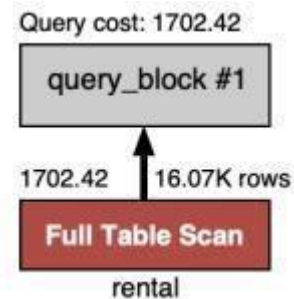
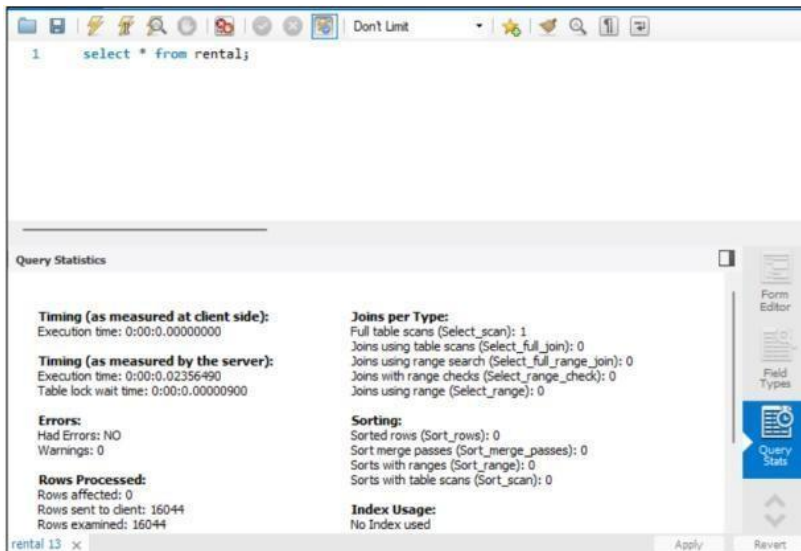
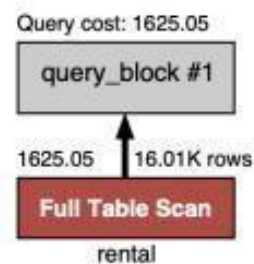
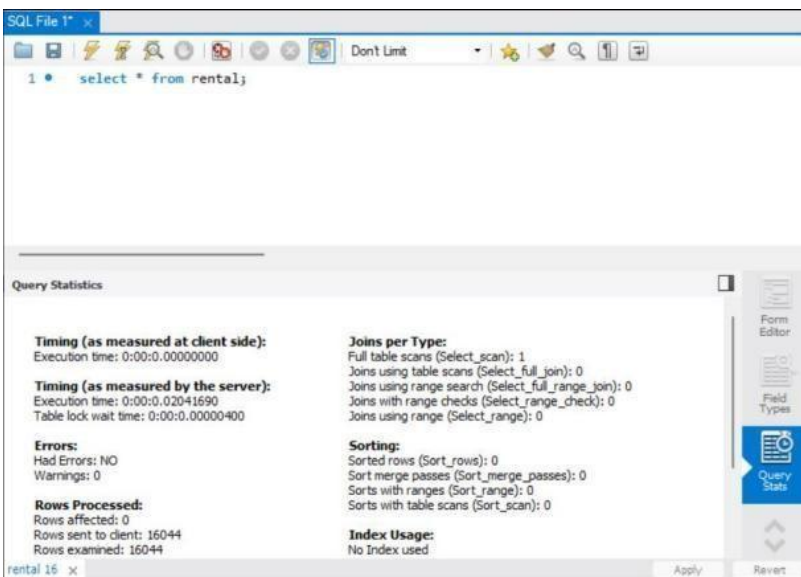


EXPERIMENT 2

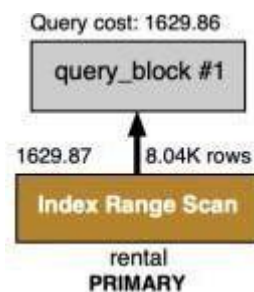
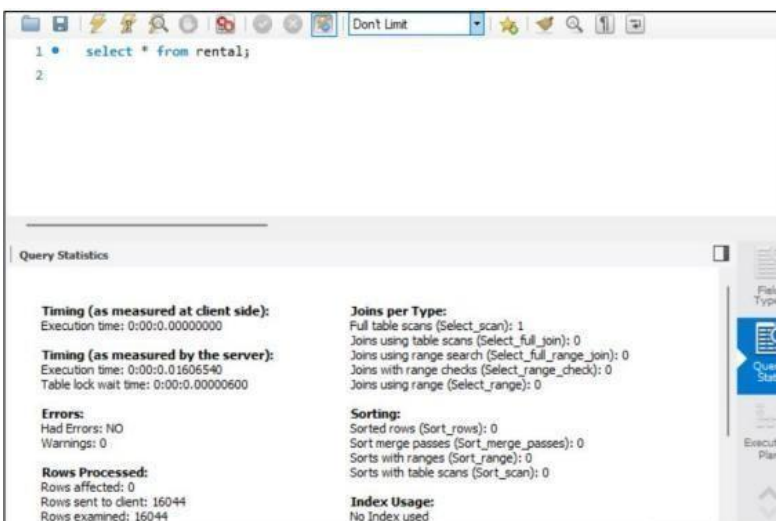
Select Query :



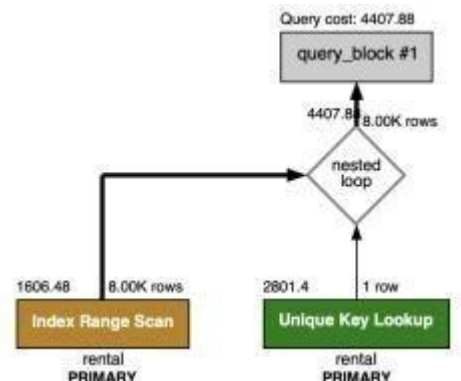
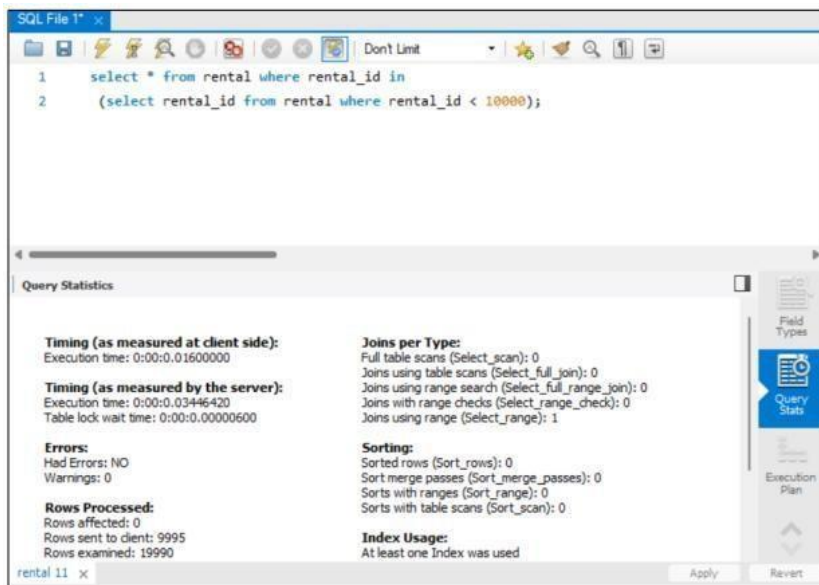
AFTER TABLE OPTIMIZATION:



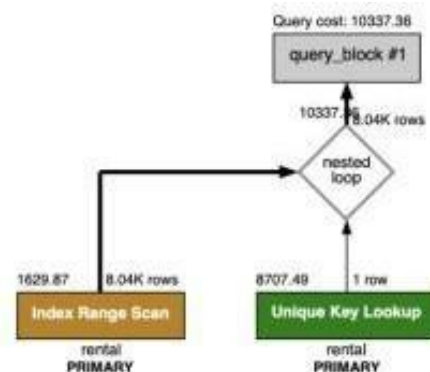
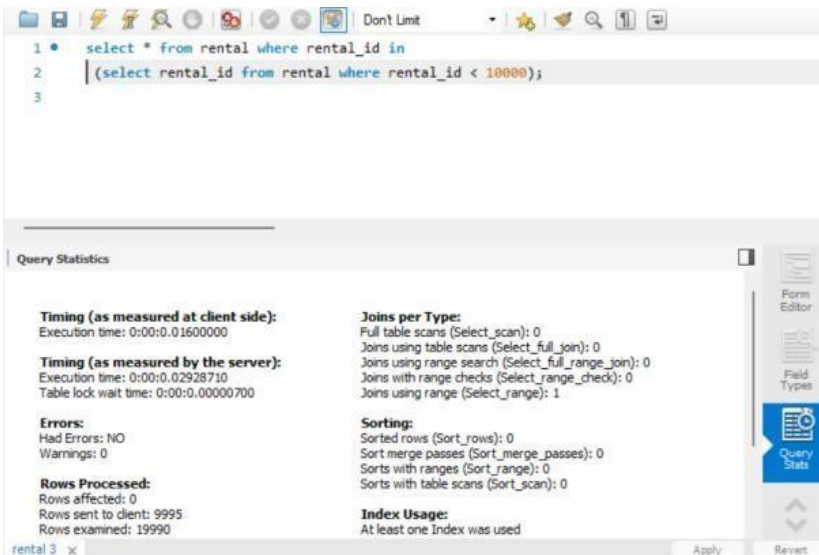
AFTER INDEX OPTIMIZATION :



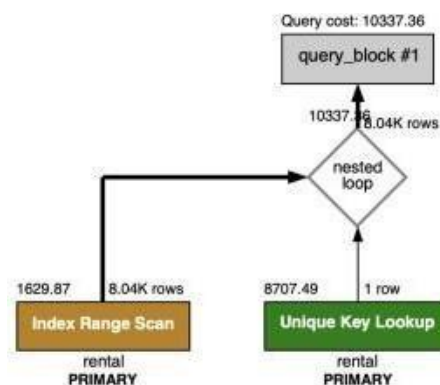
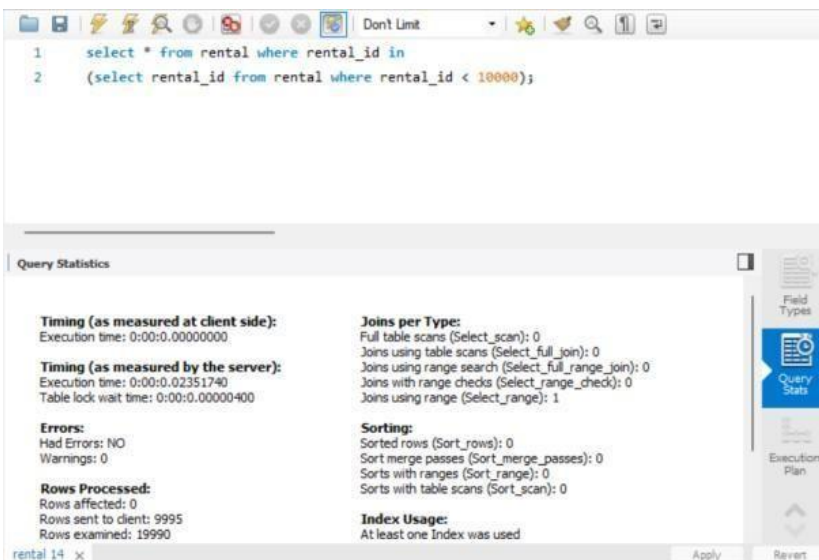
NESTED QUERY



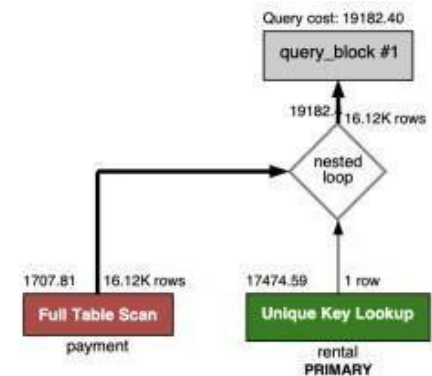
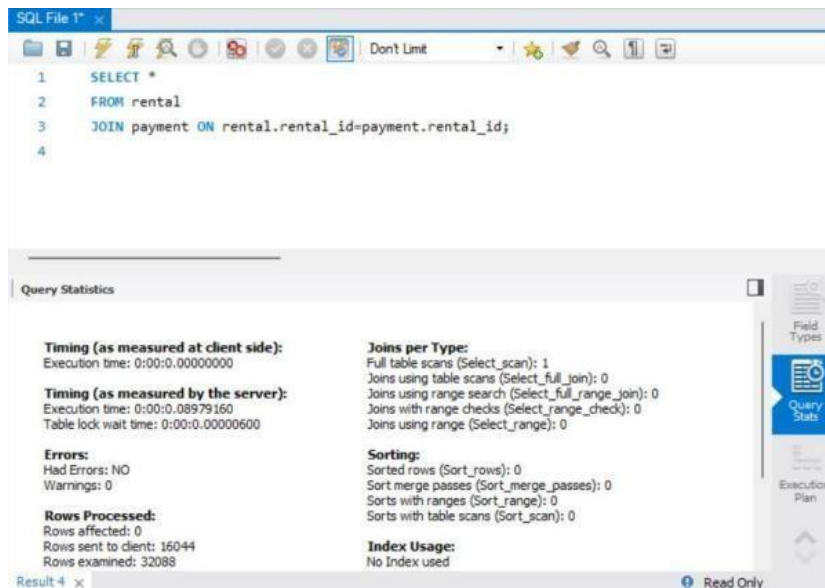
AFTER TABLE OPTIMIZATION:



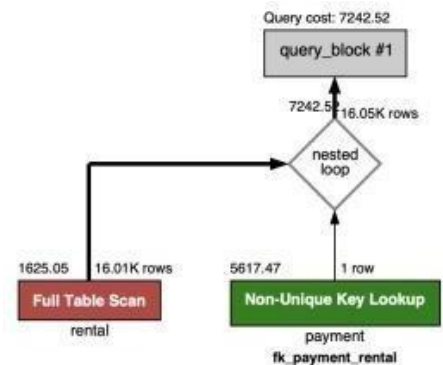
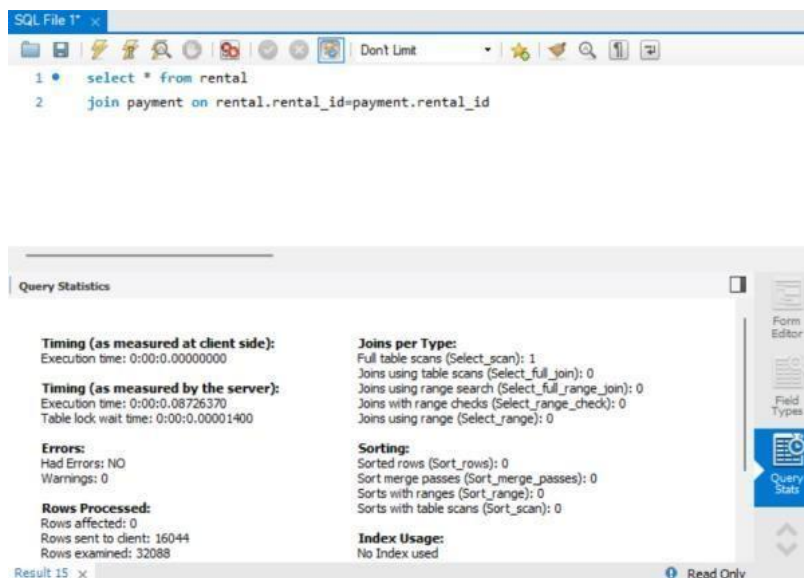
AFTER INDEX OPTIMIZATION:



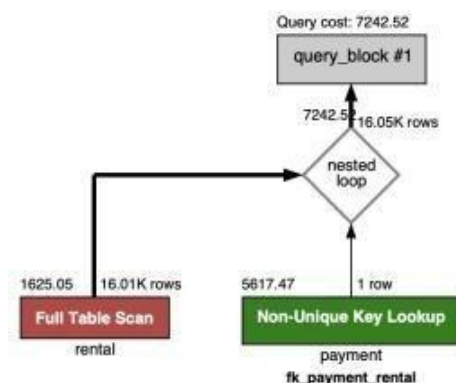
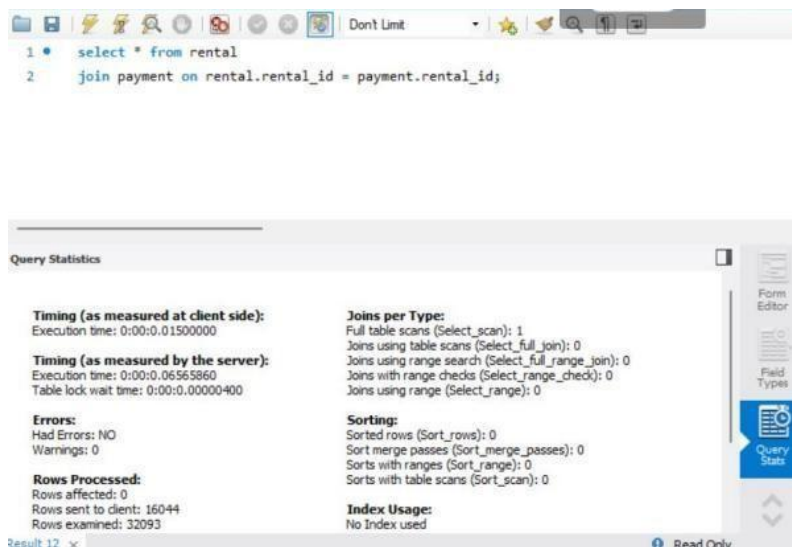
JOIN QUERY:



AFTER TABLE OPTIMIZATION:



AFTER INDEX OPTIMIZATION:



EXPERIMENT 3

Result grid :

```
4 • select country.name,countrylanguage.language from country , countrylanguage
5 • where country.code=countrylanguage.countrycode;
6 • select * from countrylanguage
```

Result Grid

ID	Name	CountryCode	District	Population
240	Cuiabá	BRA	Mato Grosso	453813
303	Várzea Grande	BRA	Mato Grosso	214435
345	Rondonópolis	BRA	Mato Grosso	155115
NULL	NULL	NULL	NULL	NULL

Form Editor

Field Types

Query Stats

Form Editor :

```
4 • select country.name,countrylanguage.language from country , countrylanguage
5 • where country.code=countrylanguage.countrycode;
6 • select * from countrylanguage
```

Form Editor

ID: 240

Name: Cuiabá

CountryCode: BRA

District: Mato Grosso

Population: 453813

Result Grid

Form Editor

Field Types

Query Stats

Field Types :

```
4 • select country.name,countrylanguage.language from country , countrylanguage
5 • where country.code=countrylanguage.countrycode;
6 • select * from countrylanguage
```

Field Types

Field	Schema	Table	Type	Character Set
1 ID	world	city	INT	binary
2 Name	world	city	CHAR	utf8mb4
3 CountryCode	world	city	CHAR	utf8mb4
4 District	world	city	CHAR	utf8mb4
5 Population	world	city	INT	binary

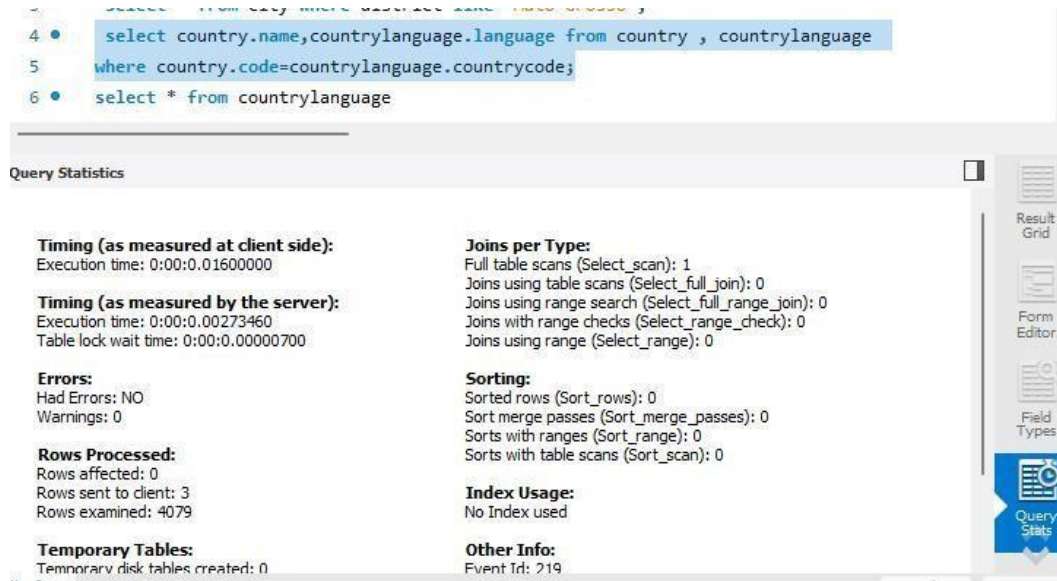
Result Grid

Form Editor

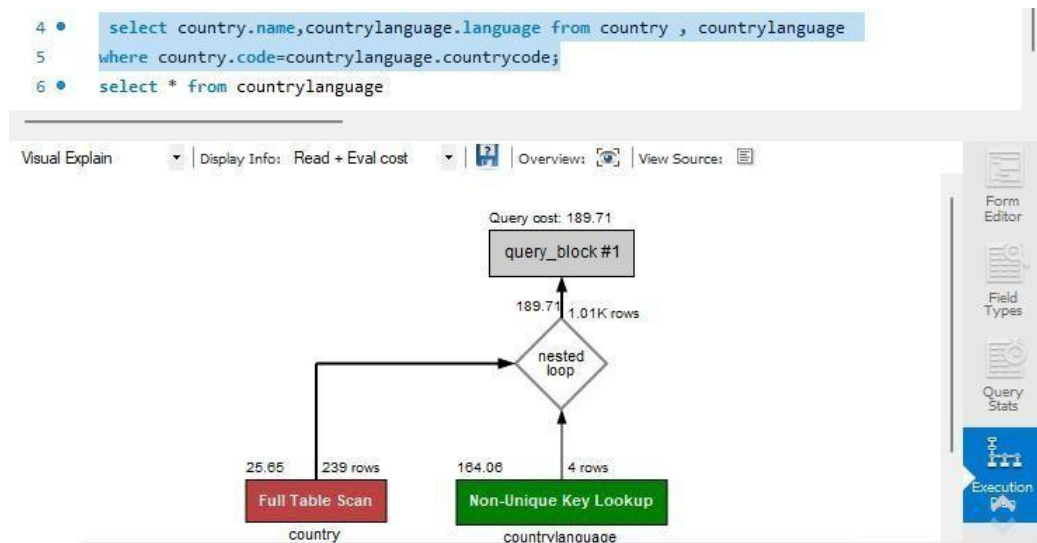
Field Types

Query Stats

Query Stats :



Excution Plan :



EXPERIMENT 4

B-Tree :

Code -

```
import time
from BTrees.IIBTree import IIBTree

t = IIBTree()
insertion_start_time = time.time()
for i in range(1000):
    t.update({i: 2*i})

insertion_end_time = time.time()

print(f"Insertion time: {round((insertion_end_time-insertion_start_time)*1000,3)} milliseconds")
key = int(input("enter key: "))

search_start_time = time.time()

if t.has_key(key):
    print(t[key])

search_end_time = time.time()
print(f"Search time: {round((insertion_end_time-insertion_start_time)*1000,3)} milliseconds")
```

Output :

```
(D:\SEM-5\ADBMS\EXPERIMENTS\adbmsenv) D:\SEM-5\ADBMS\EXPERIMENTS>python bTree.py
Insertion time : 56.872 milliseconds
enter key : 19101
38202
Search time : 15.343 milliseconds
```

B+ Tree :

Code :

```
from bplustree import BPlusTree
import time

tree = BPlusTree('D:/Data.db', order=50)

for i in range(1000):
    data = (2*i).to_bytes(10, 'big')
    tree[i] = data

data = int(input("Enter key : "))

start_time = time.time()
byte_data = tree.get(data)
end_time = time.time()

int_data = int.from_bytes(byte_data, 'big')
print("Value : ", int_data)
print("Time taken : ", (end_time-start_time)*1000, " ms")
```

Output :

```
(D:\SEM-5\ADBMS\EXPERIMENTS\adbmsenv) D:\SEM-5\ADBMS\EXPERIMENTS>python bPlusTree.py
['5']
Not found
Search time : 0.00786783530635653 ms
```


EXPERIMENT 5

Code :

```
use exp5;
```

```
DROP TABLE IF EXISTS employees;
```

```
CREATE TABLE employees ( id INT NOT NULL PRIMARY KEY,  
fname VARCHAR(30), lname VARCHAR(30),  
hired DATE NOT NULL DEFAULT  
'1970-01-01', separated DATE NOT NULL DEFAULT  
'9999-12-31', job_code INT NOT NULL, store_id INT NOT NULL  
);
```

```
INSERT INTO employees (id, fname, lname, hired, separated, job_code, store_id) VALUES (1, "Devansh",  
"Mehta", "1971-01-01", "970-01-01", 10, 50);
```

```
INSERT INTO employees (id, fname, lname, hired, separated, job_code, store_id) VALUES (2, "Niraj",  
"Mestry", "1972-01-01", "999-01-01", 11, 25);
```

```
INSERT INTO employees (id, fname, lname, hired, separated, job_code, store_id) VALUES (3, "Rachit",  
"Mody", "1969-01-01", "950-01-01", 9, 12);
```

```
INSERT INTO employees (id, fname, lname, hired, separated, job_code, store_id) VALUES (4, "Deep",  
"Prajapati", "1968-01-01", "980-01-01", 50, 50);
```


Range:

```
ALTER TABLE employees PARTITION BY RANGE (store_id) ( PARTITION p0 VALUES  
    LESS THAN (6),  
    PARTITION p1 VALUES LESS THAN (11),  
    PARTITION p2 VALUES LESS THAN (16),  
    PARTITION p3 VALUES LESS THAN MAXVALUE  
);
```

```
SELECT * FROM employees PARTITION (p2);
```



The screenshot shows a database query result grid with the following columns: id, fname, lname, hired, separated, job_code, and store_id. The grid displays two rows of data.

	id	fname	lname	hired	separated	job_code	store_id
▶	3	Rachit	Mody	1969-01-01	0950-01-01	9	12
	5	Harsh	Goh	1973-01-01	0970-01-01	7	12

List:

```
ALTER TABLE employees PARTITION BY LIST (job_code) ( PARTITION p_admin  
    VALUES IN (10, 15),  
    PARTITION p_manager VALUES IN (11, 17, 18),  
    PARTITION p_staff VALUES IN (5, 7),  
    PARTITION p_other VALUES IN (9, 50)  
);
```

```
SELECT * FROM employees PARTITION (p_staff);
```



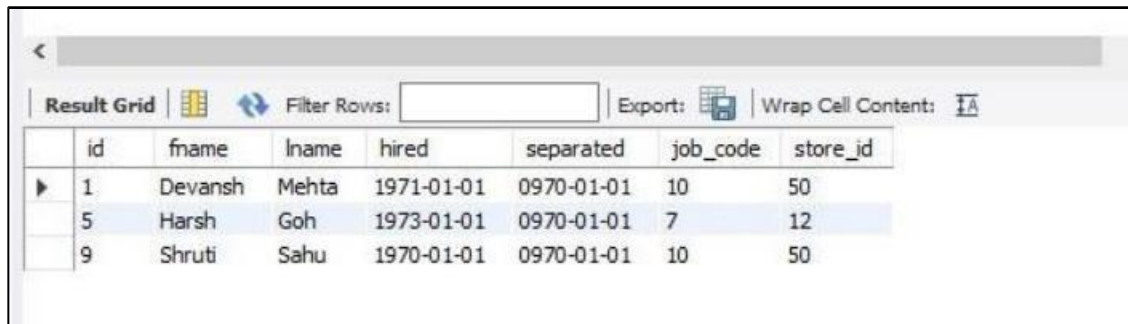
The screenshot shows a database query result grid with the following columns: id, fname, lname, hired, separated, job_code, and store_id. The grid displays two rows of data.

	id	fname	lname	hired	separated	job_code	store_id
▶	5	Harsh	Goh	1973-01-01	0970-01-01	7	12
	7	Prayag	Mitaliya	1975-01-01	0970-01-01	5	5

Hash:

ALTER TABLE employees PARTITION BY HASH (id) PARTITIONS 4;

SELECT * FROM employees partition (p1);



The screenshot shows a database query result grid with the following columns: id, fname, lname, hired, separated, job_code, and store_id. The data is displayed in three rows, corresponding to the three partitions of the employees table. The first row (id 1) is in partition p1, the second row (id 5) is in partition p2, and the third row (id 9) is in partition p3. The fourth row (id 9) is also in partition p3, as the first partition (p1) only contains one row.

	id	fname	lname	hired	separated	job_code	store_id
▶	1	Devansh	Mehta	1971-01-01	0970-01-01	10	50
	5	Harsh	Goh	1973-01-01	0970-01-01	7	12
	9	Shruti	Sahu	1970-01-01	0970-01-01	10	50

EXPERIMENT 6

Client Code :

```
#Client

import socket
host = "127.0.0.1"
port = 8000
log = ""
over = 0
msg = ""
while True:
    try:
        s = socket.socket()
        s.connect((host,port))
        data = s.recv(1024).decode().upper()
        print(f"COORDINATOR: {data}")
        if data == "ABORT":
            msg = "OK"
            print("TRANSACTION ABORTED!")
            print("END OF TRANSACTION \n final log is: ",log+" "+data)
            over = 1
        elif data == "COMPLETE":
            msg = "OK"
            print("TRANSACTION COMPLETED!")
            print("END OF TRANSACTION \n final log is: ",log+" "+data)
            over = 1
        else:
            data = input("SYSTEM STATUS: ").upper()
            s.send(data.encode())
            log += data+" "
        if over == 1:
            break
    except:
        print("END OF TRANSACTION \n final log is: ",log+" "+data)
        break
```

Server Code :

```
import socket
host = "127.0.0.1"
port = 8000

s = socket.socket()
s.bind((host,port))
s.listen(3)
print("SERVER IS RUNNING")

msg = "PREPARE"
log=msg

over = 0
while True:
    replies = []
    print(f"COORDINATOR: {msg.upper()}")
    for i in range(3):
        c,addr = s.accept()
        c.send(msg.encode())
        data = c.recv(1024).decode()
        replies.append(data.upper())
```

```

    print(f"Subordinator {i} {adrr} : {data.upper()}")
if over == 1:
    break
if "ABORT" in replies:
    msg = "ABORT"
    print(f"TRANSACTION LOG : {log} {msg}")
    over = 1
elif "SUCCESS" in replies:
    msg = "COMPLETE"
    print(f"TRANSACTION LOG : {log} {msg}")
    over = 1
else:
    msg = "COMMIT"
    log += " "+msg

```

Output

Case 1 :

The screenshot shows a VS Code terminal window with the 'TERMINAL' tab selected. The left pane shows the output of a Python script, and the right pane shows the command prompt where the script was executed.

```

(D:\SEM-5\ADBMS\EXPERIMENTS\adbmsenv) D:\SEM-5\ADBMS\EXPERIMENTS>python client.py
COORDINATOR: PREPARE
SYSTEM STATUS: SUCCESS
COORDINATOR: PREPARE
SYSTEM STATUS: SUCCESS
COORDINATOR: PREPARE
SYSTEM STATUS: SUCCESS
COORDINATOR: COMPLETE
TRANSACTION COMPLETED!
END OF TRANSACTION
final log is: SUCCESS    COMPLETE

(D:\SEM-5\ADBMS\EXPERIMENTS\adbmsenv) D:\SEM-5\ADBMS\EXPERIMENTS>

```

```

PS D:\SEM-5\ADBMS\EXPERIMENTS> conda activate ./adbmsenv
PS D:\SEM-5\ADBMS\EXPERIMENTS> python server.py
SERVER IS RUNNING
COORDINATOR: PREPARE
Subordinator 0 ('127.0.0.1', 52847) : SUCCESS
Subordinator 1 ('127.0.0.1', 52851) :
Subordinator 2 ('127.0.0.1', 52859) :
TRANSACTION LOG : PREPARE COMPLETE
COORDINATOR: COMPLETE
Subordinator 0 ('127.0.0.1', 52860) :

```

Case 2 :

The screenshot shows a VS Code terminal window with the 'TERMINAL' tab selected. The left pane shows the output of a Python script, and the right pane shows the command prompt where the script was executed.

```

(D:\SEM-5\ADBMS\EXPERIMENTS\adbmsenv) D:\SEM-5\ADBMS\EXPERIMENTS>python client.py
COORDINATOR: PREPARE
SYSTEM STATUS: SUCCESS
COORDINATOR: PREPARE
SYSTEM STATUS: SUCCESS
COORDINATOR: PREPARE
SYSTEM STATUS: ABORT
COORDINATOR: ABORT
TRANSACTION ABORTED!
END OF TRANSACTION
final log is: SUCCESS SUCCESS ABORT  ABORT

(D:\SEM-5\ADBMS\EXPERIMENTS\adbmsenv) D:\SEM-5\ADBMS\EXPERIMENTS>

```

```

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/
PSWindows

PS D:\SEM-5\ADBMS\EXPERIMENTS> python server.py
SERVER IS RUNNING
COORDINATOR: PREPARE
Subordinator 0 ('127.0.0.1', 52880) : SUCCESS
Subordinator 1 ('127.0.0.1', 52882) : SUCCESS
Subordinator 2 ('127.0.0.1', 52883) : ABORT
TRANSACTION LOG : PREPARE ABORT
COORDINATOR: ABORT
Subordinator 0 ('127.0.0.1', 52884) :

```


EXPERIMENT 7

Code :

```
<!DOCTYPE html>
<html>

<head>
  <style>
    table, th, td {
      border: 1px solid black;
      border-collapse: collapse;
      margin: 5px;
    }

    th, td
    { padding:
      5px;
    }

    input {
      margin-bottom: 5px;
    }
  </style>
</head>

<body>
  <button type="button" onclick="loadXMLDoc()">View Information about the Books</button>
  <br><br>
  <div>
    <label>Search a title</label>
    <input type="text" name="title" onchange="performQuery(event)" />
  </div>
  <div>
    <label>Search an author</label>
    <input type="text" name="author" onchange="performQuery(event)" />
  </div>
  <div>
    <label>Search a genre</label>
    <input type="text" name="genre" onchange="performQuery(event)" />
  </div>
  <div>
    <label>Search a price</label>
    <input type="text" name="price" onchange="performQuery(event)" />
  </div>
  <div>
    <label>Search a Publish Date</label>
    <input type="text" name="publish_date" onchange="performQuery(event)" />
  </div>
  <table id="data-table"></table>
  <h2>Result</h2>
  <table id="query-table"></table>

  <script>
    var arrayObj = [];

    function loadXMLDoc() {
      var xmlhttp = new XMLHttpRequest();
      xmlhttp.onreadystatechange = function () {
        if (this.readyState == 4 fifi this.status == 200)
          { myFunction(this);
        }
      };
      xmlhttp.open("GET", "books.xml", true);
```

```
.send();
```

```
function myFunction(xml)
{
    var i;
    var xmlDoc = xml.responseXML;
    var table = "<tr><th>Title</th><th>Author</th><th>Genre</th><th>Price</th><th>Publish
Date</th><th>Description</th></tr>";
    var x = xmlDoc.getElementsByTagName("book");
    N

    for (i = 0; i < x.length; i++)
    {
        table += "<tr><td>" +
        x[i].getElementsByTagName("title")[0].childNodes[0].nodeValue + "</td><td>" +
        x[i].getElementsByTagName("author")[0].childNodes[0].nodeValue + "</td><td>" +
        x[i].getElementsByTagName("genre")[0].childNodes[0].nodeValue + "</td><td>" +
        x[i].getElementsByTagName("price")[0].childNodes[0].nodeValue + "</td><td>" +
        x[i].getElementsByTagName("publish_date")[0].childNodes[0].nodeValue + "</td><td>" +
        x[i].getElementsByTagName("description")[0].childNodes[0].nodeValue + "</td></tr>";
        N
        N

        arrayObj.push({
            title: x[i].getElementsByTagName("title")[0].childNodes[0].nodeValue,
            author: x[i].getElementsByTagName("author")[0].childNodes[0].nodeValue,
            genre: x[i].getElementsByTagName("genre")[0].childNodes[0].nodeValue,
            price: x[i].getElementsByTagName("price")[0].childNodes[0].nodeValue,
            publish_date: x[i].getElementsByTagName("publish_date")[0].childNodes[0].nodeValue,
            description: x[i].getElementsByTagName("description")[0].childNodes[0].nodeValue
        });
        N
        N
    }

    document.getElementById("data-table").innerHTML = table;
    console.log(arrayObj);
}

function performQuery(event) {
    var res = arrayObj.find((obj) =>
        obj[event.target.name].toLowerCase().includes(event.target.value.toLowerCase()));
    console.log(res);

    if (res) {
        var queryTable = "<tr><th>Title</th><th>Author</th><th>Genre</th><th>Price</th><th>Publish
Date</th><th>Description</th></tr>";
        queryTable += "<tr><td>" + res.title +
            "</td><td>" + res.author +
            "</td><td>" + res.genre + "</td><td>" + res.price + "</td><td>" + res.publish_date + "</td><td>" +
            res.description + "</td></tr>";
        document.getElementById("query-table").innerHTML = queryTable;
    } else {
        alert("o result found!");
    }
    N
}

</script>
</body>
</html>
```

XML Used:

```
<?xml version="1.0"?>
<catalog>
  <!-- Book 1 -->
  <book id="bk101">
    <author>Gambardella, Matthew</author>
    <title>XML Developer's Guide</title>
    <genre>Computer</genre>
    <price>44.95</price>
    <publish_date>2000-10-01</publish_date>
    <description>An in-depth look at creating applications with XML.</description>
  </book>

  <!-- Book 2 -->
  <book id="bk102">
    <author>Ralls, Kim</author>
    <title>Midnight Rain</title>
    <genre>Fantasy</genre>
    <price>5.95</price>
    <publish_date>2000-12-16</publish_date>
    <description>A former architect battles corporate zombies, an evil sorceress, and her own childhood to become queen of the world.</description>
  </book>

  <!-- Book 3 -->
  <book id="bk103">
    <author>Corets, Eva</author>
    <title>Maeve Ascendant</title>
    <genre>Fantasy</genre>
    <price>5.95</price>
    <publish_date>2000-11-17</publish_date>
    <description>After the collapse of a nanotechnology society in England, the young survivors lay the foundation for a new society.</description>
  </book>

  <!-- Book 4 -->
  <book id="bk104">
    <author>Corets, Eva</author>
    <title>Oberon's Legacy</title>
    <genre>Fantasy</genre>
    <price>5.95</price>
    <publish_date>2001-03-10</publish_date>
    <description>In post-apocalypse England, the mysterious agent known only as Oberon helps to create a new life for the inhabitants of London. Sequel to Maeve Ascendant.</description>
  </book>

  <!-- Book 5 -->
  <book id="bk105">
    <author>Corets, Eva</author>
    <title>The Sundered Grail</title>
    <genre>Fantasy</genre>
    <price>5.95</price>
    <publish_date>2001-09-10</publish_date>
    <description>The two daughters of Maeve, half-sisters, battle one another for control of England. Sequel to Oberon's Legacy.</description>
  </book>

  <!-- Book 6 -->
  <book id="bk106">
    <author>Randall, Cynthia</author>
    <title>Jover Birds</title>
    <genre>Romance</genre>
    <price>4.95</price>
    <publish_date>2000-09-02</publish_date>
```

```
<description>When Carla meets Paul at an ornithology conference, tempers fly as feathers get
ruffled.</description>
</book>

<!-- Book 7 -->
<book id="bk107">
  <author>Thurman, Paula</author>
  <title>Splish Splash</title>
  <genre>Romance</genre>
  <price>4.95</price>
  <publish_date>2000-11-02</publish_date>
  <description>A deep-sea diver finds true love twenty thousand leagues beneath the sea.</description>
</book>

</catalog>
```

Output :

View Information about the Books

Search a title

grail

Search an author

eva

Search a genre

Search a price

Search a Publish Date

Title	Author	Genre	Price	Publish Date	Description
XML Developer's Guide	Gambardella, Matthew	Computer	44.95	2000-10-01	An in-depth look at creating applications with XML.
Midnight Rain	Rails, Kim	Fantasy	5.95	2000-12-16	A former architect battles corporate zombies, an evil sorceress, and her own childhood to become queen of the world.
Maeve Ascendant	Corets, Eva	Fantasy	5.95	2000-11-17	After the collapse of a nanotechnology society in England, the young survivors lay the foundation for a new society.
Oberon's Legacy	Corets, Eva	Fantasy	5.95	2001-03-10	In post-apocalypse England, the mysterious agent known only as Oberon helps to create a new life for the inhabitants of London. Sequel to Maeve Ascendant.
The Sundered Grail	Corets, Eva	Fantasy	5.95	2001-09-10	The two daughters of Maeve, half-sisters, battle one another for control of England. Sequel to Oberon's Legacy.
Lover Birds	Randall, Cynthia	Romance	4.95	2000-09-02	When Carla meets Paul at an ornithology conference, tempers fly as feathers get ruffled.
Splish Splash	Thurman, Paula	Romance	4.95	2000-11-02	A deep-sea diver finds true love twenty thousand leagues beneath the sea.

Result

Title	Author	Genre	Price	Publish Date	Description
The Sundered Grail	Corets, Eva	Fantasy	5.95	2001-09-10	The two daughters of Maeve, half-sisters, battle one another for control of England. Sequel to Oberon's Legacy.

View Information about the Books

Search a title

birds

Search an author

Search a genre

Search a price

Search a Publish Date

Title	Author	Genre	Price	Publish Date	Description
XML Developer's Guide	Gambardella, Matthew	Computer	44.95	2000-10-01	An in-depth look at creating applications with XML.
Midnight Rain	Rails, Kim	Fantasy	5.95	2000-12-16	A former architect battles corporate zombies, an evil sorceress, and her own childhood to become queen of the world.
Maeve Ascendant	Corets, Eva	Fantasy	5.95	2000-11-17	After the collapse of a nanotechnology society in England, the young survivors lay the foundation for a new society.
Oberon's Legacy	Corets, Eva	Fantasy	5.95	2001-03-10	In post-apocalypse England, the mysterious agent known only as Oberon helps to create a new life for the inhabitants of London. Sequel to Maeve Ascendant.
The Sundered Grail	Corets, Eva	Fantasy	5.95	2001-09-10	The two daughters of Maeve, half-sisters, battle one another for control of England. Sequel to Oberon's Legacy.
Lover Birds	Randall, Cynthia	Romance	4.95	2000-09-02	When Carla meets Paul at an ornithology conference, tempers fly as feathers get ruffled.
Splish Splash	Thurman, Paula	Romance	4.95	2000-11-02	A deep-sea diver finds true love twenty thousand leagues beneath the sea.

Result

Title	Author	Genre	Price	Publish Date	Description
Lover Birds	Randall, Cynthia	Romance	4.95	2000-09-02	When Carla meets Paul at an ornithology conference, tempers fly as feathers get ruffled.

EXPERIMENT 8

Code :

Implementing Queries- Selecting a DB :

```
test> use reddit;  
switched to db reddit  
reddit> |
```

Showing all Databases :

```
reddit> show dbs;  
admin    100.00 KiB  
config   60.00 KiB  
local    72.00 KiB  
reddit    8.00 KiB  
reddit> |
```

Dropping a Database :

```
reddit> use twitter;  
switched to db twitter  
twitter> db.dropDatabase();  
{ ok: 1, dropped: 'twitter' }  
twitter> |
```

Creating a collection :

```
reddit> db.createCollection("posts");  
{ ok: 1 }  
reddit> |
```

Dropping a collection :

```
reddit> db.comments.drop();  
true  
reddit> |
```

Inserting multiple documents :

```
reddit> db.posts.insertMany([ { title: "Funny Meme", image: "https://wikipedia.com/troll_face", votes: 123, posted_by: "lca_tejas" }, { title: "Damn: reddit", text: "Your reddit is damn: reddit", votes: 12, posted_by: "meetp90" } ]);
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("6389fde4880a8e67b5db4a3b"),
    '1': ObjectId("6389fde4880a8e67b5db4a3c")
  }
}
reddit> |
```

Updating documents :

```
reddit> db.posts.update({ posted_by: "meetp90" }, { $set: { title: "How to get stuff back!" } });
DeprecationWarning: Collection.update() is deprecated. Use updateOne, updateMany, or bulkWrite.
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
reddit> db.posts.find();
[
  {
    _id: ObjectId("6389fde4880a8e67b5db4a3b"),
    title: 'Funny Meme',
    image: 'https://wikipedia.com/troll_face',
    votes: 123,
    posted_by: 'lca_tejas'
  },
  {
    _id: ObjectId("6389fde4880a8e67b5db4a3c"),
    title: 'How to get stuff back!',
    text: 'Your reddit is damn: reddit',
    votes: 12,
    posted_by: 'meetp90'
  }
]
```

Querying the documents :

```
reddit> db.posts.find({ votes: { $gt: 1000 }, image: { $exists: true } });
[
  {
    _id: ObjectId("638a0009880a8e67b5db4a3f"),
    title: 'Soggy cat',
    image: 'https://preview.redd.it/cxjsjx27g7j81.jpg?auto=webp&s=d09b1a5e785562455e3661a186087e398c0546d0',
    votes: 33213,
    posted_by: 'lca_tejas'
  }
]
reddit> db.posts.find({ votes: { $gt: 1000 }, text: { $exists: true }, posted_by: 'meetp90' });
[
  {
    _id: ObjectId("6389ff86880a8e67b5db4a3e"),
    title: 'Emojis bad',
    text: 'Emojis bad, please laugh',
    votes: 1212,
    posted_by: 'meetp90'
  },
  {
    _id: ObjectId("638a0009880a8e67b5db4a40"),
    title: 'We did it',
    text: 'We did it reddit! We broke the stock markets around the world and dilluted all the world currency!',
    votes: 12134,
    posted_by: 'meetp90'
  }
]
```

Deleting documents :

```
reddit> db.posts.remove({ votes: { $lt: 100 } });
DeprecationWarning: Collection.remove() is deprecated. Use deleteOne, deleteMany, findOneAndDelete, or bulkWrite.
{ acknowledged: true, deletedCount: 1 }
```


Importing json :

```
# mongoimport --db reddit --collection posts --jsonArray --authenticationDatabase admin -u root -p pass@123 --file ./posts.json
2022-12-02T14:42:23.925+0000    connected to: mongod://localhost/
2022-12-02T14:42:23.932+0000    3 document(s) imported successfully. 0 document(s) failed to import.
# |
```

```
{
  "_id": ObjectId("638a0ecfecbf380e4d3fafc3"),
  "title": 'Hass lo guys, very funny',
  "image": 'https://www.google.com/url?sa=i&url=https%3A%2F%2Fknowyourmeme.com%2Fmemes%2Fwalter-white-breaks-down&psig=A0vVaw3-rrXAvEUTQcLpJMPUNmWy&ust=1670075371754000&source=images&cd=vfe&ved=0CA0QjRxqFwoTCNDpt0aJ2_sCFQAAAAAdAAAAABAD',
  "votes": 2234,
  "posted_by": 'kunaljx86'
},
{
  "_id": ObjectId("638a0ecfecbf380e4d3fafc4"),
  "title": 'No idea',
  "text": 'What is this post even',
  "votes": 3234,
  "posted_by": 'lca_tejas'
},
{
  "_id": ObjectId("638a0ecfecbf380e4d3fafc5"),
  "title": 'bruh!',
  "image": 'bruh sound effect (x100)',
  "votes": 22342,
  "posted_by": 'meetp90'
}
```

Exporting as json :

```
# mongoexport --db reddit --collection posts --out ./posts_db.json --authenticationDatabase admin -u root -p pass@123
2022-12-02T14:46:53.394+0000    connected to: mongod://localhost/
2022-12-02T14:46:53.402+0000    exported 8 records
```

```
# cat posts_db.json
{"_id":{"_id":"6389fde4880a8e67b5db4a3b"},"title":"Funny Meme","image":"https://wikipedia.com/troll_face","votes":123,"posted_by":"lca_tejas"}
{"_id":{"_id":"6389ff86880a8e67b5db4a3d"},"title":"Jharkhand is not real","text":"Jharkhand is not real guys. It is a popoganda tool","votes":3321,"posted_by":"lca_tejas"}
{"_id":{"_id":"6389ff86880a8e67b5db4a3e"},"title":"Emojis bad","text":"Emojis bad, please laugh","votes":1212,"posted_by":"meetp90"}
{"_id":{"_id":"638a0009880a8e67b5db4a3f"},"title":"Soggy cat","image":"https://preview.redd.it/cxjsjx27g7j81.jpg?auto=webp&s=d09b1a5e78556245e3661a186087e398c0546d0","votes":33213,"posted_by":"lca_tejas"}
{"_id":{"_id":"638a0009880a8e67b5db4a40"},"title":"We did it","text":"We did it reddit! We broke the stock markets around the world and diluted all the world currency!","votes":12134,"posted_by":"meetp90"}
{"_id":{"_id":"638a0ecfecbf380e4d3fafc3"},"title":"Hass lo guys, very funny","image":"https://www.google.com/url?sa=i&url=https%3A%2F%2Fknowyourmeme.com%2Fmemes%2Fwalter-white-breaks-down&psig=A0vVaw3-rrXAvEUTQcLpJMPUNmWy&ust=1670075371754000&source=images&cd=vfe&ved=0CA0QjRxqFwoTCNDpt0aJ2_sCFQAAAAAdAAAAABAD","votes":2234,"posted_by":"kunaljx86"}
{"_id":{"_id":"638a0ecfecbf380e4d3fafc4"},"title":"No idea","text":"What is this post even","votes":3234,"posted_by":"lca_tejas"}
{"_id":{"_id":"638a0ecfecbf380e4d3fafc5"},"title":"bruh!","image":"bruh sound effect (x100)","votes":22342,"posted_by":"meetp90"}
```


EXPERIMENT 9

Data:

```
mysql> select * from 2022_july;
```

start_date	start_time	distance	mode	confidence	Places
02-07-2022		18716	IN_PASSENGER_VEHICLE	MEDIUM	
06-07-2022	03:23:42	1669	MOTORCYCLING	LOW	
06-07-2022	03:35:46	11483	IN_TRAIN	LOW	
06-07-2022	03:58:13	1069	MOTORCYCLING	MEDIUM	
08-07-2022	03:11:39	461	MOTORCYCLING	LOW	
08-07-2022	03:26:15	1099	IN_PASSENGER_VEHICLE	LOW	
08-07-2022	03:42:42	7548	IN_TRAIN	MEDIUM	Anhad Misal
11-07-2022	03:48:22	1609	IN_BUS	MEDIUM	Kandivali Bus Station (W)
11-07-2022	04:11:17	9363	IN_TRAIN	MEDIUM	Agarkar Chowk
11-07-2022	04:39:15	2125	IN_SUBWAY	LOW	SAPMOHI BY MOKSHA & HIRAL
11-07-2022	04:48:18	896	IN_PASSENGER_VEHICLE	LOW	Trumpet Sky Lounge
11-07-2022	12:22:26	2972	IN_PASSENGER_VEHICLE	LOW	McDonald's
11-07-2022	12:48:32	9467	IN_TRAIN	MEDIUM	Kandivali Bus Depot
11-07-2022	13:10:00	2203	IN_PASSENGER_VEHICLE	LOW	State Bank of India
13-07-2022	03:19:59	905	WALKING	LOW	
13-07-2022	03:48:02	1896	IN_BUS	LOW	Kandivali Railway Station (W)
13-07-2022	04:04:12	9348	IN_TRAIN	MEDIUM	Agarkar Chowk / Pinky Cinema
13-07-2022	04:33:49	3270	IN_PASSENGER_VEHICLE	LOW	Lotus Business Park
13-07-2022	13:06:26	5297	IN_BUS	LOW	Villa Decor - Premium Bed, Bath & Mattresses Store
13-07-2022	13:44:17	11855	IN_TRAIN	LOW	Kandivali Station (W)
13-07-2022	14:15:27	1969	IN_PASSENGER_VEHICLE	MEDIUM	State Bank of India
14-07-2022	03:54:54	8949	IN_BUS	HIGH	
14-07-2022	04:39:02	578	WALKING	MEDIUM	UK Realty
14-07-2022	14:12:01	6005	IN_BUS	LOW	Yoko Sizzlers
14-07-2022	14:58:50	4087	UNKNOWN_ACTIVITY_TYPE	LOW	Xth Central Mall
15-07-2022	03:48:49	8500	IN_PASSENGER_VEHICLE	LOW	
15-07-2022	04:41:11	9105	IN_BUS	LOW	Rikā? - Terrace Bar & Grill
15-07-2022	14:15:09	5691	IN_BUS	MEDIUM	D Mart
15-07-2022	15:08:26	4933	IN_BUS	MEDIUM	La Pino'z Pizza Kandivali
16-07-2022	03:44:35	9838	IN_BUS	MEDIUM	Laxmi Industrial Colony
16-07-2022	13:08:07	2965	MOTORCYCLING	LOW	Andheri Station (W)
16-07-2022	13:32:44	9292	IN_TRAIN	MEDIUM	Kandivali West
16-07-2022	13:53:02	2874	IN_PASSENGER_VEHICLE	LOW	La Pino'z Pizza Kandivali
17-07-2022	08:38:08	880	MOTORCYCLING	LOW	Malad Industrial Estate
17-07-2022	10:23:08	1492	IN_PASSENGER_VEHICLE	LOW	Aadhar Center
17-07-2022	10:57:46	1294	MOTORCYCLING	MEDIUM	La Pino'z Pizza Kandivali
17-07-2022	11:38:53	5829	MOTORCYCLING	LOW	State Bank Of India ATM
18-07-2022	03:51:31	1292	IN_BUS	LOW	
18-07-2022	03:57:47	9400	IN_BUS	LOW	Anhad Misal

Queries :

- select * from 2022_july where start_time < '04:00:00';
- select * from 2022_july where distance > 10000;
- select * from 2022_july where Places = 'Doolally Taproom - Andheri';

Outputs :

Spatial :

```
mysql> select * from 2022_july where distance>10000;
```

start_date	start_time	distance	mode	confidence	Places
02-07-2022		18716	IN_PASSENGER_VEHICLE	MEDIUM	
06-07-2022	03:35:46	11483	IN_TRAIN	LOW	
13-07-2022	13:44:17	11855	IN_TRAIN	LOW	Kandivali Station (W)
19-07-2022	03:54:30	10085	IN_BUS	MEDIUM	Lotus Business Park
21-07-2022	18:59:35	41236	UNKNOWN_ACTIVITY_TYPE	LOW	Jay's Dosa & Paratha Center
23-07-2022	03:45:05	11590	IN_PASSENGER_VEHICLE	LOW	
24-07-2022	06:56:09	10674	MOTORCYCLING	LOW	Axis Bank ATM
25-07-2022	03:34:52	10629	IN_BUS	MEDIUM	Doolally Taproom - Andheri
26-07-2022	03:52:48	10072	IN_BUS	MEDIUM	Doolally Taproom - Andheri

```
9 rows in set (0.03 sec)
```

```
mysql> select * from 2022_july where Places="Doolally Taproom - Andheri";
```

start_date	start_time	distance	mode	confidence	Places
25-07-2022	03:34:52	10629	IN_BUS	MEDIUM	Doolally Taproom - Andheri
26-07-2022	03:52:48	10072	IN_BUS	MEDIUM	Doolally Taproom - Andheri
27-07-2022	03:48:55	9483	IN_BUS	LOW	Doolally Taproom - Andheri

```
3 rows in set (0.00 sec)
```

Temporal :

```
mysql> select * from 2022_july where start_time < "04:00:00";
```

start_date	start_time	distance	mode	confidence	Places
02-07-2022		18716	IN_PASSENGER_VEHICLE	MEDIUM	
06-07-2022	03:23:42	1669	MOTORCYCLING	LOW	
06-07-2022	03:35:46	11483	IN_TRAIN	LOW	
06-07-2022	03:58:13	1069	MOTORCYCLING	MEDIUM	
08-07-2022	03:11:39	461	MOTORCYCLING	LOW	
08-07-2022	03:26:15	1099	IN_PASSENGER_VEHICLE	LOW	
08-07-2022	03:42:42	7548	IN_TRAIN	MEDIUM	Anhad Misal
11-07-2022	03:48:22	1609	IN_BUS	MEDIUM	Kandivali Bus Station (W)
13-07-2022	03:19:59	905	WALKING	LOW	
13-07-2022	03:48:02	1896	IN_BUS	LOW	Kandivali Railway Station (W)
14-07-2022	03:54:54	8949	IN_BUS	HIGH	
15-07-2022	03:48:49	8500	IN_PASSENGER_VEHICLE	LOW	
16-07-2022	03:44:35	9838	IN_BUS	MEDIUM	Laxmi Industrial Colony
18-07-2022	03:51:31	1292	IN_BUS	LOW	
18-07-2022	03:57:47	9400	IN_BUS	LOW	Anhad Misal
19-07-2022	03:54:30	10085	IN_BUS	MEDIUM	Lotus Business Park
20-07-2022	03:32:29	1721	IN_BUS	MEDIUM	Bajaj Municipal School
20-07-2022	03:47:40	9487	IN_TRAIN	MEDIUM	Andheri Police Station
21-07-2022	03:46:02	8698	UNKNOWN_ACTIVITY_TYPE	LOW	Sun-n-Sand Hotel
23-07-2022	03:45:05	11590	IN_PASSENGER_VEHICLE	LOW	
25-07-2022	03:34:52	10629	IN_BUS	MEDIUM	Doolally Taproom - Andheri
26-07-2022	03:52:48	10072	IN_BUS	MEDIUM	Doolally Taproom - Andheri
27-07-2022	03:48:55	9483	IN_BUS	LOW	Doolally Taproom - Andheri
28-07-2022	03:29:48	9599	IN_BUS	MEDIUM	RikÅ? - Terrace Bar & Grill
29-07-2022	03:31:35	1948	MOTORCYCLING	LOW	Kandivali Bus Station (W)
29-07-2022	03:47:34	9579	IN_TRAIN	MEDIUM	

26 rows in set (0.00 sec)

