SHAIK SIRAJ (217Z1A1254) **DATE:22-05-2024**

DAY -03 DBMS QUERIES AND MANGODB ASSIGNMENT:

TABLE CREATIONS:

DEPARTMENT TABLE:

mysql> create table department (dept_id int auto_increment primary key,dept_name varchar(30) NOT NULL);

```
mysql> desc department;
+-----------+-------------+------+-----+---------+----------------+
| Field     | Type        | Null | Key | Default | Extra          |
+-----------+-------------+------+-----+---------+----------------+
| dept_id   | int         | NO   | PRI | NULL    | auto_increment |
| dept_name | varchar(30) | NO   |     | NULL    |                |
+-----------+-------------+------+-----+---------+----------------+
2 rows in set (0.02 sec)
```

YEAR TABLE:

mysql> create table year(std_id int auto_increment primary key,year varchar(10) NOT NULL);

```
mysql> desc year;
+--------+------------+------+-----+---------+----------------+
| Field  | Type       | Null | Key | Default | Extra          |
+--------+------------+------+-----+---------+----------------+
| std_id | int        | NO   | PRI | NULL    | auto_increment |
| year   | varchar(10) | NO   |     | NULL    |                |
+--------+------------+------+-----+---------+----------------+
2 rows in set (0.01 sec)
```

STUDENT TABLE:

mysql> create table student(std_id int auto_increment primary key,f_name varchar(30) NOT NULL,l_name varchar(30) NOT NULL,dept_id int,year int, FOREIGN KEY (dept_id) references department (dept_id));

```
mysql> desc student;
+---------+-------------+------+-----+---------+----------------+
| Field   | Type        | Null | Key | Default | Extra          |
+---------+-------------+------+-----+---------+----------------+
| std_id  | int         | NO   | PRI | NULL    | auto_increment |
| f_name  | varchar(30) | NO   |     | NULL    |                |
| l_name  | varchar(30) | NO   |     | NULL    |                |
| dept_id | int         | YES  | MUL | NULL    |                |
| year    | int         | YES  |     | NULL    |                |
+---------+-------------+------+-----+---------+----------------+
5 rows in set (0.01 sec)
```

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INSERTING VALUES TO DEPARTMENT TABLE:

mysql> insert into department(dept_name)values ('CSE'),('IT'),('ECE'),('CE'),('ME');

```
mysql> select *from department;
+---------+-----------+
| dept_id | dept_name |
+---------+-----------+
|       1 | CSE       |
|       2 | IT        |
|       3 | ECE       |
|       4 | CE        |
|       5 | ME        |
+---------+-----------+
5 rows in set (0.01 sec)
```

INSERTING VALUES TO YEAR TABLE:

mysql> insert into year (year) values ('first'),('second'),('third'),('fourth');

```
mysql> select *from year;
+--------+--------+
| std_id | year   |
+--------+--------+
|      1 | first  |
|      2 | second |
|      3 | third  |
|      4 | fourth |
+--------+--------+
4 rows in set (0.00 sec)
```

INSERTING VALUES TO STUDENTTABLE:

mysql> insert into student (f_name, l_name, dept_id, year)
VALUES('shaik','siraj',1,1),('palakurla','sujith',1,2),('rapaka','anish',1,3),('pittala','saichandra',1,4),('motu','hemanth',2,1),('ch','akshith',2,2),('nanam','pranay',2,3),('raavi','sadvik',2,4),('megha','satya',3,1),('duddu','anil',3,2),('pisati','prathuysha',3,3),('sri','gayatri',3,4),('n','preethika',4,1),('kushi','verma',4,2),('k','ruchitha',4,3),('sri','vyshnavi',4,4),('andhe','vishnu',5,1),('s','nikitha',5,2),('t','manusha',5,3),('t','sravan',5,4);

```
mysql> select * from student;
+--------+-----------+------------+---------+------+
| std_id | f_name    | l_name     | dept_id | year |
+--------+-----------+------------+---------+------+
|      1 | shaik     | siraj      |       1 |    1 |
|      2 | palakurla | sujith     |       1 |    2 |
|      3 | rapaka    | anish      |       1 |    3 |
|      4 | pittala   | saichandra |       1 |    4 |
|      5 | motu      | hemanth    |       2 |    1 |
|      6 | ch        | akshith    |       2 |    2 |
|      7 | nanam     | pranay     |       2 |    3 |
|      8 | raavi     | sadvik     |       2 |    4 |
|      9 | megha     | satya      |       3 |    1 |
|     10 | duddu     | anil       |       3 |    2 |
|     11 | pisati    | prathuysha |       3 |    3 |
|     12 | sri       | gayatri    |       3 |    4 |
|     13 | n         | preethika  |       4 |    1 |
|     14 | kushi     | verma      |       4 |    2 |
|     15 | k         | ruchitha   |       4 |    3 |
|     16 | sri       | vyshnavi   |       4 |    4 |
|     17 | andhe     | vishnu     |       5 |    1 |
|     18 | s         | nikitha    |       5 |    2 |
|     19 | t         | manusha    |       5 |    3 |
|     20 | t         | sravan     |       5 |    4 |
+--------+-----------+------------+---------+------+
20 rows in set (0.00 sec)
```

QUERIES:

Display students from the CSE department:

mysql> SELECT * FROM student WHERE dept_id = (SELECT dept_id FROM department WHERE dept_name='CSE');

```
mysql> SELECT * FROM student WHERE dept_id = (SELECT dept_id FROM department WHERE dept_name='CSE');
+--------+-----------+------------+---------+------+
| std_id | f_name    | l_name     | dept_id | year |
+--------+-----------+------------+---------+------+
|      1 | shaik     | siraj      |       1 |    1 |
|      2 | palakurla | sujith     |       1 |    2 |
|      3 | rapaka    | anish      |       1 |    3 |
|      4 | pittala   | saichandra |       1 |    4 |
+--------+-----------+------------+---------+------+
4 rows in set (0.01 sec)
```

Display only dept_name using the students table:

mysql> SELECT DISTINCT d.dept_name from student s JOIN department d ON s.dept_id=d.dept_id;

```
mysql> SELECT DISTINCT d.dept_name from student s JOIN department d ON s.dept_id=d.dept_id;
+------------+
| dept_name  |
+------------+
| CSE        |
| IT         |
| ECE        |
| CE         |
| ME         |
+------------+
```

Display students sorted by department and first name:

mysql> select s.f_name,s.l_name,d.dept_name from student s join department d on s.dept_id=d.dept_id order by d.dept_name,s.f_name;

```
mysql> select s.f_name,s.l_name,d.dept_name from student s join department d on s.dept_id=d.dept_id order by d.dept_name,s.f_name;
+-----------+------------+-----------+
| f_name    | l_name     | dept_name |
+-----------+------------+-----------+
| k         | ruchitha   | CE        |
| kushi     | verma      | CE        |
| n         | preethika  | CE        |
| sri       | vyshnavi   | CE        |
| palakurla | sujith     | CSE       |
| pittala   | saichandra | CSE       |
| rapaka    | anish      | CSE       |
| shaik     | siraj      | CSE       |
| duddu     | anil       | ECE       |
| megha     | satya      | ECE       |
| pisati    | prathuysha | ECE       |
| sri       | gayatri    | ECE       |
| ch        | akshith    | IT        |
| motu      | hemanth    | IT        |
| nanam     | pranay     | IT        |
| raavi     | sadvik     | IT        |
| andhe     | vishnu     | ME        |
| s         | nikitha    | ME        |
| t         | manusha    | ME        |
| t         | sravan     | ME        |
+-----------+------------+-----------+
20 rows in set (0.01 sec)
```

• Translating MySQL to MongoDB

- CREATE TABLE department (dept_id INT AUTO_INCREMENT PRIMARY KEY, dept_name VARCHAR(50) NOT NULL);
- CREATE TABLE year (year_id INT AUTO_INCREMENT PRIMARY KEY, year_name VARCHAR(10) NOT NULL);
- CREATE TABLE students (student_id INT AUTO_INCREMENT PRIMARY KEY, f irst_name VARCHAR(50) NOT NULL, last_name VARCHAR(50) NOT NULL, dept_id INT, year_id INT, FOREIGN KEY (dept_id) REFERENCES department(dept_id), FOREIGN KEY (year_id) REFERENCES year(year_id));

To create a similar structure in MongoDB, you can embed the related documents or use references.

1.Using Embedding (not the best for normalized data but can be simpler):

{ "_id": ObjectId(),

"first_name": "Shaik",

"last_name": "siraj",

"department": {

"dept_id": 1,

"dept_name": "CSE"

},

"year": {

"year_id": 1,

"year_name": "First"

} }

2.Using References (more similar to normalized SQL structure):

Department Collection { "_id": ObjectId(),

"dept_id": 1,

"dept_name": "CSE"

}

Year Collection {

"_id": ObjectId(),

"year_id": 1,

"year_name": "First"

}

Students Collection {

"_id": ObjectId(),

```
"first_name": "shaik",
 "last_name": "siraj",
 "dept_id": 1,
"year_id": 1
}
```

Insert 5 Students for Each Department

This can be done similarly by inserting documents into the students collection with references to dept_id and year_id.

MongoDB Queries

1.Display students from the CSE department:

```
db.students.find({ dept_id: db.department.findOne({ dept_name: "CSE" }).dept_id });
```

2.Display only dept_name using students table

```
db.students.aggregate([
 {
 $lookup: {
 from: "department",
 localField: "dept_id",
 foreignField: "dept_id",
 as: "department"
}
 },
{ $unwind: "$department"
 },
{
 $group:
{ _id: "$department.dept_name"
}
 },
{
 $project: {
 _id: 0,
```

```
 dept_name: "$_id"
 } } ]);
```

3.Display students sorted by department and first name:

```
 db.students.aggregate([
{
 $lookup: {
 from: "department",
 localField: "dept_id",
foreignField: "dept_id",
 as: "department"
 } },
 {
 $unwind: "$department"
},
{
 $sort: {
"department.dept_name": 1,
"first_name": 1
} },
 {
 $project: {
 _id: 0,
first_name: 1,
 last_name: 1,
 dept_name: "$department.dept_name"
} } ]);
```