

DBMS - Assignment No 02

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Roll No: 31410

Topic: Employee Schema

Queries:

Part A. Design and Develop SQL DDL statements which demonstrate the use of SQL objects such as Table, View, Index, Sequence, Synonym, different constraints etc.

DDL Commands To Create Table:

1. Create Table Department

```
mysql> use te31410_db;
Database changed
mysql> create table departments(
    -> dept_id int primary key auto_increment,
    -> dept_name varchar(45),
    -> dept_loc varchar(45));
Query OK, 0 rows affected (0.23 sec)
```

```
mysql> describe departments;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| dept_id    | int           | NO   | PRI | NULL    | auto_increment |
| dept_name  | varchar(45)   | YES  |     | NULL    |                |
| dept_loc   | varchar(45)   | YES  |     | NULL    |                |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.07 sec)

mysql>
```

2. Create Table Employees:

```
mysql> create table employees(
-> emp_id int primary key auto_increment,
-> dept_id int,
-> emp_fname varchar(45),
-> emp_lname varchar(45),
-> emp_position varchar(45),
-> emp_join_date date,
-> constraint fk_dept_id1 foreign key(dept_id)
-> references departments(dept_id));
Query OK, 0 rows affected (0.10 sec)
```

Output

```
mysql> describe employees;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| emp_id     | int           | NO   | PRI | NULL    | auto_increment |
| dept_id    | int           | YES  | MUL | NULL    |                 |
| emp_fname  | varchar(45)   | YES  |     | NULL    |                 |
| emp_lname  | varchar(45)   | YES  |     | NULL    |                 |
| emp_position | varchar(45)   | YES  |     | NULL    |                 |
| emp_join_date | date         | YES  |     | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.01 sec)
```

3. Create Table Projects:

```
31410 - Ayush Bulbule × + v
mysql> create table projects(
-> proj_id int primary key auto_increment,
-> dept_id int,
-> proj_name varchar(255),
-> proj_loc varchar(45),
-> proj_cost int,
-> proj_year int,
-> constraint fk_dept_id2 foreign key(dept_id)
-> references departments(dept_id));
Query OK, 0 rows affected (0.09 sec)

mysql>
```

```
31410 - Ayush Bulbule × + v
mysql> describe projects;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| proj_id    | int           | NO   | PRI | NULL    | auto_increment |
| dept_id    | int           | YES  | MUL | NULL    |                |
| proj_name  | varchar(255)  | YES  |     | NULL    |                |
| proj_loc   | varchar(45)   | YES  |     | NULL    |                |
| proj_cost  | int           | YES  |     | NULL    |                |
| proj_year  | int           | YES  |     | NULL    |                |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql>
```

```
MySQL 8.0 Command Line C x + v
mysql> insert into departments(dept_name, dept_loc) values
-> ('Computer','Pune'),
-> ('IT','Banglore'),
-> ('Electronics','Mumbai'),
-> ('Mechanical','Nagpur'),
-> ('Textile','Nashik');
Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
MySQL 8.0 Command Line C x + v
+-----+-----+-----+
| dept_id | dept_name | dept_loc |
+-----+-----+-----+
|      1 | Computer  | Pune     |
|      2 | IT        | Bangalore|
|      3 | Electronics| Mumbai   |
|      4 | Mechanical| Nagpur   |
|      5 | Textile   | Nashik   |
+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> |
```

Table:

```
Ayush Bulbule MySQL x + v
mysql> select * from employees;
+-----+-----+-----+-----+-----+-----+-----+
| emp_id | emp_fname | emp_lname | emp_position | emp_join_date | dept_id | emp_salary |
+-----+-----+-----+-----+-----+-----+-----+
|      1 | Ayush     | Bulbule   | Manager      | 2002-06-24    |      1 | 2400000    |
+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> |
```

```
Ayush Bulbule MySQL
mysql> select * from employees;
+-----+-----+-----+-----+-----+-----+
| emp_id | emp_fname | emp_lname | emp_position | emp_join_date | dept_id | emp_salary |
+-----+-----+-----+-----+-----+-----+
| 1 | Ayush | Bulbule | Manager | 2002-06-24 | 1 | 2400000 |
| 2 | Durvesh | Chopade | Manager | 2002-06-12 | 2 | 2700000 |
| 3 | Pranay | Chavhan | Manager | 2000-06-02 | 3 | 2800000 |
| 4 | Om | Panchwate | Manager | 2000-07-02 | 3 | 2600000 |
| 5 | Karan | Sharma | Manager | 2001-07-04 | 1 | 2600000 |
| 6 | Yash | Gaur | Assistant | 2020-05-05 | 1 | 2300000 |
| 7 | Ganesh | Chopade | SDE | 2002-06-12 | 2 | 2700000 |
| 8 | Virat | Joshi | SDE | 2002-06-10 | 3 | 2400000 |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

View:

```
Ayush Bulbule MySQL
mysql> select emp_id, emp_lname, emp_salary from employees;
+-----+-----+-----+
| emp_id | emp_lname | emp_salary |
+-----+-----+-----+
| 1 | Bulbule | 2400000 |
| 2 | Chopade | 2700000 |
| 3 | Chavhan | 2800000 |
| 4 | Panchwate | 2600000 |
| 5 | Sharma | 2600000 |
| 6 | Gaur | 2300000 |
| 7 | Chopade | 2700000 |
| 8 | Joshi | 2400000 |
+-----+-----+-----+
8 rows in set (0.00 sec)

mysql> |
```

CONCAT

```
Ayush Bulbule MySQL x + v
mysql> select emp_id, concat(emp_fname, emp_lname) as emp_name, emp_position from employees;
+-----+-----+-----+
| emp_id | emp_name | emp_position |
+-----+-----+-----+
| 1 | AyushBulbule | Manager |
| 2 | DurveshChopade | Manager |
| 3 | PranayChavhan | Manager |
| 4 | OmPanchwate | Manager |
| 5 | KaranSharma | Manager |
| 6 | YashGaur | Assistant |
| 7 | GaneshChopade | SDE |
| 8 | ViratJoshi | SDE |
+-----+-----+-----+
8 rows in set (0.00 sec)

mysql> |
```

Index

```
Ayush Bulbule MySQL x + v
mysql> create index idx_emp_fname on employees(emp_fname);
Query OK, 0 rows affected (0.07 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> select * from employees;
+-----+-----+-----+-----+-----+-----+-----+
| emp_id | emp_fname | emp_lname | emp_position | emp_join_date | dept_id | emp_salary |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Ayush | Bulbule | Manager | 2002-06-24 | 1 | 2400000 |
| 2 | Durvesh | Chopade | Manager | 2002-06-12 | 2 | 2700000 |
| 3 | Pranay | Chavhan | Manager | 2000-06-02 | 3 | 2800000 |
| 4 | Om | Panchwate | Manager | 2000-07-02 | 3 | 2600000 |
| 5 | Karan | Sharma | Manager | 2001-07-04 | 1 | 2600000 |
| 6 | Yash | Gaur | Assistant | 2020-05-05 | 1 | 230000 |
| 7 | Ganesh | Chopade | SDE | 2002-06-12 | 2 | 2700000 |
| 8 | Virat | Joshi | SDE | 2002-06-10 | 3 | 2400000 |
+-----+-----+-----+-----+-----+-----+-----+
|
```

Various Constraints:

```
Ayush Bulbule MySQL x + v
mysql> alter table employees drop constraint fk_dept_id1;
Query OK, 0 rows affected (0.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> |
```

Foreign Key Constraint with on delete cascade

```
Ayush Bulbule MySQL x + v
mysql> alter table employees add constraint fk_dept_id1 foreign key(dept_id)
references departments(dept_id) on delete cascade;
Query OK, 8 rows affected (0.07 sec)
Records: 8 Duplicates: 0 Warnings: 0
```

Aliases:

```
Ayush Bulbule MySQL x + v
mysql> select emp_id, emp_fname as emp_name, emp_salary as salary from employ
ees;
+-----+-----+-----+
| emp_id | emp_name | salary |
+-----+-----+-----+
| 1 | Ayush | 2400000 |
| 2 | Durvesh | 2700000 |
| 3 | Pranay | 2800000 |
| 4 | Om | 2600000 |
| 5 | Karan | 2600000 |
| 6 | Yash | 230000 |
| 7 | Ganesh | 2700000 |
| 8 | Virat | 2400000 |
+-----+-----+-----+
8 rows in set (0.00 sec)

mysql> |
```

Part B:

B. Insert at least 10 records in the Employee table and insert other tables accordingly.

```
mysql> insert into employees (dept_id, emp_fname, emp_lname, emp_position, emp_join_date) values
-> (4, 'Ajey', 'Jain', 'SrTester', '2023/05/21'),
-> (3, 'Ayush', 'Joshi', 'Manager', '2023/03/21'),
-> (1, 'Ajinkya', 'Birla', 'HOD', '2023/01/22'),
-> (1, 'Ojas', 'Deshmukh', 'TestAnalyst', '2023/01/03'),
-> (2, 'Jayesh', 'Kamad', 'Marketing', '2023/01/03'),
-> (2, 'Piyush', 'Shridhar', 'Operations', '2023/02/09');
Query OK, 6 rows affected, 6 warnings (0.05 sec)
Records: 6  Duplicates: 0  Warnings: 6

mysql>
```

```
mysql> select * from employees;
+-----+-----+-----+-----+-----+-----+
| emp_id | dept_id | emp_fname | emp_lname | emp_position | emp_join_date |
+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Ayush | Bulbule | Manager | 2023-07-12 |
| 4 | 2 | Piyush | Karad | SalesMan | 2023-07-05 |
| 5 | 3 | Pawan | Kumar | Tester | 2023-06-01 |
| 6 | 2 | Karan | Sharma | Analyst | 2023-02-17 |
| 7 | 4 | Ajey | Jain | SrTester | 2023-05-21 |
| 8 | 3 | Ayush | Joshi | Manager | 2023-03-21 |
| 9 | 1 | Ajinkya | Birla | HOD | 2023-01-22 |
| 10 | 1 | Ojas | Deshmukh | TestAnalyst | 2023-01-03 |
| 11 | 2 | Jayesh | Kamad | Marketing | 2023-01-03 |
| 12 | 2 | Piyush | Shridhar | Operations | 2023-02-09 |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Result And Query:


```

mysql> insert into employees (dept_id, emp_fname, emp_lname, emp_position, emp_join_date, emp_salary) values
-> (1, 'Ayush', 'Bulbule', 'SDE', '2023/01/20', 80000),
-> (2, 'Pawan', 'Kumar', 'DEV', '2023/01/30', 90000),
-> (3, 'Arnav', 'Deshmukh', 'Head', '2022/02/04', 90000),
-> (4, 'Sumit', 'Joshi', 'Manager', '2022/02/04', 90000),
-> (5, 'Kishor', 'Jain', 'Manager', '2022/02/04', 80000),
-> (4, 'Arnav', 'Deshmukh', 'Head', '2022/02/04', 90000),
-> (3, 'Yash', 'Jain', 'Head', '2022/02/04', 80000),
-> (2, 'Pawan', 'Kumar', 'DEV', '2023/01/30', 90000),
-> (1, 'Amar', 'Desai', 'SDE', '2003/01/20', 80000);
Query OK, 9 rows affected, 9 warnings (0.01 sec)
Records: 9 Duplicates: 0 Warnings: 9

mysql> select * from employees;
+-----+-----+-----+-----+-----+-----+-----+
| emp_id | dept_id | emp_fname | emp_lname | emp_position | emp_join_date | emp_salary |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Ayush | Bulbule | SDE | 2023-01-20 | 80000 |
| 2 | 2 | Pawan | Kumar | DEV | 2023-01-30 | 90000 |
| 3 | 3 | Arnav | Deshmukh | Head | 2022-02-04 | 90000 |
| 4 | 4 | Sumit | Joshi | Manager | 2022-02-04 | 90000 |
| 5 | 5 | Kishor | Jain | Manager | 2022-02-04 | 80000 |
| 6 | 4 | Arnav | Deshmukh | Head | 2022-02-04 | 90000 |
| 7 | 3 | Yash | Jain | Head | 2022-02-04 | 80000 |
| 8 | 2 | Pawan | Kumar | DEV | 2023-01-30 | 90000 |
| 9 | 1 | Amar | Desai | SDE | 2003-01-20 | 80000 |
+-----+-----+-----+-----+-----+-----+-----+

```

2. Display all Employee details with Department 'Computer' and 'IT' and Employee first name starting with 'a' or 'h'.

```

1 row in set (0.01 sec)

mysql> select * from employees as e join departments as d on e.dept_id=d.dept_id where d.dept_name='Computer' and emp_fname like 'a%';
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| emp_id | dept_id | emp_fname | emp_lname | emp_position | emp_join_date | emp_salary | dept_id | dept_name | dept_loc |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Ayush | Bulbule | SDE | 2023-01-20 | 80000 | 1 | Computer | Pune |
| 9 | 1 | Amar | Desai | SDE | 2003-01-20 | 80000 | 1 | Computer | Pune |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>

```

3. Lists the number of different Employee Positions.

```

mysql> select count(distinct emp_positions) from employees;
ERROR 1054 (42S22): Unknown column 'emp_positions' in 'field list'
mysql> select count(distinct emp_position) from employees;
+-----+
| count(distinct emp_position) |
+-----+
| 4 |
+-----+
1 row in set (0.01 sec)

```

4. Give 10% increase in Salary of the Employee whose Joining Date before 2020.

```

mysql> update employees set emp_salary = emp_salary*1.1 where emp_join_date<'2020-01-01';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> select * from employees;
+-----+-----+-----+-----+-----+-----+-----+
| emp_id | dept_id | emp_fname | emp_lname | emp_position | emp_join_date | emp_salary |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Ayush | Bulbule | SDE | 2023-01-20 | 8000 |
| 2 | 2 | Pawan | Kumar | DEV | 2023-01-30 | 9000 |
| 3 | 3 | Arnav | Deshmukh | Head | 2022-02-04 | 9000 |
| 4 | 4 | Sumit | Joshi | Manager | 2022-02-04 | 9000 |
| 5 | 5 | Kishor | Jain | Manager | 2022-02-04 | 8000 |
| 6 | 4 | Arnav | Deshmukh | Head | 2022-02-04 | 9000 |
| 7 | 3 | Yash | Jain | Head | 2022-02-04 | 8000 |
| 8 | 2 | Pawan | Kumar | DEV | 2023-01-30 | 9000 |
| 9 | 1 | Amar | Desai | SDE | 2003-01-20 | 8800 |
+-----+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)

mysql>

```

5. Delete Department details which location is 'Mumbai'

```

mysql> delete from departments where dept_loc='Mumbai';
Query OK, 1 row affected (0.01 sec)

mysql> select * from employees;
+-----+-----+-----+-----+-----+-----+-----+
| emp_id | dept_id | emp_fname | emp_lname | emp_position | emp_join_date | emp_salary |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Ayush | Bulbule | SDE | 2023-01-20 | 8000 |
| 2 | 2 | Pawan | Kumar | DEV | 2023-01-30 | 9000 |
| 4 | 4 | Sumit | Joshi | Manager | 2022-02-04 | 9000 |
| 5 | 5 | Kishor | Jain | Manager | 2022-02-04 | 8000 |
| 6 | 4 | Arnav | Deshmukh | Head | 2022-02-04 | 9000 |
| 8 | 2 | Pawan | Kumar | DEV | 2023-01-30 | 9000 |
| 9 | 1 | Amar | Desai | SDE | 2003-01-20 | 8800 |
+-----+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql>

```

```
MySQL - Ayush Bulbule x + v
+-----+
| 6 | 4 | Arnav | Deshmukh | Head | 2022-02-04 | 9000 |
| 8 | 2 | Pawan | Kumar | DEV | 2023-01-30 | 9000 |
| 9 | 1 | Amar | Desai | SDE | 2003-01-20 | 8800 |
+-----+
7 rows in set (0.00 sec)

mysql> select * from departments;
+-----+
| dept_id | dept_name | dept_loc |
+-----+
| 1 | Computer | Pune |
| 2 | IT | Bangalore |
| 4 | Mechanical | Nagpur |
| 5 | Textile | Nashik |
+-----+
4 rows in set (0.00 sec)

mysql> |
```

6. Find the names of Projects with location 'pune' .

Table Data:

```
MySQL - Ayush Bulbule x + v
mysql>
mysql> select * from projects;
+-----+
| proj_id | dept_id | proj_name | proj_loc | proj_cost | proj_year |
+-----+
| 23 | 1 | EMS | Mumbai | 3000000 | 2023 |
| 24 | 2 | Hotel System | Pune | 7000000 | 2022 |
| 25 | 5 | E-Commerce Platform | Delhi | 6000000 | 2022 |
| 26 | 4 | AI Chatbot Integration | Bengaluru | 8500000 | 2023 |
| 27 | 2 | Inventory Management System | Hyderabad | 3000000 | 2024 |
| 28 | 1 | Online Learning Portal | Chennai | 4500000 | 2022 |
| 29 | 4 | Social Media Analytics | Kolkata | 7500000 | 2025 |
| 30 | 4 | Mobile Banking App | Ahmedabad | 4000000 | 2021 |
| 31 | 2 | Cloud-Based CRM | Jaipur | 5500000 | 2024 |
| 32 | 5 | IoT Home Automation | Lucknow | 7000000 | 2023 |
| 33 | 1 | E-Healthcare System | Indore | 6500000 | 2022 |
| 34 | 5 | Blockchain Payment Platform | Patna | 8000000 | 2021 |
+-----+
12 rows in set (0.00 sec)
```

Query:

```
MySQL - Ayush Bulbule x + v
mysql> select * from projects where proj_loc = 'Pune';
+-----+
| proj_id | dept_id | proj_name | proj_loc | proj_cost | proj_year |
+-----+
| 24 | 2 | Hotel System | Pune | 7000000 | 2022 |
+-----+
1 row in set (0.00 sec)

mysql> |
```

7. Find the project having cost in between 100000 to 500000.

```
mysql> select * from projects where proj_cost between 1000000 and 5000000;
+-----+-----+-----+-----+-----+-----+
| proj_id | dept_id | proj_name | proj_loc | proj_cost | proj_year |
+-----+-----+-----+-----+-----+-----+
| 23 | 1 | EMS | Mumbai | 3000000 | 2023 |
| 27 | 2 | Inventory Management System | Hyderabad | 3000000 | 2024 |
| 28 | 1 | OnLine Learning Portal | Chennai | 4500000 | 2022 |
| 30 | 4 | Mobile Banking App | Ahmedabad | 4000000 | 2021 |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> |
```

8. Find the project having maximum price and find average of Project cost

```
mysql> select avg(proj_costs) from projects;
ERROR 1054 (42S22): Unknown column 'proj_costs' in 'field list'
mysql> select avg(proj_cost) as avg_cost from projects;
+-----+
| avg_cost |
+-----+
| 5875000.0000 |
+-----+
1 row in set (0.01 sec)

mysql> |
```

9. Display all employees with Emp_id and Emp name in decreasing order of Emp_Iname

```
MySQL - Ayush Bulbule x + v
mysql> select emp_id, concat(emp_fname, ' ', emp_lname) as full_name from employees order by emp_lname desc;

+-----+-----+
| emp_id | full_name |
+-----+-----+
| 2      | Pawan Kumar |
| 8      | Pawan Kumar |
| 4      | Sumit Joshi |
| 5      | Kishor Jain |
| 6      | Arnav Deshmukh |
| 9      | Amar Desai |
| 1      | Ayush Bulbule |
+-----+-----+
7 rows in set (0.00 sec)

mysql> |
```

10. Display Proj_name, Proj_location, Proj_cost of all project started in 2004, 2005, 2007

```
MySQL - Ayush Bulbule x + v
mysql> select proj_name, proj_loc, proj_cost from projects where proj_year in (2004, 2005, 2007);

+-----+-----+-----+
| proj_name | proj_loc | proj_cost |
+-----+-----+-----+
| EMS       | Mumbai  | 3000000   |
| Hotel System | Pune    | 7000000   |
| E-Commerce Platform | Delhi   | 6000000   |
| AI Chatbot Integration | Bengaluru | 8500000   |
| Online Learning Portal | Chennai  | 4500000   |
| Mobile Banking App | Ahmedabad | 4000000   |
| IoT Home Automation | Lucknow  | 7000000   |
| E-Healthcare System | Indore   | 6500000   |
| Blockchain Payment Platform | Patna    | 8000000   |
+-----+-----+-----+
9 rows in set (0.00 sec)

mysql> |
```

@31410 Ayush Bulbule