1. create table EMP(EMP\_CODE CHAR(5) NOT NULL PRIMARY KEY, EMP\_NAME CHAR(20), DEPT\_CODE CHAR(5), DESIG\_CODE CHAR(5), SEX CHAR(1), ADDRESS CHAR(25), CITY CHAR(20), STATE CHAR(20), PIN CHAR(6), BASIC DECIMAL(10,2), JN\_DATE DATE);  
     
   **Note:** Here, queries are written according to the assignment set. How, EMP\_CODE can either be set as CHAR(5) or INT or with or without AUTO\_INCREMENT. However, fix length CHAR datatype will be memory efficient. However, EMP\_NAME should be VARCHAR. (and, I think 40 or 50 will be great.) DEPT\_CODE is ok. However, according to memory and other requirement, one can use BIT(5) too. SEX or GENDER is CHAR(1) which is perfect. ADDRESS can be made VARCHAR type. VARCHAR(80) be good. PIN CHAR(6) is good for India. BASIC DECIMAL (6,2). Now, note about BASIC DECIMAL type. The DECIMAL data type requires you to specify the total number of digits and the number of digits after the decimal point.

create table DESIGNATION(DESIG\_CODE CHAR(5) NOT NULL PRIMARY KEY, DESIG\_DESC CHAR(20));  
  
Again, I believe, DESIG\_DESC could be VARCHAR(20) to become more memory efficient.

create table DEPARTMENT(DEPT\_CODE CHAR(5) NOT NULL PRIMARY KEY, DEPT\_NAME CHAR(15));

1. Display structure of each table:

**show columns from EMP;**

**Or, DESC EMP;**

It will show the following:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field** | **Type** | **NULL** | **Key** | **Default** | **Extra** |
| EMP\_CODE | CHAR(5) | NO | PRI |  |  |
| EMP\_NAME | CHAR(20) | YES |  |  |  |
| DEPT\_CODE | CHAR(5) | YES |  |  |  |
| DESIG\_CODE | CHAR(5) | YES |  |  |  |
| SEX | CHAR(1) | YES |  |  |  |
| ADDRESS | char(25) | YES |  |  |  |
| CITY | CHAR(20) | YES |  |  |  |
| STATE | CHAR(20) | YES |  |  |  |
| PIN | CHAR(6) | YES |  |  |  |
| BASIC | DECIMAL(6,2) | YES |  |  |  |
| JN\_DATE | DATE | YES |  |  |  |

**show columns from DESIGNATION;  
  
Or, DESC DESIGNATION;**

This will show the table structure of DESIGNATION.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field** | **Type** | **NULL** | **Key** | **Default** | **Extra** |
| DESIG\_CODE | CHAR(5) | NO | PRI | NULL |  |
| DESIG\_DESC | CHAR(20) | YES |  | NULL |  |

**show columns from DEPARTMENT;**

**Or, DESC DEPARTMENT;**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field** | **Type** | **NULL** | **Key** | **Default** | **Extra** |
| DEPT\_CODE | CHAR(5) | NO | PRI | NULL |  |
| DEPT\_NAME | CHAR(15) | YES |  | NULL |  |

1. Now, let’s assign some code for DESIGNATION. Let’s say,

Executive is 1

Manager is 2

Officer is 3

clerk is 4

Helper is 5.

Now, we need to insert same into the DESIGNATION table.

**insert into DESIGNATION(DESIG\_CODE, DESIG\_DESC) values("00001", "Executive");**

**insert into DESIGNATION(DESIG\_CODE, DESIG\_DESC) values("00002", "Manager");**

**insert into DESIGNATION(DESIG\_CODE, DESIG\_DESC) values("00003", "Officer");**

**insert into DESIGNATION(DESIG\_CODE, DESIG\_DESC) values("00004", "Clerk");**

**insert into DESIGNATION(DESIG\_CODE, DESIG\_DESC) values("00005", "Helper");**

Now, the designation codes are entered in DESIGNATION table with DESIGNATION\_DESCRIPTION.

Now, let’s assign code for DEPARTMENT\_TABLE.

(Personnel, Production, Purchase, Finance, Research)

**Let’s assign 00001 to Research**

**00002 for Finance**

**00003 for Purchase**

**00004 for Production**

**00005 for Personnel**

insert into DEPARTMENT(DEPT\_CODE, DEPT\_NAME) VALUES("00001","Research");

insert into DEPARTMENT(DEPT\_CODE, DEPT\_NAME) VALUES("00002","Finance");

insert into DEPARTMENT(DEPT\_CODE, DEPT\_NAME) VALUES("00003","Purchase");

insert into DEPARTMENT(DEPT\_CODE, DEPT\_NAME) VALUES("00004","Production");

insert into DEPARTMENT(DEPT\_CODE, DEPT\_NAME) VALUES("00005","Personnel");

Now, let’s insert some data into **EMP**.

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00001", "Sayak Haldar", "00001", "00001", 'M', "C.R. Park, Delhi", "New Delhi", "New Delhi", "110019", 3000000.00, '2012-04-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00002", "Sayantan Acharya", "00001", "00002", 'M', "C.R. Park, Delhi", "New Delhi", "New Delhi", "110019", 2400000, '2013-04-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00003", "Suman Rudra", "00001", "00003", 'M', "C.R. Park, Delhi", "New Delhi", "New Delhi", "110019", 2100000, '2013-07-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00004", "Buddha Dutta", "00002", "00001", 'M', "Noida,Delhi", "New Delhi", "New Delhi", "201301", 2600000, '2013-07-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00005", "Neha Sen", "00002", "00002", 'F', "Noida,Delhi", "New Delhi", "New Delhi", "201301", 1900000, '2014-01-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00006", "Tilottoma Majumdar", "00002", "00003", 'F', "Nodia,Delhi", "New Delhi", "New Delhi", "201301", 1600000, '2014-01-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00008","Debarati Das", "00003", "00001", 'F', "Kalkaji,Delhi", "New Delhi", "New Delhi", "110019", 1600000, '2014-01-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00009","Debanjan Das", "00003", "00002", 'M', "Okhla", "New Delhi", "New Delhi", "110020", 1300000, '2014-04-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00010","Binayak Basu", "00003", "00003", 'M', "Okhla", "New Delhi", "New Delhi", "110020", 1200000, '2014-05-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES ("00011","Supratim Majumdar", "00003","00001",'M', “Malviya Nagar", "New Delhi", "New Delhi", "110017", 1300000, '2014-01-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES ("00011", "Supratim Majumdar", "00003", "00001", 'M', "Malviya Nagar", "New Delhi", "New Delhi", "110017", 1300000, '2014-01-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00013","Subas Das", "00004", "00003", 'M', "Okhla", "New Delhi", "New Delhi", "110020", 1000000, '2014-05-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00014","Sananda Roy", "00005", "00003", 'F', "Okhla", "New Delhi", "New Delhi", "110020", 900000, '2014-08-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN, BASIC, JN\_DATE) VALUES("00015","Prerona Hazra", "00005", "00004", 'F', "Okhla", "New Delhi", "New Delhi", "110020", 700000, '2014-08-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN,JN\_DATE) VALUES("00016","Ankan Debnath", "00005", "00004", 'M', "Okhla", "New Delhi", "New Delhi", "110020", '2014-08-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN,JN\_DATE) VALUES("00017","Ankush Das", "00005", "00004", 'M', "Okhla", "New Delhi", "New Delhi", "110020", '2014-08-01');

4)

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN,JN\_DATE) VALUES("00016","Ankan Debnath", "00005", "00004", 'M', "Okhla", "New Delhi", "New Delhi", "110020", '2014-08-01');

insert into EMP(EMP\_CODE, EMP\_NAME, DEPT\_CODE, DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN,JN\_DATE) VALUES("00017","Ankush Das", "00005", "00004", 'M', "Okhla", "New Delhi", "New Delhi", "110020", '2014-08-01');

These are without basic.

And the following are without DEPT\_CODE

insert into EMP(EMP\_CODE, EMP\_NAME,DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN,BASIC,JN\_DATE) VALUES("00018","Amiya Adhikari","00004", 'M', "Okhla", "New Delhi", "New Delhi", "110020", 700000,'2014-08-01');

insert into EMP(EMP\_CODE, EMP\_NAME,DESIG\_CODE, SEX, ADDRESS, CITY, STATE, PIN,BASIC,JN\_DATE) VALUES("00019","Supriyo Das","00005", 'M', "Okhla", "New Delhi", "New Delhi", "110020", 500000,'2014-08-01');

5) select \* from EMP where DEPT\_CODE is NULL;

1. select \* from EMP where BASIC=0.00;
2. select \* from EMP where BASIC is NULL;
3. Now, the best part about group or aggregate function that it ignores null value.
4. select avg(BASIC) from EMP;

Now, current average is 1487500.000000.

1. update EMP SET BASIC=0 where BASIC IS NULL;
2. select avg(BASIC) from EMP;

Now, current average is 1322222.222222. Why this difference?

Average means =total basic/total no of person? Now, when zero is not set, AVG function omits the null rows as well as those rows from the row count. That’s why, previous average basic was high.

1. TO delete the rows with unassigned basic\_code:  
     
   DELETE from EMP where DEPT\_CODE is NULL;
2. select UPPER(EMP\_NAME) as EMP\_NAME, BASIC from EMP ORDER BY DEPT\_CODE ASC;
3. Find the employees who have joined after 1st January 1990.Now, this is going to be a little tough. Why, Because, JN\_DATE’s datatype is

Date. So, 1st January, 1990 should be written as 1990-01-01.

1. Find, how many employees have joined in the month of January?

Now, this is a good question.

select EMP\_NAME from EMP where JN\_DATE LIKE '%-01-%';

1. Find Minimum and maximum basic.  
     
   For just finding,   
     
   select MIN(BASIC) from EMP & select MAX(BASIC) from EMP;  
     
   However, if you want to display record:

select \* from EMP where BASIC >= ALL(select BASIC from EMP);

And,   
  
select \* from EMP where BASIC <= ALL(select BASIC from EMP);

(But, time complexity becomes O(n2))  
  
We can make it O(n). (or, 2\*O(n) but 2O(n) is considered as O(n) after all)

select \* from EMP where BASIC=(select MAX(BASIC) from EMP);

And,

select \* from EMP where BASIC=(select MIN(BASIC) from EMP);

1. Find how many Female employees are there?  
     
   select COUNT(\*) as FEMALE\_COUNT from EMP WHERE SEX='F';
2. UPDATE EMP set CITY:=UPPER(CITY);
3. select count(DISTINCT CITY) from EMP;