DBMS Assignment 5

1. Question 1
    a. Creating Tables:
        i. Customer Table

```
3  create table customer(
4  CustomerID int primary key,
5  CustomerName varchar(30),
6  ContactName varchar(30),
7  Address varchar(30),
8  City varchar(30),
9  PostalCode varchar(10),
10 Country varchar(20)
11 );
12 desc customer;
```

Field	Type	Null	Key	Default	Extra
CustomerID	int	NO	PRI	NULL	
CustomerName	varchar(30)	YES		NULL	
ContactName	varchar(30)	YES		NULL	
Address	varchar(30)	YES		NULL	
City	varchar(30)	YES		NULL	
PostalCode	varchar(10)	YES		NULL	
Country	varchar(20)	YES		NULL	

        ii. Order Table

```
14 create table orders(
15 OrderID int primary key,
16 CustomerID int,
17 EmployeeID int,
18 OrderDate date,
19 ShipperID int,
20 foreign key (CustomerID) references customer(CustomerID)
21 on update cascade on delete cascade
22 );
23 desc orders;
```

Field	Type	Null	Key	Default	Extra
OrderID	int	NO	PRI	NULL	
CustomerID	int	YES	MUL	NULL	
EmployeeID	int	YES		NULL	
OrderDate	date	YES		NULL	
ShipperID	int	YES		NULL	

b. Inserting Data

i. Customer Table

```
25 • insert into customer values(1, 'Alfreds', 'Maria Anders', 'Obere Str.5', 'Berlin', '12209', 'Germany');
26 • insert into customer values(2, 'Ana Trujillo', 'Ana Trujillo', 'Avda de la Constitucion', 'Mexico City', '05021', 'Mexico');
27 • insert into customer values(3, 'Antonia Moreno', 'Antonio', 'Metaderos', 'London', 'WA1 1DP', 'UK');
28 • select * from customer;
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds	Maria Anders	Obere Str.5	Berlin	12209	Germany
2	Ana Trujillo	Ana Trujillo	Avda de la Constitucion	Mexico City	05021	Mexico
3	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK
NULL	NULL	NULL	NULL	NULL	NULL	NULL

ii. Order Table

```
30 • insert into orders values(10308, 2, 7, '1996-09-18', 3);
31 • insert into orders values(10309, 3, 3, '1996-09-19', 1);
32 • insert into orders values(10310, 77, 8, '1996-09-20', 2);
33 • select * from orders;
```

OrderID	CustomerID	EmployeeID	OrderDate	ShipperID
10308	2	7	1996-09-18	3
10309	3	3	1996-09-19	1
10310	77	8	1996-09-20	2
NULL	NULL	NULL	NULL	NULL

c. Queries

i. Selects all customers with a City starting with the letter "M"

```
35 •  select * from customer where City like "M%";
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
2	Ana Trujillo	Ana Trujillo	Avda de la Constitucion	Mexico City	05021	Mexico
NULL	NULL	NULL	NULL	NULL	NULL	NULL

ii. Selects all customers with a City containing the pattern "ex"

```
35 •  select * from customer where City like "%ex%";
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
2	Ana Trujillo	Ana Trujillo	Avda de la Constitucion	Mexico City	05021	Mexico
NULL	NULL	NULL	NULL	NULL	NULL	NULL

iii. Selects all customers with a City of "Berlin" or "London"

```
35 •  select * from customer where City in ('Berlin','London');
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds	Maria Anders	Obere Str.5	Berlin	12209	Germany
3	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK

iv. Left Join

```
37 •  select * from customer left join orders on customer.CustomerID = orders.CustomerID;
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country	OrderID	CustomerID	EmployeeID	OrderDate	ShipperID
1	Alfreds	Maria Anders	Obere Str.5	Berlin	12209	Germany	NULL	NULL	NULL	NULL	NULL
2	Ana Trujillo	Ana Trujillo	Avda de la Constitucion	Mexico City	05021	Mexico	10308	2	7	1996-09-18	3
3	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK	10309	3	3	1996-09-19	1

v. Right Join

```
37 • select * from customer right join orders on customer.CustomerID = orders.CustomerID;
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country	OrderID	CustomerID	EmployeeID	OrderDate	ShipperID
2	Ana Trujillo	Ana Trujillo	Avda de la Constitucion	Mexico City	05021	Mexico	10308	2	7	1996-09-18	3
3	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK	10309	3	3	1996-09-19	1
77	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK	10310	77	8	1996-09-20	2

vi. Inner Join

```
37 • select * from customer inner join orders on customer.CustomerID = orders.CustomerID;
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country	OrderID	CustomerID	EmployeeID	OrderDate	ShipperID
2	Ana Trujillo	Ana Trujillo	Avda de la Constitucion	Mexico City	05021	Mexico	10308	2	7	1996-09-18	3
3	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK	10309	3	3	1996-09-19	1
77	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK	10310	77	8	1996-09-20	2

vii. Full join

```
37 • (select * from customer left join orders on customer.CustomerID = orders.CustomerID)
38   union
39   (select * from customer right join orders on customer.CustomerID = orders.CustomerID)
40   ;
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country	OrderID	CustomerID	EmployeeID	OrderDate	ShipperID
1	Alfreds	Maria Anders	Obere Str.5	Berlin	12209	Germany	NULL	NULL	NULL	NULL	NULL
2	Ana Trujillo	Ana Trujillo	Avda de la Constitucion	Mexico City	05021	Mexico	10308	2	7	1996-09-18	3
3	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK	10309	3	3	1996-09-19	1
77	Antonia Moreno	Antonio	Metaderos	London	WA1 1DP	UK	10310	77	8	1996-09-20	2

2. Question 2
    a. Create Tables
        i. Campus Table

```
6  create table Campus(
7  CampusID varchar(5) primary key,
8  CampusName varchar(30),
9  Street varchar(20),
10 City varchar(20),
11 State varchar(20),
12 Zip int unique key,
13 Phone char(10),
14 CampusDisount numeric(4,2)
15 );
16 desc Campus;
```

Field	Type	Null	Key	Default	Extra
CampusID	varchar(5)	NO	PRI	NULL	
CampusName	varchar(30)	YES		NULL	
Street	varchar(20)	YES		NULL	
City	varchar(20)	YES		NULL	
State	varchar(20)	YES		NULL	
Zip	int	YES	UNI	NULL	
Phone	char(10)	YES		NULL	
CampusDisount	decimal(4,2)	YES		NULL	

        ii. Position Table

```
23 create table Positions(
24 PositionID varchar(5) primary key,
25 PositionName varchar(30),
26 MembershipFee numeric(7,2)
27 );
28 desc Positions;
```

Field	Type	Null	Key	Default	Extra
PositionID	varchar(5)	NO	PRI	NULL	
PositionName	varchar(30)	YES		NULL	
MembershipFee	decimal(7,2)	YES		NULL	

iii. Member Table

```
35  create table Members(
36  MemberID varchar(5) primary key,
37  LastName varchar(20),
38  FirstName varchar(20),
39  CampusAddress varchar(30),
40  CampusPhone char(10),
41  CampusID varchar(5),
42  PositionID varchar(5),
43  ContractDuration int check(ContractDuration<1000),
44  foreign key (CampusID) references Campus(CampusID) on delete cascade on update cascade,
45  foreign key (PositionID) references Positions(PositionID) on delete cascade on update cascade
46  );
47  desc Members;
```

Field	Type	Null	Key	Default	Extra
MemberID	varchar(5)	NO	PRI	NULL	
LastName	varchar(20)	YES		NULL	
FirstName	varchar(20)	YES		NULL	
CampusAddress	varchar(30)	YES		NULL	
CampusPhone	char(10)	YES		NULL	
CampusID	varchar(5)	YES	MUL	NULL	
PositionID	varchar(5)	YES	MUL	NULL	
ContractDuration	int	YES		NULL	

iv. Prices Table

```
55  create table Price(
56  FoodItemTypeID int auto_increment primary key,
57  MealType varchar(20),
58  MealPrice numeric(7,2)
59  );
60  desc Price;
```

Field	Type	Null	Key	Default	Extra
FoodItemTypeID	int	NO	PRI	NULL	auto_increment
MealType	varchar(20)	YES		NULL	
MealPrice	decimal(7,2)	YES		NULL	

v. Food Item Table

```
67  create table FoodItem(
68  FoodItemID varchar(5) primary key,
69  FoodItemName varchar(30),
70  FoodItemTypeID int,
71  foreign key (FoodItemTypeID) references Price(FoodItemTypeID) on update cascade on delete cascade);
72  desc FoodItem;
```

Field	Type	Null	Key	Default	Extra
FoodItemID	varchar(5)	NO	PRI	NULL	
FoodItemName	varchar(30)	YES		NULL	
FoodItemTypeID	int	YES	MUL	NULL	

vi. Orders Table

```
79  create table orders2(
80  OrderId varchar(5) primary key,
81  MemberId varchar(5),
82  OrderDate varchar(25),
83  foreign key (MemberID) references members(MemberID)
84  );
85  desc orders2;
```

Field	Type	Null	Key	Default	Extra
OrderId	varchar(5)	NO	PRI	NULL	
MemberId	varchar(5)	YES	MUL	NULL	
OrderDate	varchar(25)	YES		NULL	

vii. Order Line Table

```
92  create table OrderLine(
93  OrderID varchar(5),
94  FoodItemID varchar(5),
95  Quantity int check (Quantity<1000),
96  primary key(OrderID,FoodItemID),
97  foreign key (OrderID) references orders2(OrderID) on update cascade on delete cascade,
98  foreign key (FoodItemID) references FoodItem(FoodItemID) on update cascade on delete cascade
99  );
100 desc OrderLine;
```

Field	Type	Null	Key	Default	Extra
OrderID	varchar(5)	NO	PRI	NULL	
FoodItemID	varchar(5)	NO	PRI	NULL	
Quantity	int	YES		NULL	

b. Inserting Data

i. Campus Table

```
18 insert into Campus values('C0001', 'DTU Delhi', 'DTU Str.', 'New Delhi', 'Delhi', 201542, '0159815812', 5.12365);
19 insert into Campus values('C0002', 'IIIT Allahabad', 'IIIT Road', 'Prayagraj', 'UP', 211015, '7859815812', 12.15465);
20 insert into Campus values('C0003', 'IIT Kanpur', 'Kanpur Road', 'Kanpur', 'UP', 654555, '6489815812', 30.12365);
21 select * from campus;
```

CampusID	CampusName	Street	City	State	Zip	Phone	CampusDisount
C0001	DTU Delhi	DTU Str.	New Delhi	Delhi	201542	0159815812	5.12
C0002	IIIT Allahabad	IIIT Road	Prayagraj	UP	211015	7859815812	12.15
C0003	IIT Kanpur	Kanpur Road	Kanpur	UP	654555	6489815812	30.12
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

ii. Position Table

```
30 •  insert into Positions values('PO001', 'Lecturer', 30052.12365);
31 •  insert into Positions values('PO002', 'HOD', 61052.12545);
32 •  insert into Positions values('PO003', 'Dean', 85052.12455);
33 •  select * from Positions;
```

PositionID	PositionName	MembershipFee
PO001	Lecturer	30052.12
PO002	HOD	61052.13
PO003	Dean	85052.12
NULL	NULL	NULL

iii. Member Table

```
49 •  insert into members values('M0001', 'Singh', 'Paaji', 'DTU Street', '0159815812', 'C0001', 'PO003', 52);
50 •  insert into members values('M0002', 'Kumar', 'Anup', 'IIITA Road', '7859815812', 'C0002', 'PO002', 99);
51 •  insert into members values('M0003', 'Verma', 'Subra', 'Kanpur Road', '6489815812', 'C0003', 'PO003', 85);
52 •  select * from members;
```

MemberID	LastName	FirstName	CampusAddress	CampusPhone	CampusID	PositionID	ContractDuration
M0001	Singh	Paaji	DTU Street	0159815812	C0001	PO003	52
M0002	Kumar	Anup	IIITA Road	7859815812	C0002	PO002	99
M0003	Verma	Subra	Kanpur Road	6489815812	C0003	PO003	85
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

iv. Prices Table

```
62 • insert into Price (MealType,MealPrice) values ('Breakfast', 25.6598);
63 • insert into Price (MealType,MealPrice) values ('Lunch', 235.4858);
64 • insert into Price (MealType,MealPrice) values ('Dinner', 245.5398);
65 • select * from price;
```

FoodItemTypeID	MealType	MealPrice
1	Breakfast	25.66
2	Lunch	235.49
3	Dinner	245.54
NULL	NULL	NULL

v. Food Item Table

```
74 • insert into FoodItem values ('F0001', 'Pasta', 2);
75 • insert into FoodItem values ('F0002', 'Biryani', 3);
76 • insert into FoodItem values ('F0003', 'Bread Jam', 1);
77 • select * from FoodItem;
```

FoodItemID	FoodItemName	FoodItemTypeID
F0001	Pasta	2
F0002	Biryani	3
F0003	Bread Jam	1
NULL	NULL	NULL

vi. Orders Table

```
87 • insert into orders2 values ('O0001', 'M0002', '2023-03-16');
88 • insert into orders2 values ('O0002', 'M0001', '2023-02-28');
89 • insert into orders2 values ('O0003', 'M0003', '2023-03-08');
90 • select * from orders2;
```

OrderId	MemberId	OrderDate
O0001	M0002	2023-03-16
O0002	M0001	2023-02-28
O0003	M0003	2023-03-08
NULL	NULL	NULL

vii. Order Line Table

```
102 • insert into OrderLine values('O0001', 'F0003', 125);
103 • insert into OrderLine values('O0001', 'F0002', 150);
104 • insert into OrderLine values('O0002', 'F0001', 200);
105 • select * from OrderLine;
```

OrderID	FoodItemID	Quantity
O0001	F0002	150
O0001	F0003	125
O0002	F0001	200
NULL	NULL	NULL

c. Queries

i. List all of your constraints in the database

```
(SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS
WHERE TABLE_NAME='Campus')
union
(SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS
WHERE TABLE_NAME='Positions')
union
(SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS
WHERE TABLE_NAME='Members')
union
(SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS
WHERE TABLE_NAME='Price')
union
(SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS
WHERE TABLE_NAME='FoodItem')
union
(SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS
WHERE TABLE_NAME='orders2')
union
(SELECT CONSTRAINT_NAME, CONSTRAINT_TYPE
FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS
WHERE TABLE_NAME='orderline')
;
```

CONSTRAINT_NAME	CONSTRAINT_TYPE
PRIMARY	PRIMARY KEY
Zip	UNIQUE
members_ibfk_1	FOREIGN KEY
members_ibfk_2	FOREIGN KEY
members_chk_1	CHECK
fooditem_ibfk_1	FOREIGN KEY
orders2_ibfk_1	FOREIGN KEY
orderline_ibfk_1	FOREIGN KEY
orderline_ibfk_2	FOREIGN KEY
orderline_chk_1	CHECK

ii. List all of your table names in the database

```
107 •    show tables;
```

Tables_in_dbmslab5
campus
fooditem
members
orderline
orders2
positions
price

iii. List your sequence name in the database

1. Not possible in MySQL.

iv. Create a listing of all Faculty Members (First and Last), their Faculty Position and the University that they are affiliated with (Name), along with their Monthly_Dues (Calculated Field with a column alias). Sort the records in descending order by University and then by Faculty's last name in ascending order.

```
142 •   select
143     Members.LastName as Last_Name,
144     Members.FirstName as First_Name,
145     Positions.PositionName as Position,
146     Campus.CampusName as University_Name,
147     Positions.MembershipFee as Monthly_Dues
148     from Members,Positions,Campus
149     where Members.PositionID = Positions.PositionID
150     and Members.CampusID = Campus.CampusID
151     order by University_Name desc, Last_Name asc
152     ;
```

Last_Name	First_Name	Position	University_Name	Monthly_Dues
Verma	Subra	Dean	IIT Kanpur	85052.12
Kumar	Anup	HOD	IIIT Allahabad	61052.13
Singh	Paaji	Dean	DTU Delhi	85052.12

v. Create a listing that shows the various food items that the faculty club serves (Name of the food item, type of food item and the price of the food item). Note: List no alcoholic beverages. Sort the records in ascending order by price.

```
154 •  select
155    FoodItem.FoodItemName,
156    Price.MealType,
157    Price.MealPrice
158    from FoodItem,Price
159    where FoodItem.FoodItemTypeID = Price.FoodItemTypeID
160    and Price.MealType not in ('Alchoholic Beverage')
161    order by Price.MealPrice
162    ;
```

FoodItemName	MealType	MealPrice
Bread Jam	Breakfast	25.66
Pasta	Lunch	235.49
Biryani	Dinner	245.54

vi. List the OrderID, Order Date, Faculty Member's Name, Campus Name, each FoodItem that makes up a given order, the type of meal, cost of the meal, quantity ordered and the total line total (calculated field and column alias). Sort by Order IDs in descending order.

```
164 •  select
165    Orders2.OrderID,
166    Orders2.OrderDate,
167    Members.LastName + Members.FirstName as Member_Name,
168    Campus.CampusName,
169    FoodItem.FoodItemName,
170    Price.MealType,
171    Price.MealPrice,
172    OrderLine.Quantity,
173    OrderLine.Quantity * Price.MealPrice as LineTotal
174    from Orders2, Members, Campus, FoodItem, Price, OrderLine
175    where Orders2.OrderID = OrderLine.OrderID
176    and Orders2.MemberID = Members.MemberID
177    and Members.CampusID = Campus.CampusID
178    and OrderLine.FoodItemID = FoodItem.FoodItemID
179    and Price.FoodItemTypeID = FoodItem.FoodItemTypeID
180    order by Orders2.OrderID desc;
```

OrderID	OrderDate	Member_Name	CampusName	FoodItemName	MealType	MealPrice	Quantity	LineTotal
O0002	2023-02-28	0	DTU Delhi	Pasta	Lunch	235.49	200	47098.00
O0001	2023-03-16	0	IIIT Allahabad	Bread Jam	Breakfast	25.66	125	3207.50
O0001	2023-03-16	0	IIIT Allahabad	Biryani	Dinner	245.54	150	36831.00