '%a%';
```

SID	Name	Dep...	Gen...	DOB	Add...	Cou...	PostalCode
104	Ana	CSE	Female	12/0...	Kesk...	Finland	21240
105	Alfred	EEE	Male	23/0...	Filtro...	Poland	1012
108	Antonio	BBA	Male	21/11...	120 ...	UK	30765
110	Familia	Philo...	Female	13/0...	2, ru...	France	51100
111	Lila	Liter...	Female	13/0...	25, r...	France	75016
114	Wilman	Phar...	Male	14/1...	Torik...	Finland	90110

≫

```
1 SELECT * FROM Student
2 WHERE name LIKE '_a%';
```

SID	Name	Dep...	Gen...	DOB	Addr...	Cou...	Post...
110	Familia	Philos...	Female	13/08...	2, rue...	France	51100

```
>>
```

```sql
1 SELECT * FROM Student
2 WHERE name LIKE 'a_%';
```

SID	Name	Dep...	Gen...	DOB	Addr...	Cou...	Post...
104	Ana	CSE	Female	12/01...	Kesk...	Finland	21240
105	Alfred	EEE	Male	23/06...	Filtro...	Poland	1012
108	Antonio	BBA	Male	21/11/...	120 H...	UK	30765

```
>>
```

```sql
1 SELECT * FROM Student
2 WHERE name LIKE 't%m';
```

SID	Name	Dep...	Gen...	DOB	Addr...	Cou...	Post...
112	Tom	Econ...	Male	25/08...	722 D...	USA	98034

≫

```
1 SELECT * FROM Student
2 WHERE name NOT LIKE 't%m';
```

SID	Name	Department	Gender	DOB	Address	Country	PostalCode
101	Shudipto	English	Male	03/03/2000	Mirpur 11	Bnagladesh	1216
102	Orin	Bangla	Female	10/04/2005	Skagen 21	Norway	4006
103	Shuvo	Math	Male	15/05/2007	Suite 3B	USA	98128
104	Ana	CSE	Female	12/01/2008	Keskuskatu 45	Finland	21240
105	Alfred	EEE	Male	23/06/2009	Filtrowa 68	Poland	1012
106	Munni	Chemistry	Female	20/09/2006	Obere Str. 57	Germany	12209
107	Orbin	NFE	Male	18/07/2003	Mataderos 2312	Mexico	5021
108	Antonio	BBA	Male	21/11/2002	120 Hanover	UK	30765
109	Moreno	Civil	Male	11/02/2001	Berguvsvägen 8	Sweden	95822
110	Familia	Philosophy	Female	13/08/2010	2, rue du Com…	France	51100
111	Lila	Literature	Female	13/06/2011	25, rue du Co…	France	75016
113	Clover	Physics	Male	22/09/2009	Luisenstr. 48	Germany	44087
114	Wilman	Pharmacy	Male	14/12/2013	Torikatu 38	Finland	90110

- **LIKE** (Specify Multiple values) -
≫

```
1 SELECT * FROM Student
2 WHERE country IN ('Finland','USA');
```

SID	Name	Dep…	Gen…	DOB	Addr…	Cou…	Post…
103	Shuvo	Math	Male	15/05…	Suite …	USA	98128
104	Ana	CSE	Female	12/01…	Kesk…	Finland	21240
112	Tom	Econ…	Male	25/08…	722 D…	USA	98034
114	Wilman	Phar…	Male	14/12…	Torika…	Finland	90110

>>

```
1 SELECT name,country
2 FROM Student
3 WHERE country IN ('Finland','USA');
```

Name	Country
Shuvo	USA
Ana	Finland
Tom	USA
Wilman	Finland

>>

```
1 SELECT name,country
2 FROM Student
3 WHERE country NOT IN ('Finland','USA');
```

Name	Country
Shudipto	Bnagladesh
Orin	Norway
Alfred	Poland
Munni	Germany
Orbin	Mexico
Antonio	UK
Moreno	Sweden
Familia	France
Lila	France
Clover	Germany

```
1 SELECT * FROM Fees
2 WHERE sid IN (SELECT sid FROM Student);
```

SID	Credit	Total_Fee	Due
101	20	20000	5000
102	22	24000	0
103	23	26000	3000
104	40	40000	2000
105	30	30000	4000
106	34	36000	0
107	40	40000	1000
108	40	40000	7000
109	34	36000	5500
110	20	20000	6000
111	22	24000	3500
112	223	26000	2500
113	30	30000	5500
114	23	26000	1000

● **BETWEEN** (select values within a range) -
≫

```
1 SELECT * FROM Fees
2 WHERE due BETWEEN 1000 AND 3000;
```

SID	Credit	Total_Fee	Due
103	23	26000	3000
104	40	40000	2000
107	40	40000	1000
112	223	26000	2500
114	23	26000	1000

≫

```
1 SELECT * FROM Student
2 WHERE dob BETWEEN '12/01/2000' AND '12/10/2010';
```

SID	Name	Dep...	Gen...	DOB	Add...	Cou...	PostalCode
104	Ana	CSE	Female	12/0...	Kesk...	Finland	21240

```
1 SELECT * FROM Fees
2 WHERE credit NOT BETWEEN 20 AND 25;
3
```

SID	Credit	Total_Fee	Due
104	40	40000	2000
105	30	30000	4000
106	34	36000	0
107	40	40000	1000
108	40	40000	7000
109	34	36000	5500
112	223	26000	2500
113	30	30000	5500

≫

```sql
1 SELECT * FROM Student
2 WHERE department NOT BETWEEN 'Bangla' AND 'Math';
```

SID	Name	Dep...	Gen...	DOB	Addr...	Cou...	Post...
107	Orbin	NFE	Male	18/07...	Mata...	Mexico	5021
108	Antonio	BBA	Male	21/11/...	120 H...	UK	30765
110	Familia	Philos...	Female	13/08...	2, rue...	France	51100
113	Clover	Physics	Male	22/09...	Luise...	Germ...	44087
114	Wilman	Phar...	Male	14/12...	Torika...	Finland	90110

● **Operators -**

≫ **AND:**

```sql
1 SELECT * FROM Student
2 WHERE department = 'English' AND gender = 'Male';
3
```

SID	Name	Departm...	Gender	DOB	Address	Country	PostalC...
101	Shudipto	English	Male	03/03/2000	Mirpur 11	Bnagladesh	1216

≫ **OR :**

```sql
1 SELECT * FROM Student
2 WHERE department = 'English' OR department = 'Math';
3
```

SID	Name	Departm...	Gender	DOB	Address	Country	PostalC...
101	Shudipto	English	Male	03/03/2000	Mirpur 11	Bnagladesh	1216
103	Shuvo	Math	Male	15/05/2007	Suite 3B	USA	98128

≫ NOT :

```
1 SELECT * FROM Student
2 WHERE NOT department = 'English';
3
```

SID	Name	Departm...	Gender	DOB	Address	Country	PostalC...
102	Orin	Bangla	Female	10/04/2005	Skagen 21	Norway	4006
103	Shuvo	Math	Male	15/05/2007	Suite 3B	USA	98128
104	Ana	CSE	Female	12/01/2008	Keskuska...	Finland	21240
105	Alfred	EEE	Male	23/06/2009	Filtrowa 68	Poland	1012
106	Munni	Chemistry	Female	20/09/2006	Obere Str...	Germany	12209
107	Orbin	NFE	Male	18/07/2003	Matadero...	Mexico	5021
108	Antonio	BBA	Male	21/11/2002	120 Hano...	UK	30765
109	Moreno	Civil	Male	11/02/2001	Berguvsv...	Sweden	95822
110	Familia	Philosophy	Female	13/08/2010	2, rue du ...	France	51100
111	Lila	Literature	Female	13/06/2011	25, rue d...	France	75016
112	Tom	Economics	Male	25/08/2012	722 DaVi...	USA	98034
113	Clover	Physics	Male	22/09/2009	Luisenstr....	Germany	44087
114	Wilman	Pharmacy	Male	14/12/2013	Torikatu 38	Finland	90110

≫Combine:

```
1 SELECT * FROM Student
2 WHERE country ='France' AND (department = 'Philosophy' OR department= 'literature');
3
```

SID	Name	Departm...	Gender	DOB	Address	Country	PostalC...
110	Familia	Philosophy	Female	13/08/2010	2, rue du ...	France	51100

≫

```
1 SELECT * FROM Student
2 WHERE NOT country ='France' AND NOT(department = 'Philosophy' OR department= 'literature');
3
```

SID	Name	Departm...	Gender	DOB	Address	Country	PostalC...
101	Shudipto	English	Male	03/03/2000	Mirpur 11	Bnagladesh	1216
102	Orin	Bangla	Female	10/04/2005	Skagen 21	Norway	4006
103	Shuvo	Math	Male	15/05/2007	Suite 3B	USA	98128
104	Ana	CSE	Female	12/01/2008	Keskuska...	Finland	21240
105	Alfred	EEE	Male	23/06/2009	Filtrowa 68	Poland	1012
106	Munni	Chemistry	Female	20/09/2006	Obere Str...	Germany	12209
107	Orbin	NFE	Male	18/07/2003	Matadero...	Mexico	5021
108	Antonio	BBA	Male	21/11/2002	120 Hano...	UK	30765
109	Moreno	Civil	Male	11/02/2001	Berguvsv...	Sweden	95822
112	Tom	Economics	Male	25/08/2012	722 DaVi...	USA	98034
113	Clover	Physics	Male	22/09/2009	Luisenstr....	Germany	44087
114	Wilman	Pharmacy	Male	14/12/2013	Torikatu 38	Finland	90110

≫ = :

```
1 SELECT * FROM Fees
2 WHERE due = 2000;
```

SID	Credit	Total_Fee	Due
104	40	40000	2000

≫ > :

```
1 SELECT * FROM Fees
2 WHERE due > 2000;
```

SID	Credit	Total_Fee	Due
101	20	20000	5000
103	23	26000	3000
105	30	30000	4000
108	40	40000	7000
109	34	36000	5500
110	20	20000	6000
111	22	24000	3500
112	223	26000	2500
113	30	30000	5500

≫ >= :

```
1 SELECT * FROM Fees
2 WHERE due >= 2000;
```

SID	Credit	Total_Fee	Due
101	20	20000	5000
103	23	26000	3000
104	40	40000	2000
105	30	30000	4000
108	40	40000	7000
109	34	36000	5500
110	20	20000	6000
111	22	24000	3500
112	223	26000	2500
113	30	30000	5500

≫ < :

```
1 SELECT * FROM Fees
2 WHERE due < 3000;
```

SID	Credit	Total_Fee	Due
102	22	24000	0
104	40	40000	2000
106	34	36000	0
107	40	40000	1000
112	223	26000	2500
114	23	26000	1000

≫ <= :

```
1 SELECT * FROM Fees
2 WHERE due <= 3000;
```

SID	Credit	Total_Fee	Due
102	22	24000	0
103	23	26000	3000
104	40	40000	2000
106	34	36000	0
107	40	40000	1000
112	223	26000	2500
114	23	26000	1000

>> <> :

```
1 SELECT * FROM Fees
2 WHERE due <> 3000;
```

SID	Credit	Total_Fee	Due
101	20	20000	5000
102	22	24000	0
104	40	40000	2000
105	30	30000	4000
106	34	36000	0
107	40	40000	1000
108	40	40000	7000
109	34	36000	5500
110	20	20000	6000
111	22	24000	3500
112	223	26000	2500
113	30	30000	5500
114	23	26000	1000

>> !=

```
1 SELECT * FROM Fees
2 WHERE due != 3000;
```

SID	Credit	Total_Fee	Due
101	20	20000	5000
102	22	24000	0
104	40	40000	2000
105	30	30000	4000
106	34	36000	0
107	40	40000	1000
108	40	40000	7000
109	34	36000	5500
110	20	20000	6000
111	22	24000	3500
112	223	26000	2500
113	30	30000	5500
114	23	26000	1000

● **ORDER BY** (short the result in order by ascending/ descending) -
≫ **ASC**

```
1 SELECT sid, name FROM Student
2 ORDER BY name;
```

SID	Name
105	Alfred
104	Ana
108	Antonio
113	Clover
110	Familia
111	Lila
109	Moreno
106	Munni
107	Orbin
102	Orin
101	Shudipto
103	Shuvo
112	Tom
114	Wilman

≫ DESC :

```
1  SELECT sid, name FROM Student
2  ORDER BY name DESC;
```

SID	Name
114	Wilman
112	Tom
103	Shuvo
101	Shudipto
102	Orin
107	Orbin
106	Munni
109	Moreno
111	Lila
110	Familia
113	Clover
108	Antonio
104	Ana
105	Alfred

≫ Combine :

```
1 SELECT sid, name,country FROM Student
2 ORDER BY name DESC, country ASC;
```

SID	Name	Country
114	Wilman	Finland
112	Tom	USA
103	Shuvo	USA
101	Shudipto	Bnagladesh
102	Orin	Norway
107	Orbin	Mexico
106	Munni	Germany
109	Moreno	Sweden
111	Lila	France
110	Familia	France
113	Clover	Germany
108	Antonio	UK
104	Ana	Finland
105	Alfred	Poland

● **ALIAS** (give a temporary name) -
≫

```sql
1 SELECT sid AS id, name AS SName
2 FROM Student;
3
```

id	SName
101	Shudipto
102	Orin
103	Shuvo
104	Ana
105	Alfred
106	Munni
107	Orbin
108	Antonio
109	Moreno
110	Familia
111	Lila
112	Tom
113	Clover
114	Wilman

\>\>

```
1 SELECT s.sid,s.Name, f.due
2 FROM Student AS s, Fees AS f
3 WHERE s.name= 'Orbin' AND s.sid = f.SID;
```

SID	Name	Due
107	Orbin	1000

● **GROUP BY** (same values into rows)-
\>\>

```
1 SELECT sid, country
2 FROM Student
3 GROUP BY country;
```

SID	Country
101	Bnagladesh
104	Finland
110	France
106	Germany
107	Mexico
102	Norway
105	Poland
109	Sweden
108	UK
103	USA

≫ HAVING :

```
1 SELECT sid, country
2 FROM Student
3 GROUP BY country
4 HAVING sid < 105;
```

SID	Country
101	Bnagladesh
104	Finland
102	Norway
103	USA

≫

```
1 SELECT sid, country
2 FROM Student
3 GROUP BY country
4 HAVING sid < 105
5 ORDER BY sid;
6
```

SID	Country
101	Bnagladesh
102	Norway
103	USA
104	Finland

●FUNCTIONS -

≫ COUNT( ) :

```
1 SELECT COUNT(sid), country
2 FROM Student
3 GROUP BY country;
```

COUNT(sid)	Country
1	Bnagladesh
2	Finland
2	France
2	Germany
1	Mexico
1	Norway
1	Poland
1	Sweden
1	UK
2	USA

≫ AVG( ) :

```
1 SELECT AVG(credit)
2 FROM Fees;
```

AVG(credit)
42.92857142857143

≫ Sum( ):

```
1 SELECT Sum(due)
2 FROM Fees;
```

⋮ Sum(due)

46000

≫ MIN ( ):

```
1 SELECT MIN(credit) AS LowCredit
2 FROM Fees;
```

⋮ LowCredit

20

≫MAX( ):

```
1 SELECT MAX(credit) AS HighestCredit
2 FROM Fees;
```

⋮ HighestCredit

223

●JOINS (Combine rows) -
≫ INNER JOIN :

```
1 SELECT Fees.sid, Student.name, Fees.due
2 FROM Fees
3 INNER JOIN Student ON Fees.sid = Student.SID;
```

SID	Name	Due
101	Shudipto	5000
102	Orin	0
103	Shuvo	3000
104	Ana	2000
105	Alfred	4000
106	Munni	0
107	Orbin	1000
108	Antonio	7000
109	Moreno	5500
110	Familia	6000
111	Lila	3500
112	Tom	2500
113	Clover	5500
114	Wilman	1000

```
1 SELECT Student.name, Fees.due
2 FROM Student
3 LEFT JOIN Fees ON Student.sid = Fees.SID;
```

Name	Due
Shudipto	5000
Orin	0
Shuvo	3000
Ana	2000
Alfred	4000
Munni	0
Orbin	1000
Antonio	7000
Moreno	5500
Familia	6000
Lila	3500
Tom	2500
Clover	5500
Wilman	1000

≫ RIGHT JOIN -

```sql
1 SELECT Fees.credit, Student.name, Student.Department
2 FROM Fees
3 RIGHT JOIN Student ON Fees.sid = Student.SID
4 ORDER BY credit;
```

Credit	Name	Department
20	Shudipto	English
20	Familia	Philosophy
22	Orin	Bangla
22	Lila	Literature
23	Shuvo	Math
23	Wilman	Pharmacy
30	Alfred	EEE
30	Clover	Physics
34	Munni	Chemistry
34	Moreno	Civil
40	Ana	CSE
40	Orbin	NFE
40	Antonio	BBA
223	Tom	Economics

≫ FULL OUTER JOIN -

```
1 SELECT Fees.credit, Student.name
2 FROM Fees
3 FULL OUTER JOIN Student ON Fees.sid = Student.SID
4 ORDER BY Student.name;
```

Credit	Name
30	Alfred
40	Ana
40	Antonio
30	Clover
20	Familia
22	Lila
34	Moreno
34	Munni
40	Orbin
22	Orin
20	Shudipto
23	Shuvo
223	Tom
23	Wilman