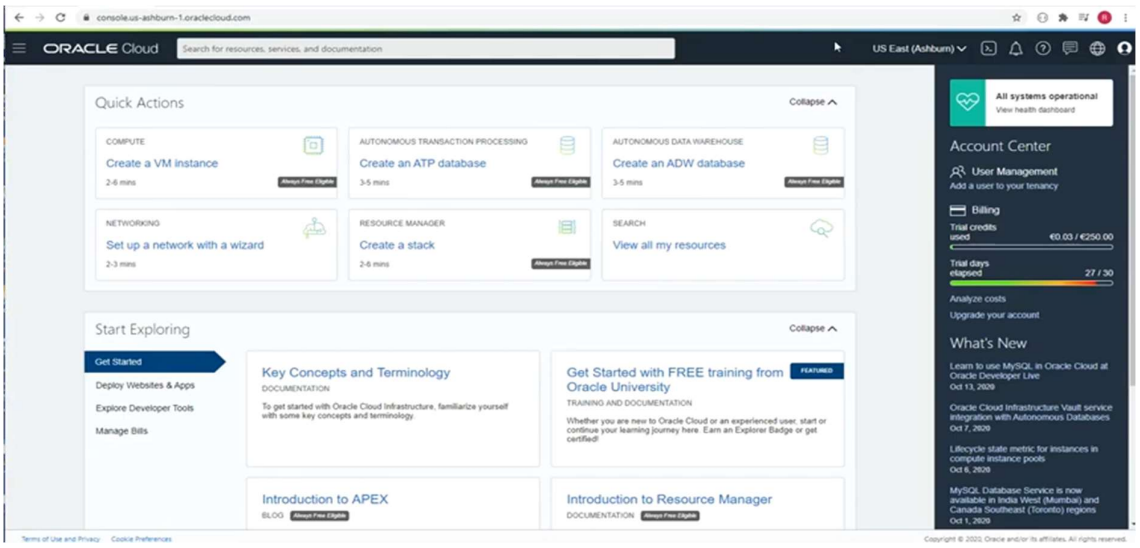
ADVANCED DATABASE TECHNIQUES PRACTICAL

Practical No. 1

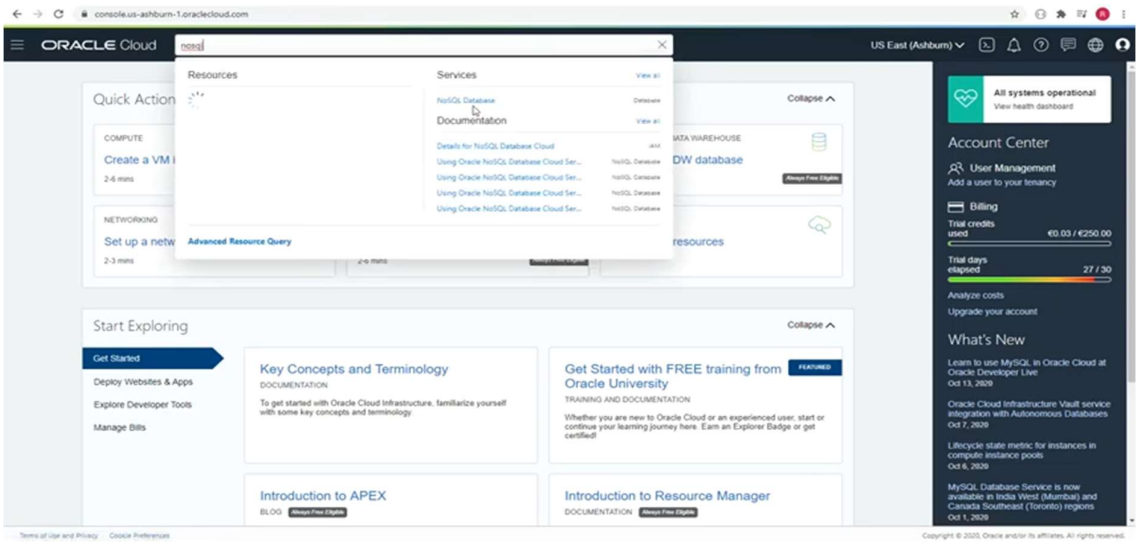
Create different types that include attributes and methods. Define tables for these types by adding a sufficient number of tuples. Demonstrate insert, update and delete operations on these tables. Execute queries on them.

Solution :

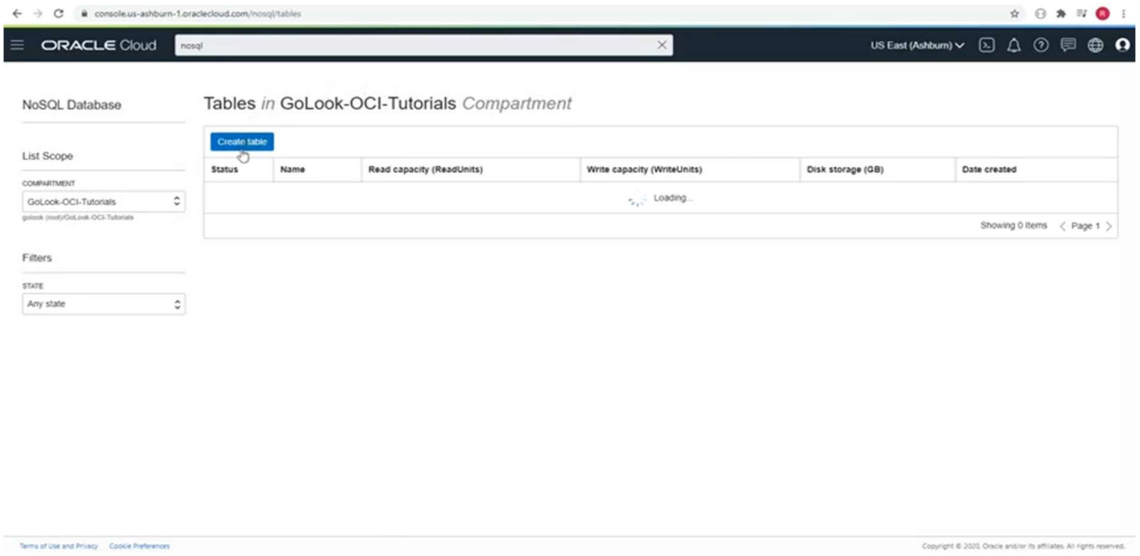
Step 1 : Start ⟶ www.oracle.com ⟶ Sign in 0R Sign up



Step 2 : In search box, type Nosql and in serives select Nosql database

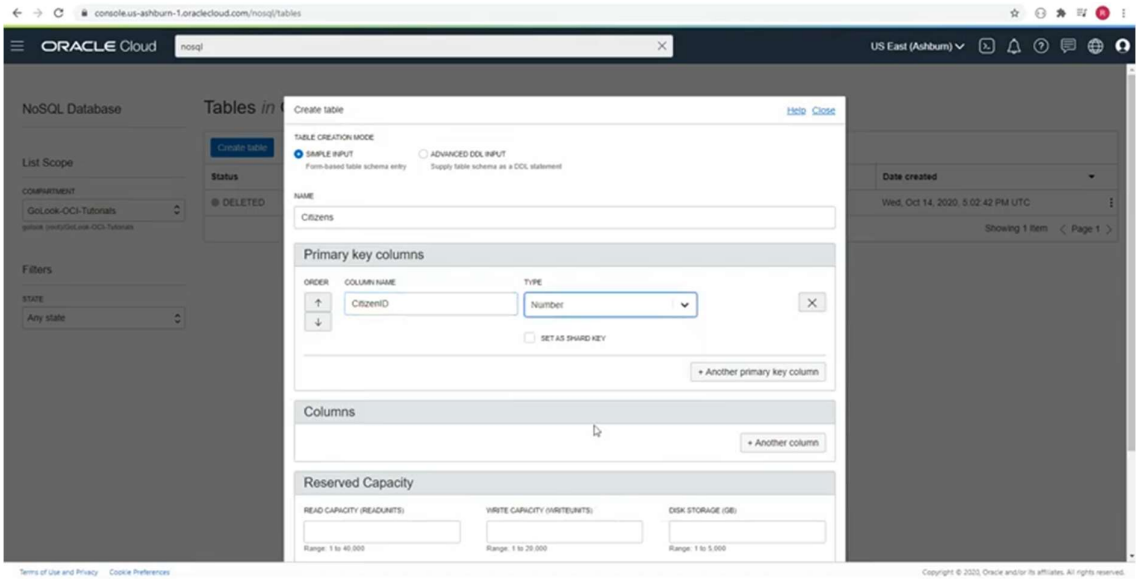


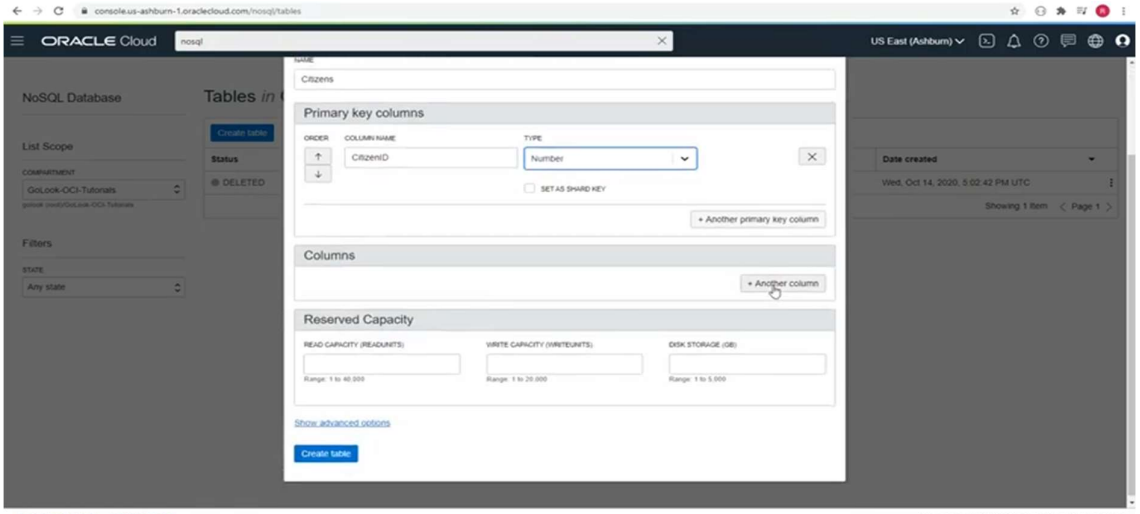
Step 3 : Click on Create Table.



Step 4 : Mention Name of Table and create columns as required.

Type name of columns and their data types in respective box.




console.us-ashburn-1.oraclecloud.com/nosql/tables
ORACLE Cloud
nosql
US East (Ashburn)
NoSQL Database
Tables in
List Scope
COMPARTMENT
GoLook-OCI-Tutorials
Filters
STATE
Any state
Create table
Status
DELETED
Date created
Wed, Oct 14, 2020, 5:02:42 PM UTC
Showing 1 item
Page 1
Citizens
Primary key columns
ORDER
COLUMN NAME
TYPE
CitizenID
Number
SET AS SHARD KEY
+ Another primary key column
Columns
+ Another column
Reserved Capacity
READ CAPACITY (READUNITS)
WRITE CAPACITY (WRITEUNITS)
DISK STORAGE (GB)
Range: 1 to 40,000
Range: 1 to 20,000
Range: 1 to 5,000
Show advanced options
Create table
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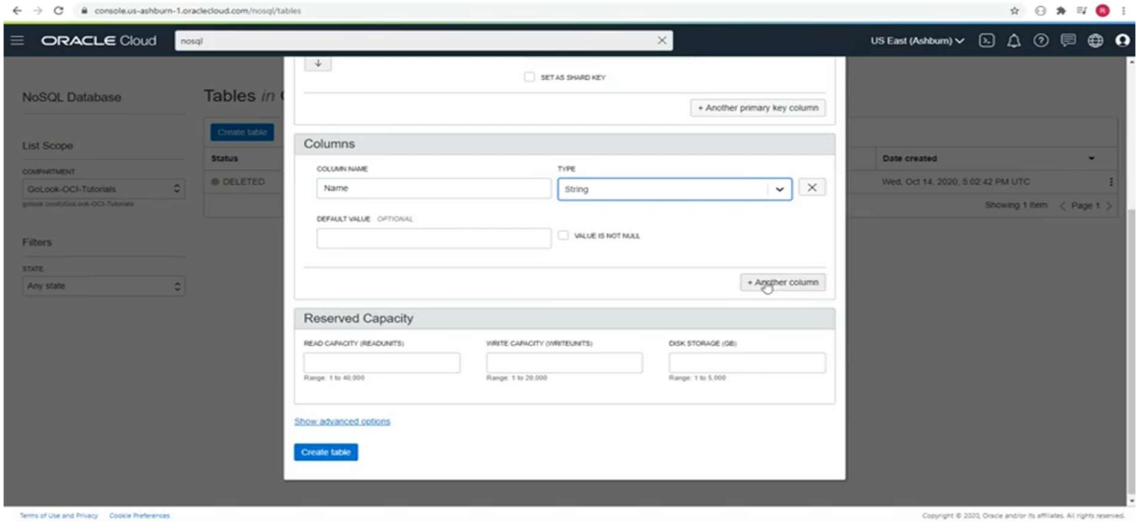
console.us-ashburn-1.oraclecloud.com/nosql/tables
ORACLE Cloud
nosql
US East (Ashburn)
NoSQL Database
Tables in
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Create table
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Date created
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Showing 1 item
Page 1
SET AS SHARD KEY
+ Another primary key column
Columns
COLUMN NAME
TYPE
Name
String
DEFAULT VALUE
OPTIONAL
VALUE IS NOT NULL
+ Another column
Reserved Capacity
READ CAPACITY (READUNITS)
WRITE CAPACITY (WRITEUNITS)
DISK STORAGE (GB)
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Range: 1 to 20,000
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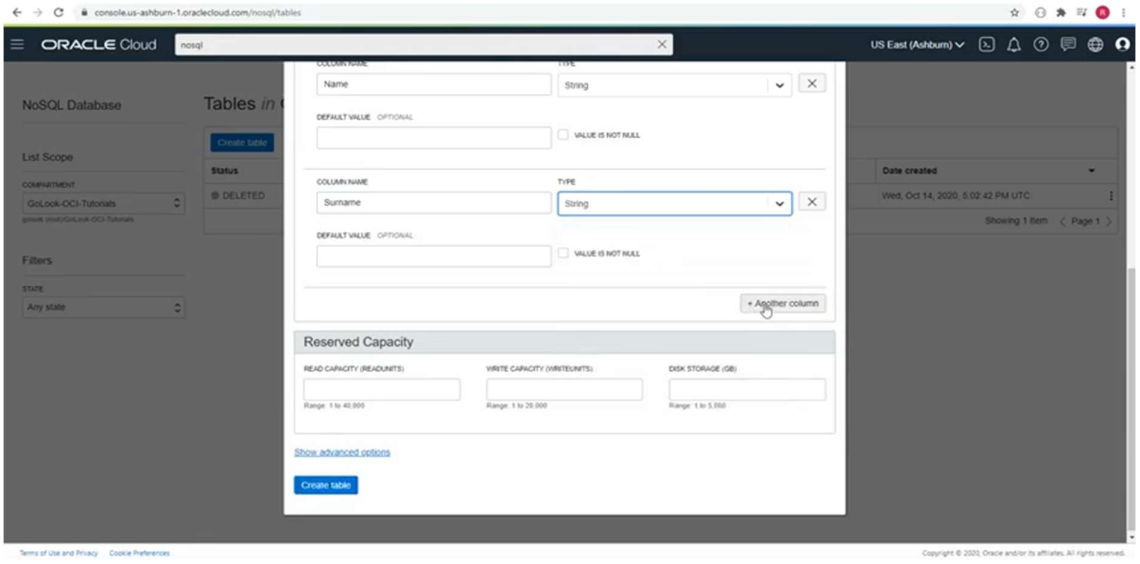
console.us-ashburn-1.oraclecloud.com/nosql/tables
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Date created
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Showing 1 item
Page 1
Name
String
DEFAULT VALUE
OPTIONAL
VALUE IS NOT NULL
COLUMN NAME
TYPE
Surname
String
DEFAULT VALUE
OPTIONAL
VALUE IS NOT NULL
+ Another column
Reserved Capacity
READ CAPACITY (READUNITS)
WRITE CAPACITY (WRITEUNITS)
DISK STORAGE (GB)
Range: 1 to 40,000
Range: 1 to 20,000
Range: 1 to 5,000
Show advanced options
Create table
Terms of Use and Privacy
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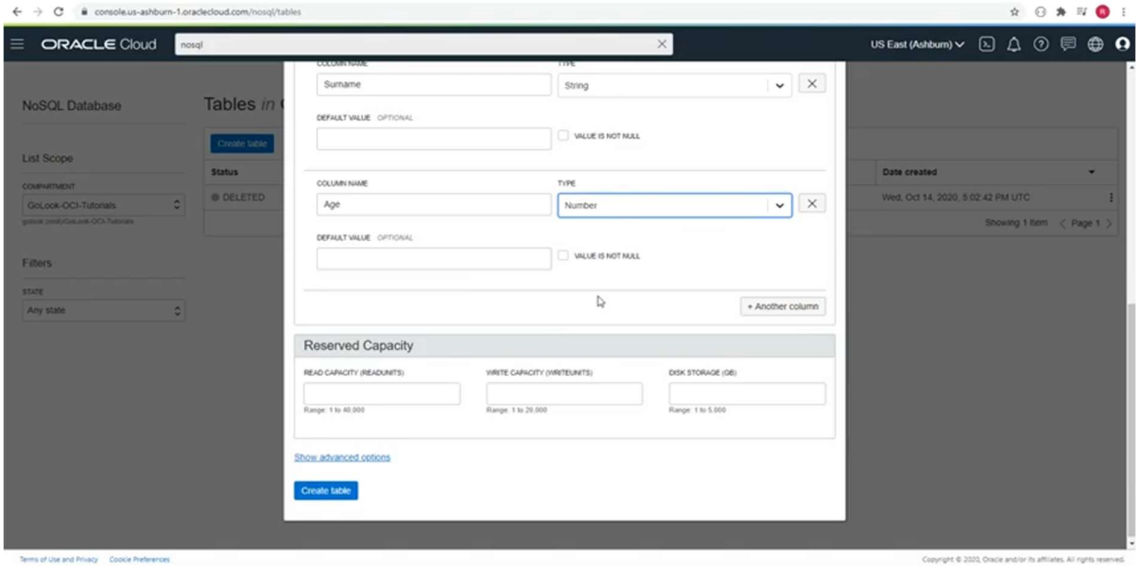


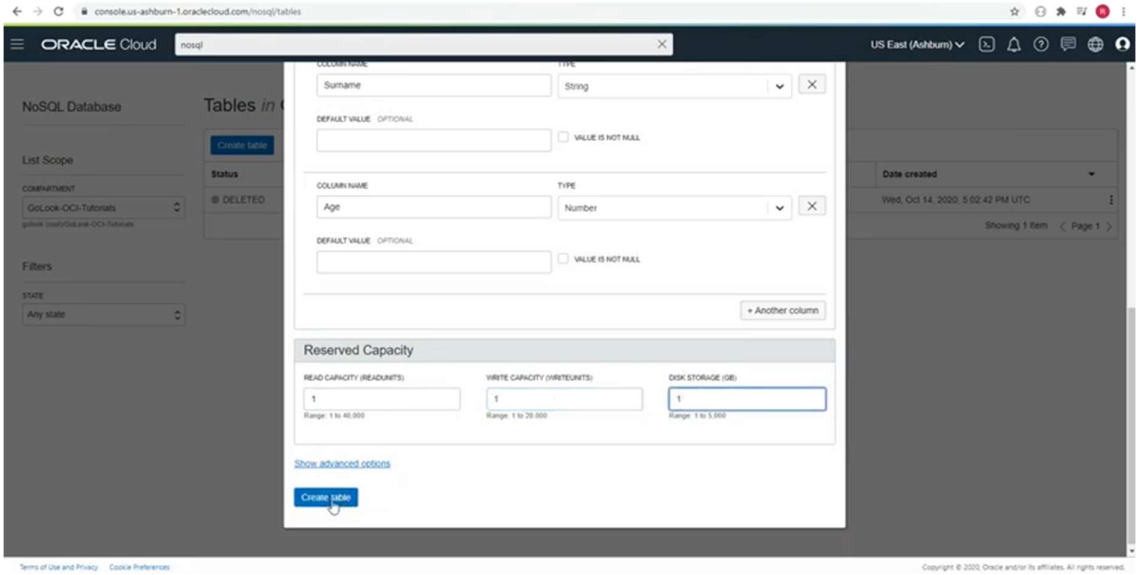
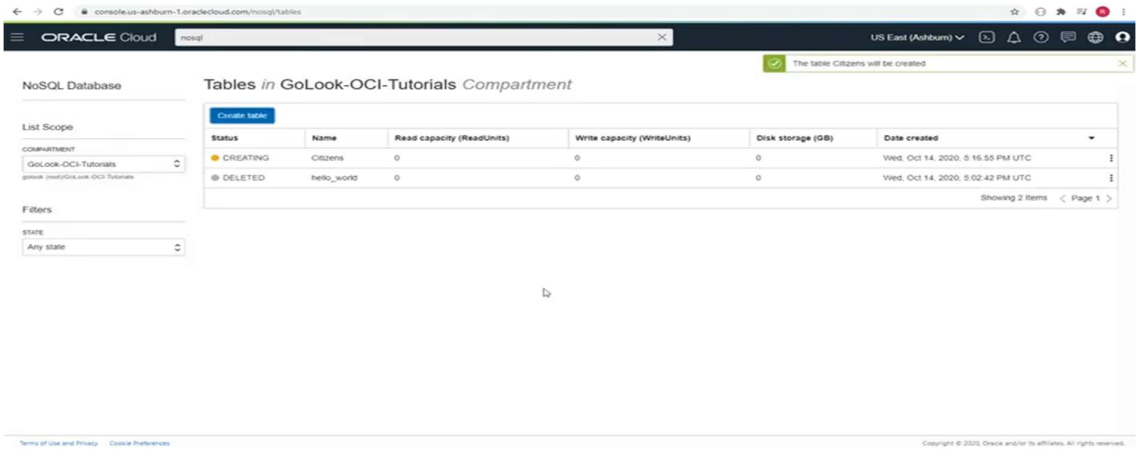
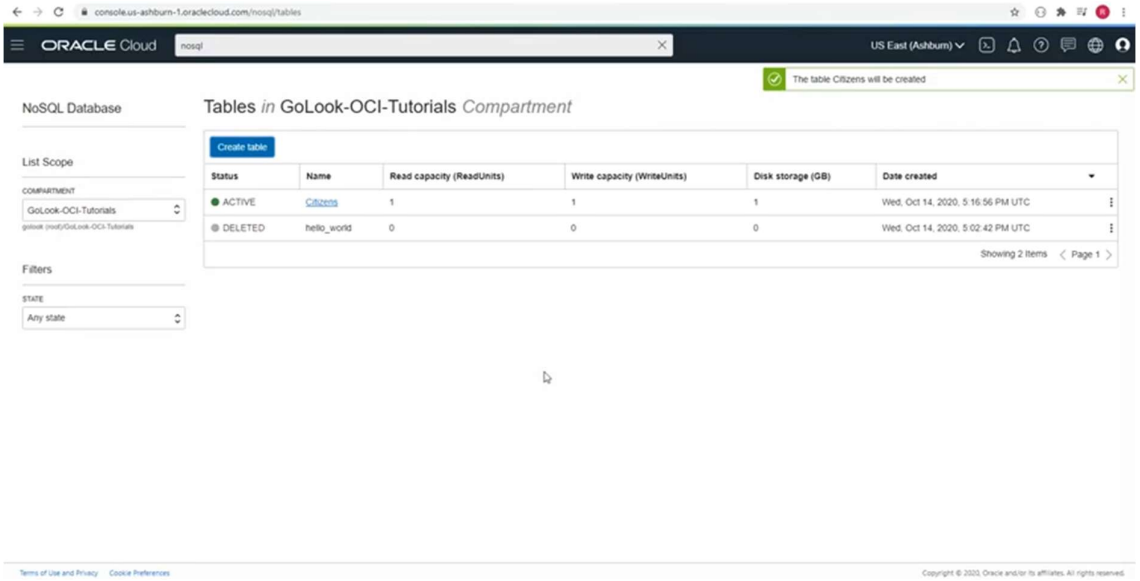
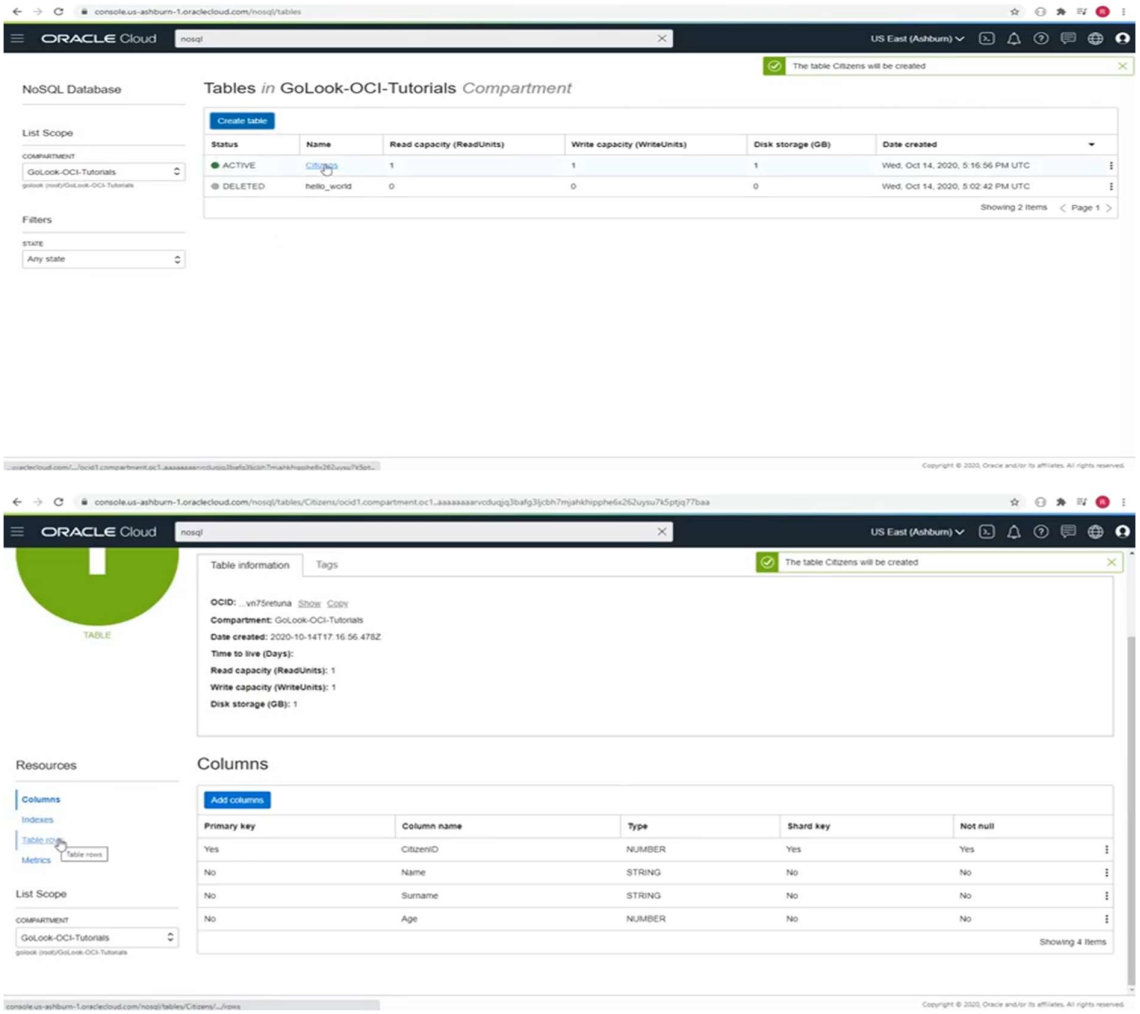


Table is created.

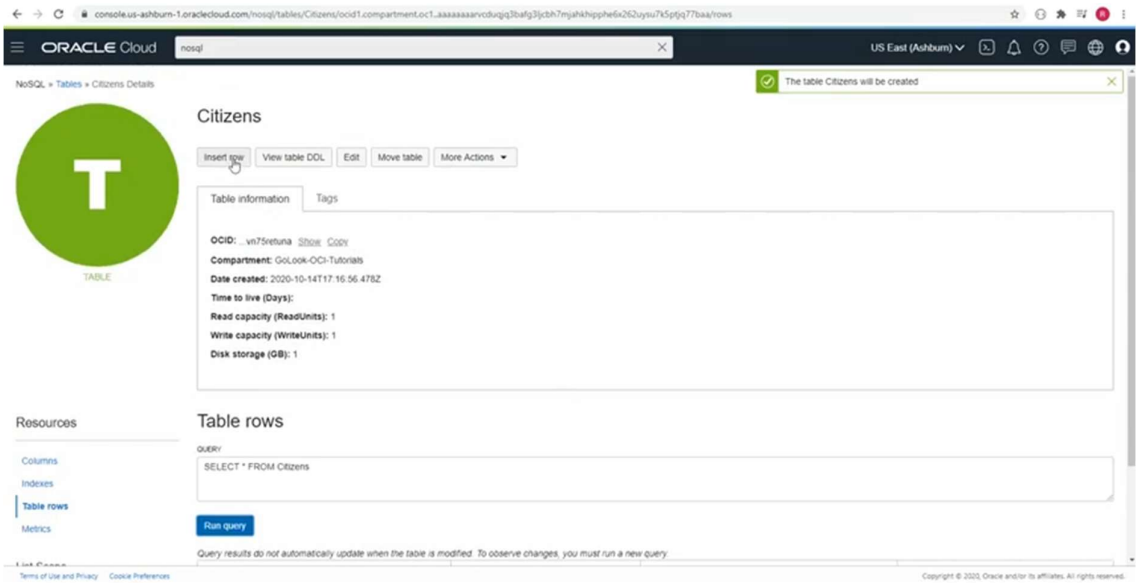


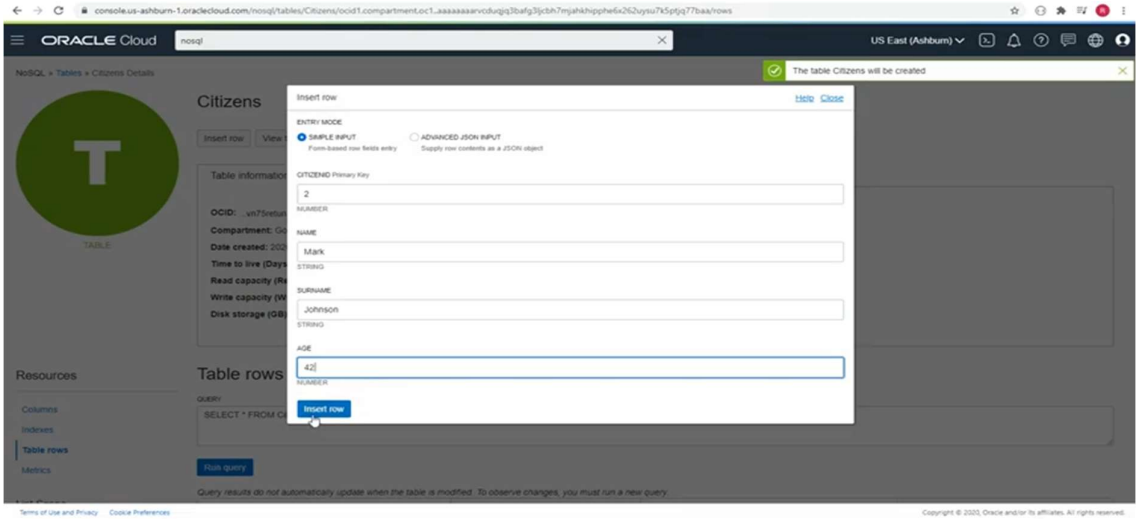


Step 5 : Click on Table Name.

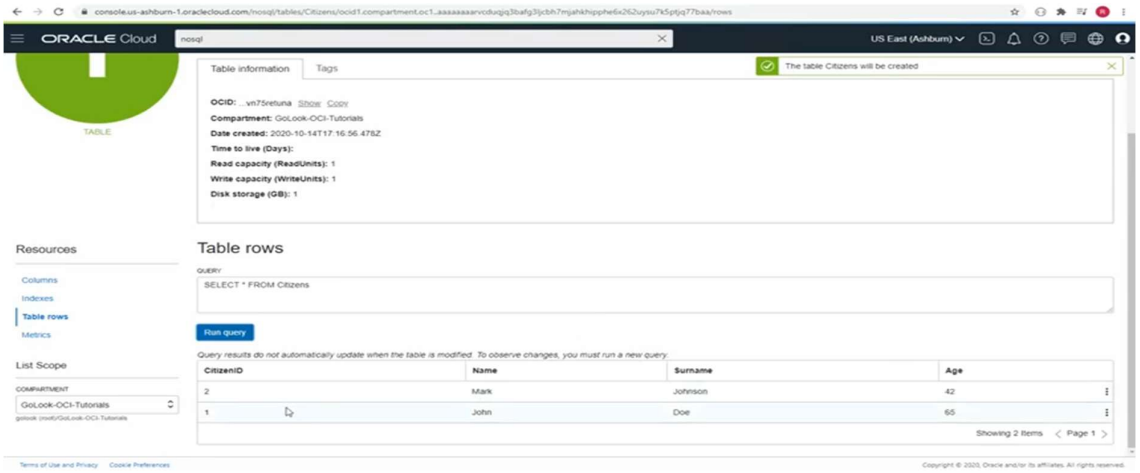


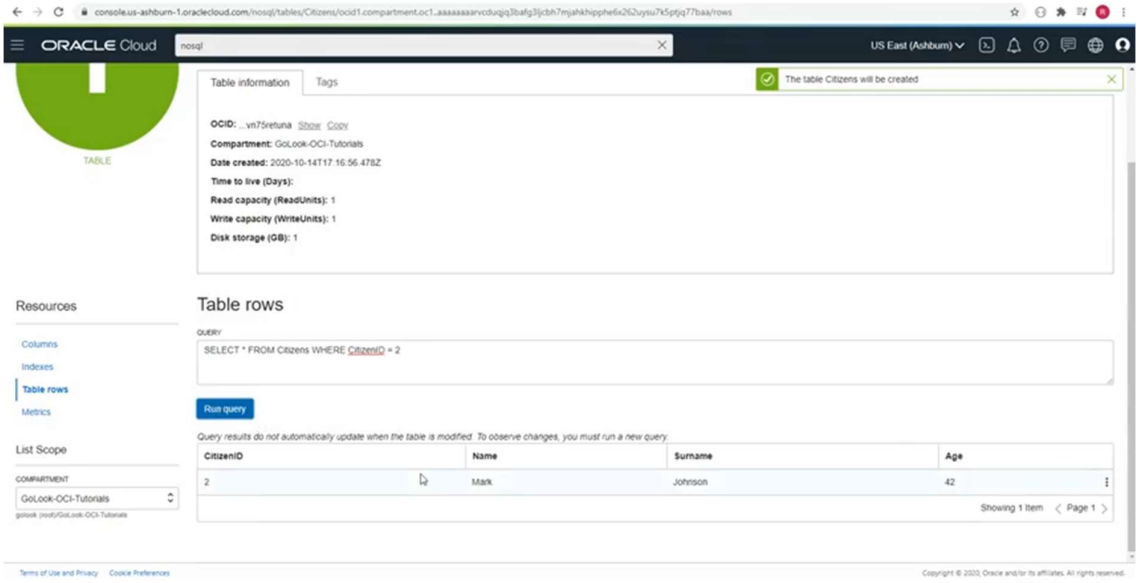
Step 6 : To insert rows , click on Insert Row from above option.



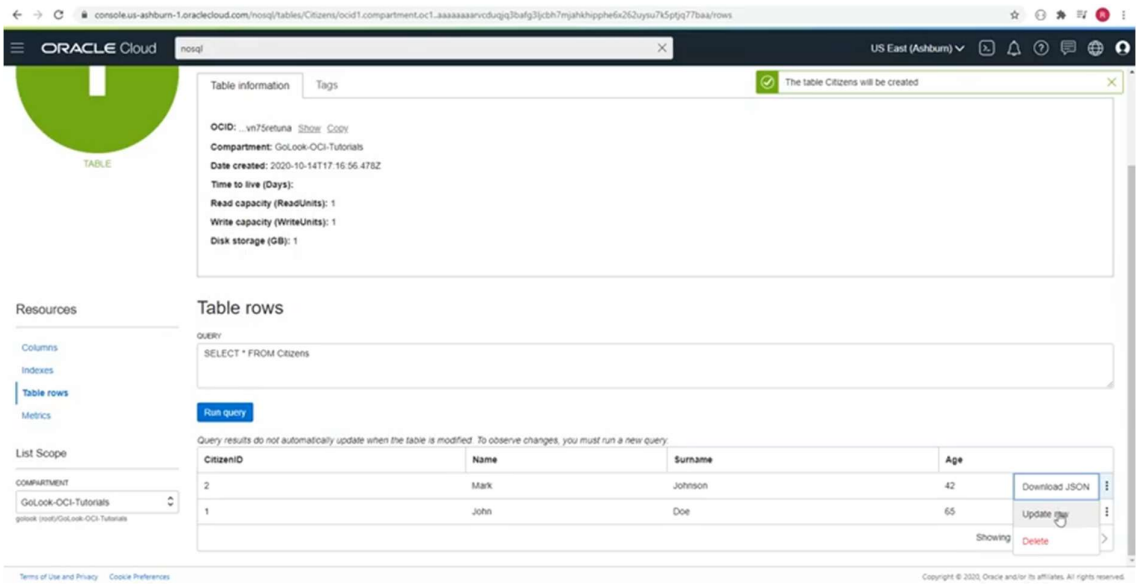


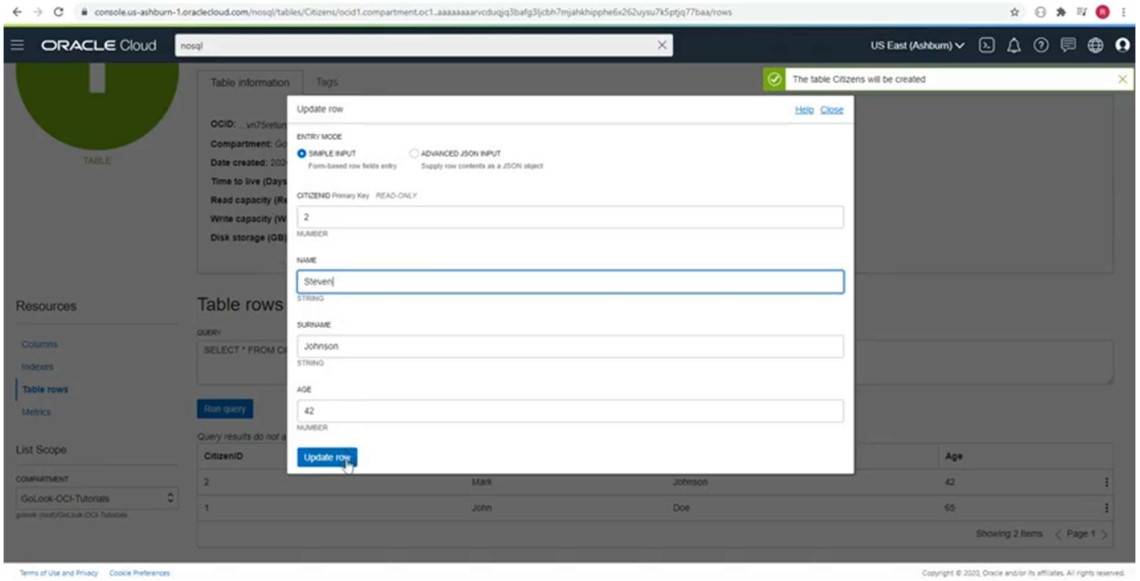
Step 7 : Run Queries.



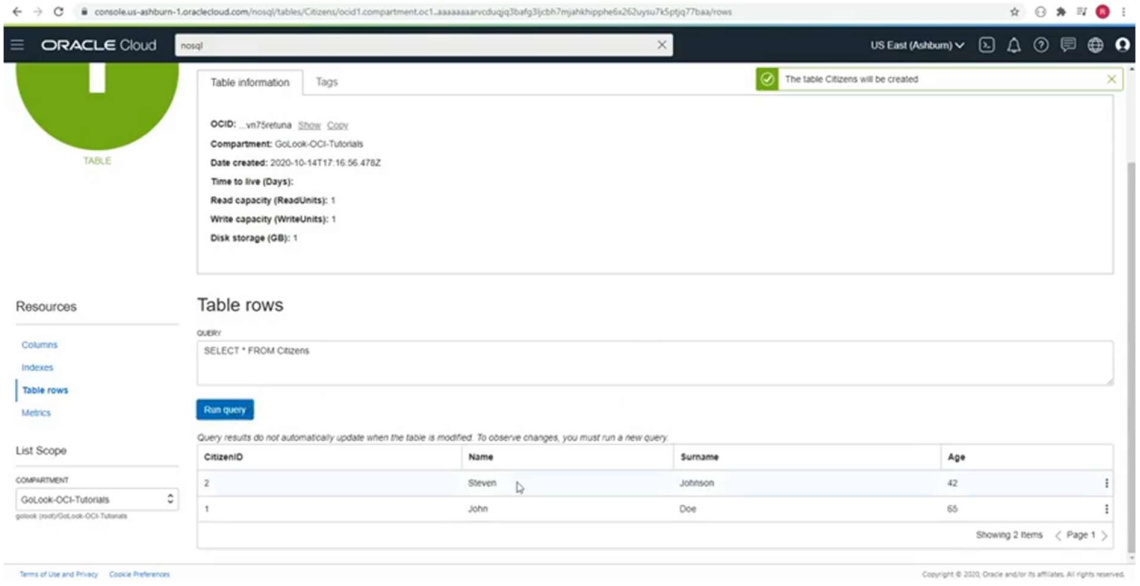


Step 8 : To Update Table

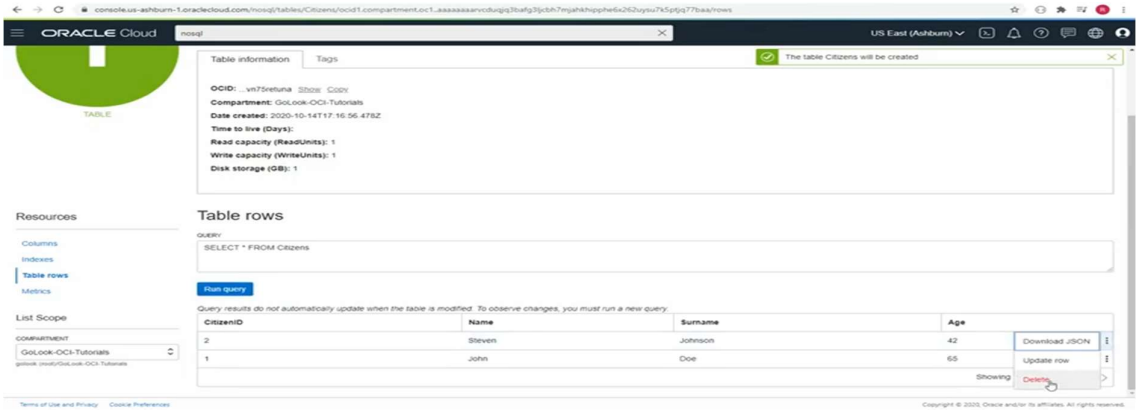


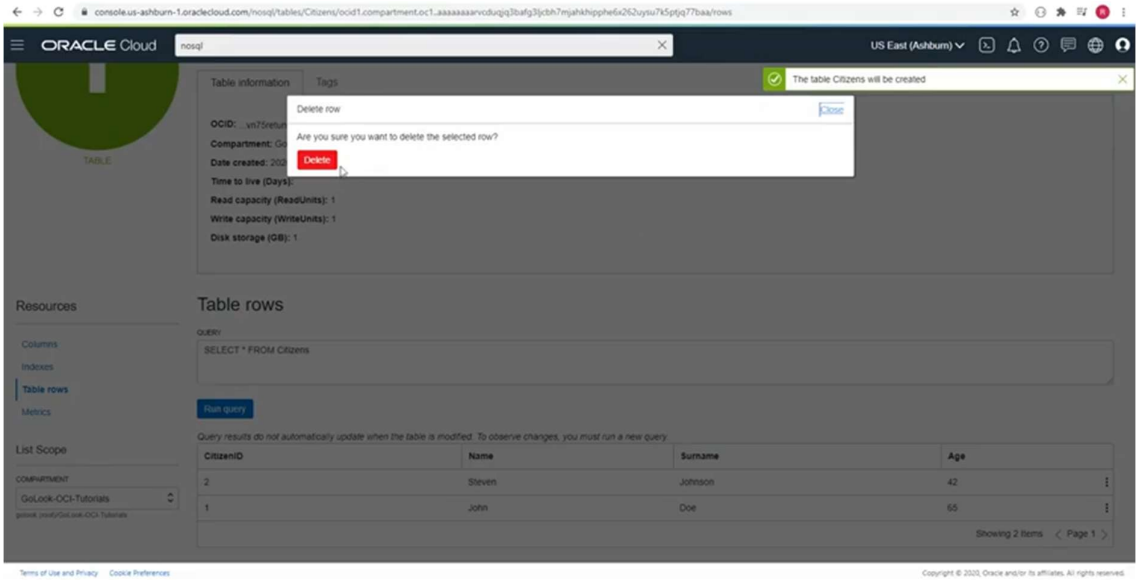


After updating

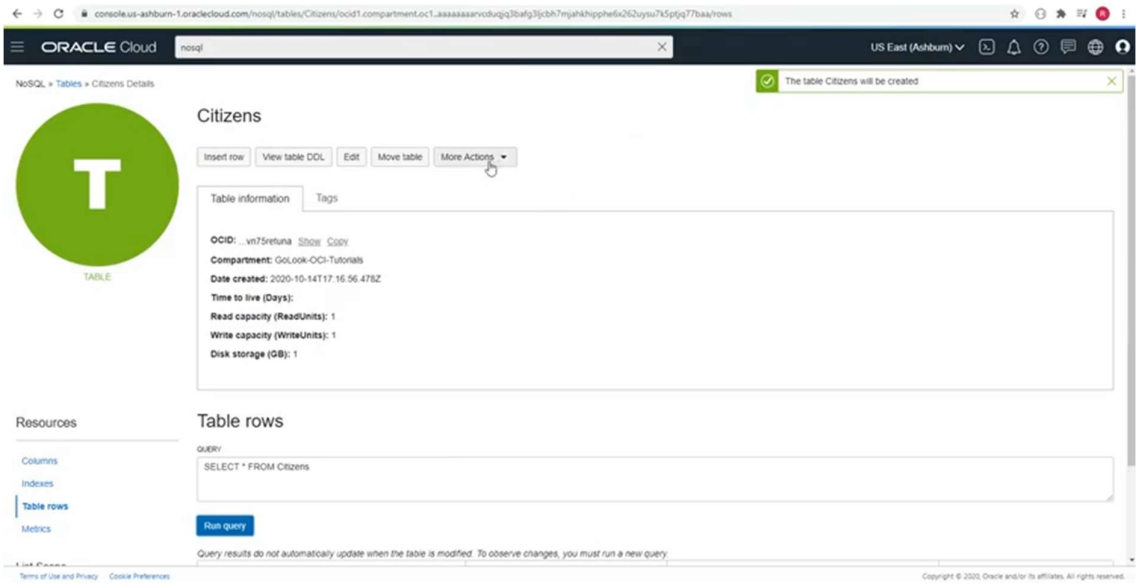


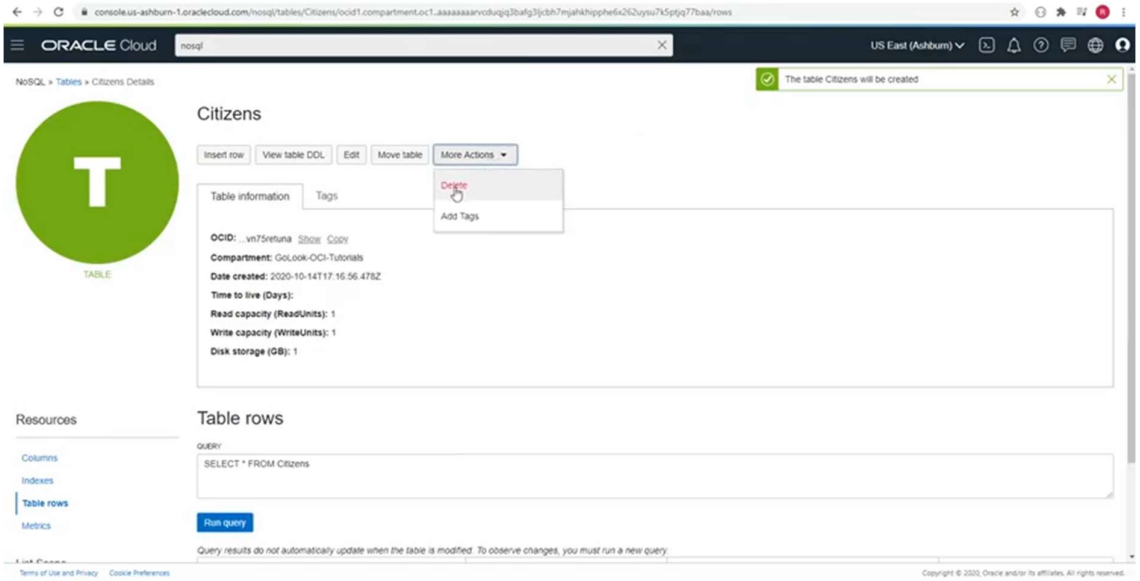
Step 9 : For deleting row.

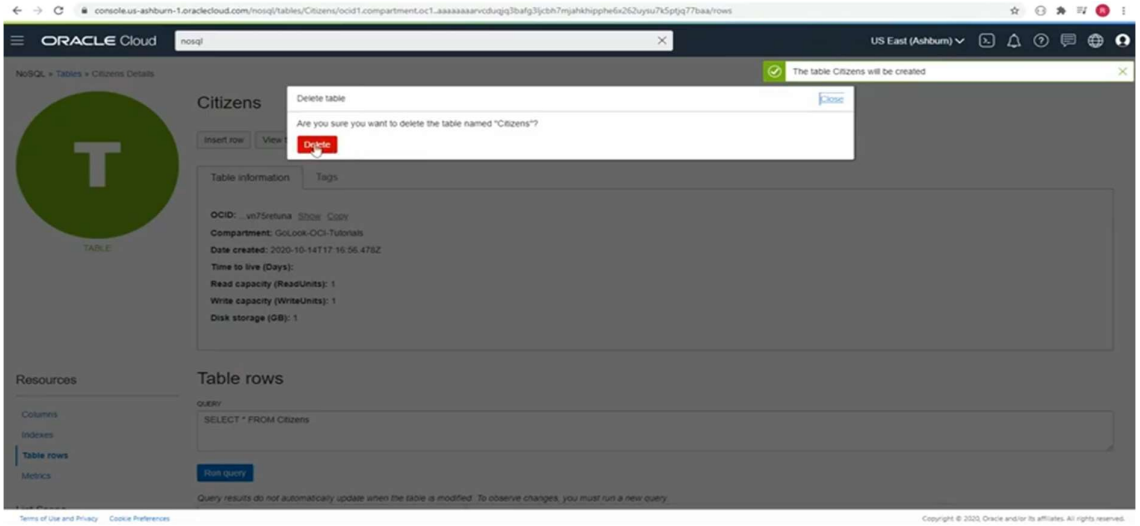


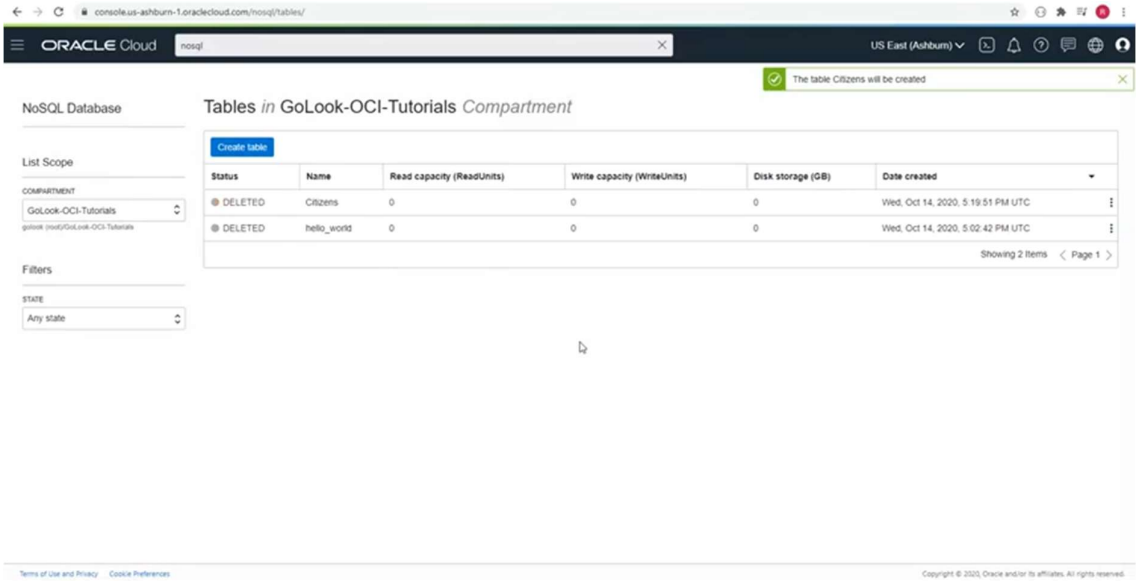


Step 10 : For deleting Table




ORACLE Cloud
nosql
US East (Ashburn)
NoSQL » Tables » Citizens Details
The table Citizens will be created
Citizens
Insert row
View table DDL
Edit
Move table
More Actions
Delete
Add Tags
Table information
Tags
OCID: ...vn75refuna Show Copy
Compartment: GoLook-OCI-Tutorials
Date created: 2020-10-14T17:16:56.478Z
Time to live (Days):
Read capacity (ReadUnits): 1
Write capacity (WriteUnits): 1
Disk storage (GB): 1
Resources
Columns
Indexes
Table rows
Metrics
Table rows
QUERY
SELECT * FROM Citizens
Run query
Query results do not automatically update when the table is modified. To observe changes, you must run a new query.


ORACLE Cloud
nosql
US East (Ashburn)
NoSQL » Tables » Citizens Details
The table Citizens will be created
Citizens
Delete table
Close
Are you sure you want to delete the table named "Citizens"?
Delete
Table information
Tags
OCID: ...vn75refuna Show Copy
Compartment: GoLook-OCI-Tutorials
Date created: 2020-10-14T17:16:56.478Z
Time to live (Days):
Read capacity (ReadUnits): 1
Write capacity (WriteUnits): 1
Disk storage (GB): 1
Resources
Columns
Indexes
Table rows
Metrics
Table rows
QUERY
SELECT * FROM Citizens
Run query
Query results do not automatically update when the table is modified. To observe changes, you must run a new query.


ORACLE Cloud
nosql
US East (Ashburn)
The table Citizens will be created
NoSQL Database
List Scope
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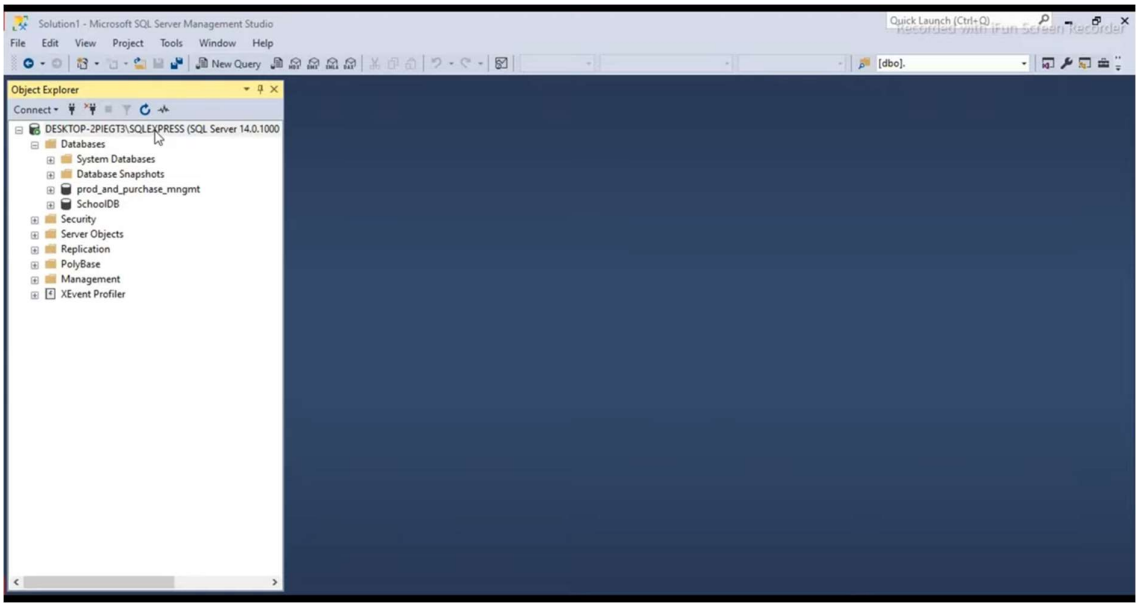
GoLook-OCI-Tutorials
Filters
STATE
Any state
Tables in GoLook-OCI-Tutorials Compartment
Create table
Status
Name
Read capacity (ReadUnits)
Write capacity (WriteUnits)
Disk storage (GB)
Date created
DELETED
Citizens
0
0
0
Wed, Oct 14, 2020, 5:19:51 PM UTC
DELETED
hello_world
0
0
0
Wed, Oct 14, 2020, 5:02:42 PM UTC
Showing 2 items
Page 1

Practical No 2

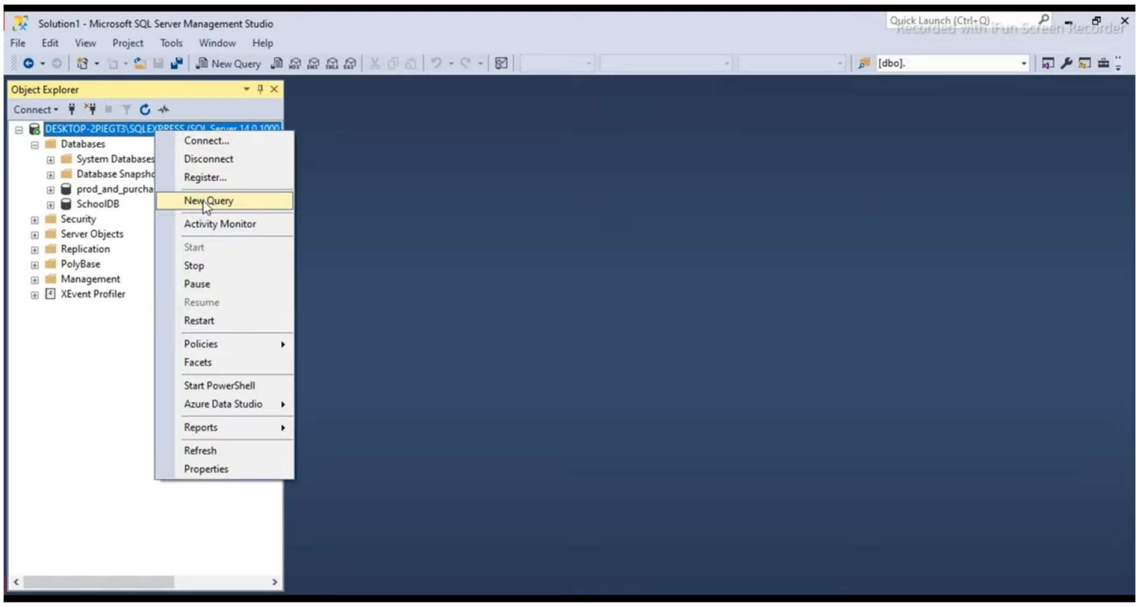
Create an XML database and demonstrate insert, update and delete operations on these tables. Issue queries on it.

Solution :

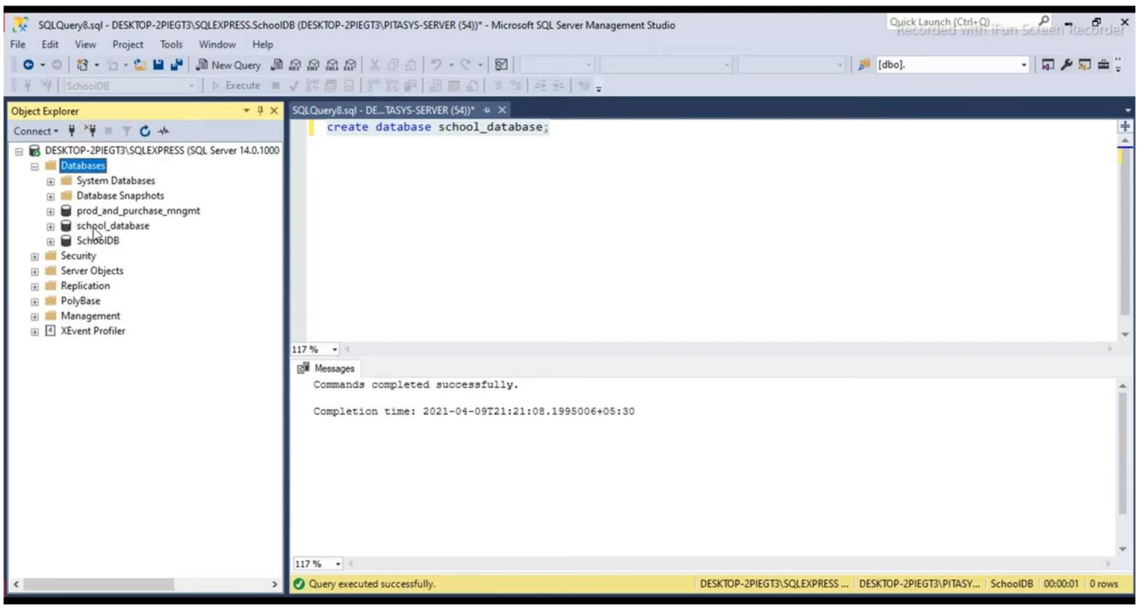
Step 1 : Open Microsoft SQL Server Management Studio.



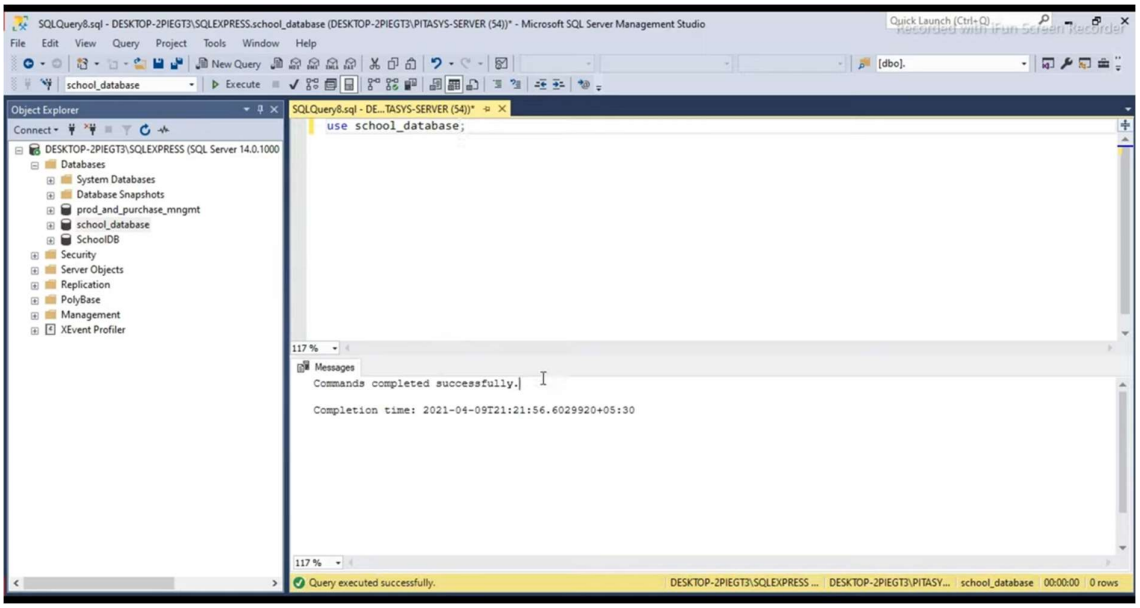
Step 2 : Right click on Device name and then select New Query.



Step 3 : To create database, pass command **create database** and type name of database which you want to create and then execute the query.



Step 4 : To create table , first set the database which you want by using **use** command.



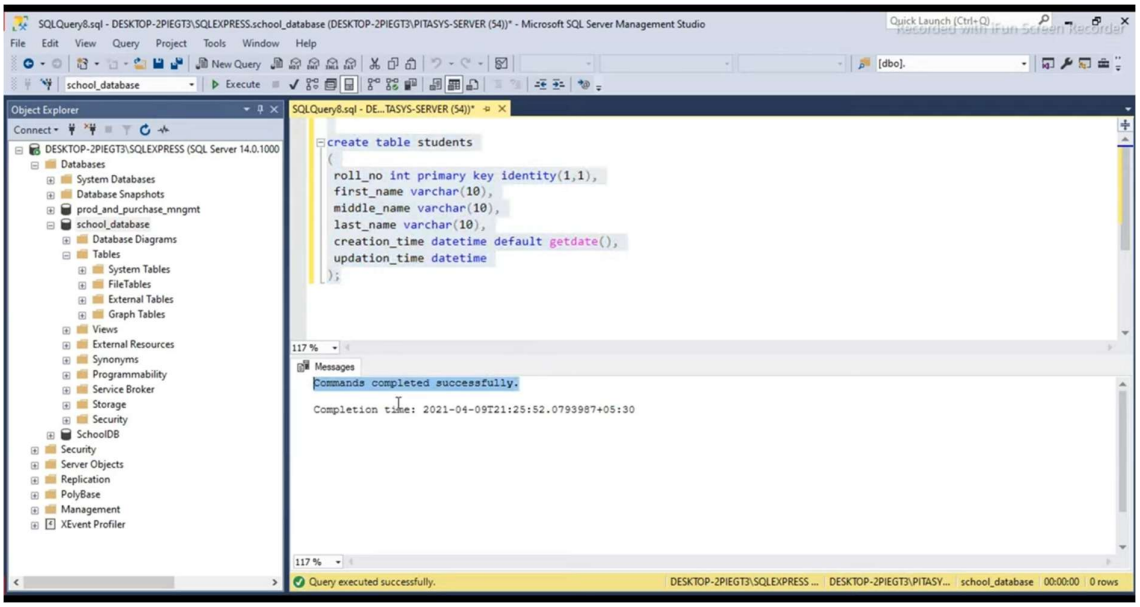
Step 5 : For creating table , pass command **create table** and name of table.

Create columns as per requirement as shown below .

To insert columns write query in round brackets() and execute it.

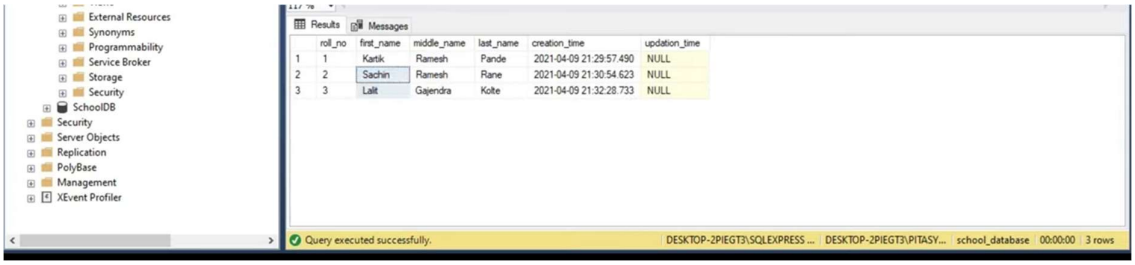
Eg : ***insert into students*** (column_names)

values('Lalit');

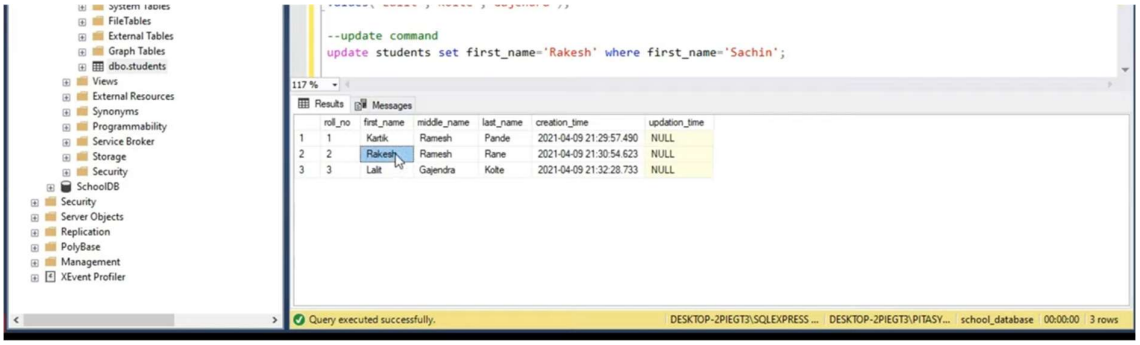


Once you inserted all columns then execute the query , a table is created.

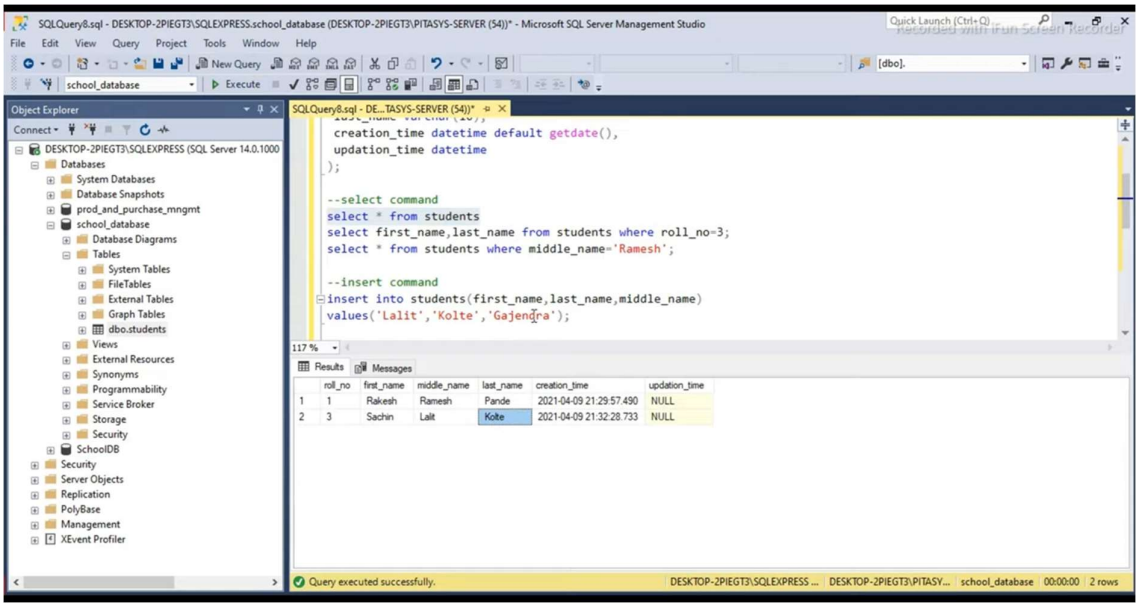
Step 6 : To view the table , execute command **select * from students**



Step 7 : To Update table use **update command.**



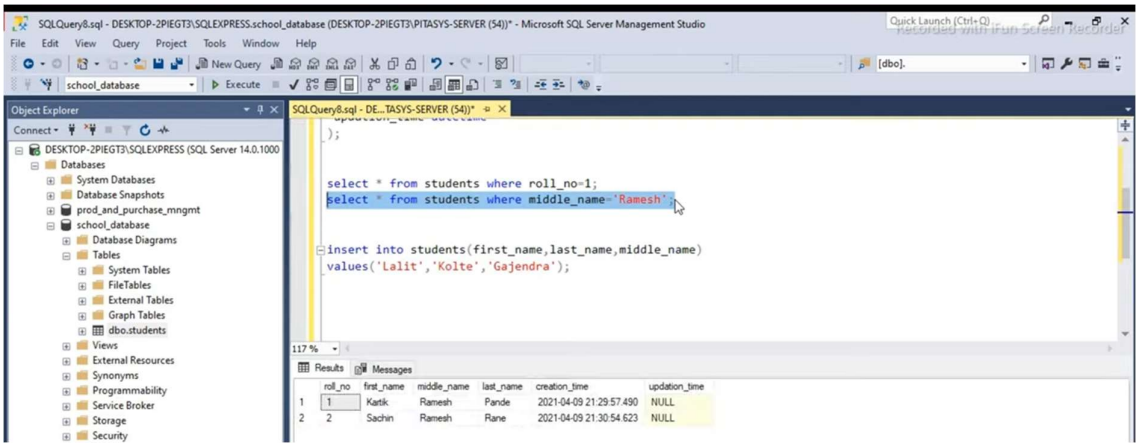
Step 8 : To delete column use delete command.



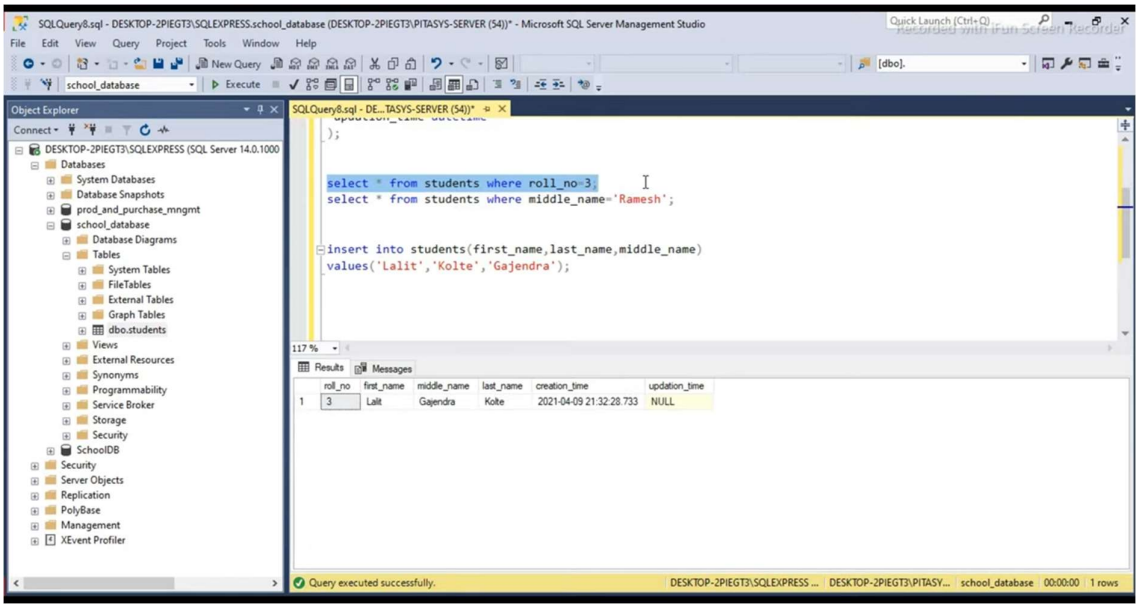
Step 9 : For executing queries

For eg :

1. ***Select from*** student ***where*** middle_name= 'Ramesh';



2. ***Select from*** student ***where*** roll no=3;



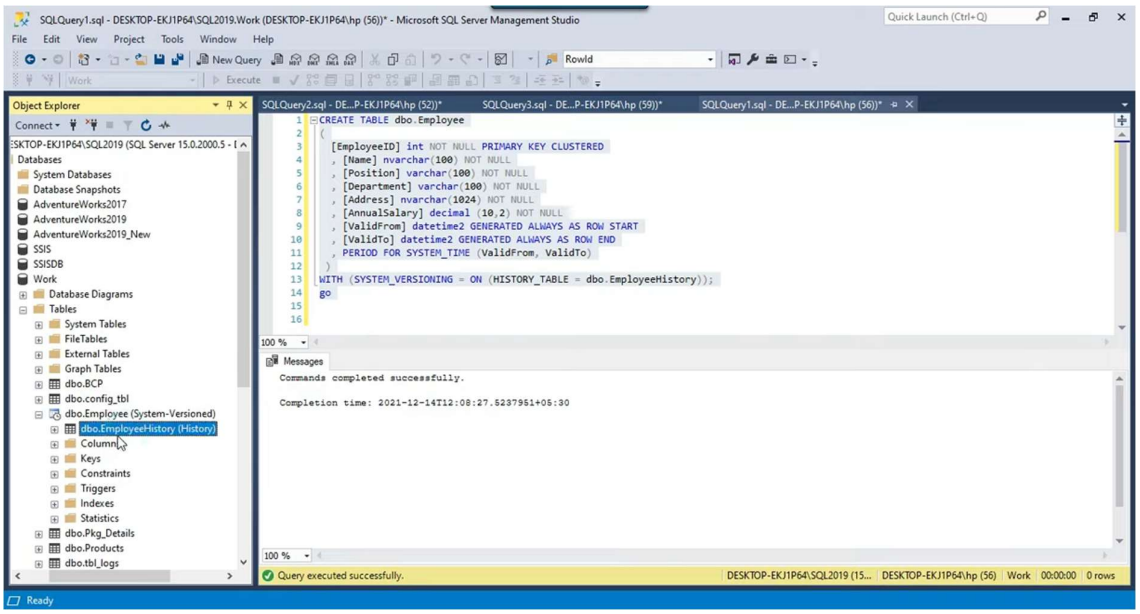
Practical No 3

Create a temporal database and issue queries on it.

Solution :

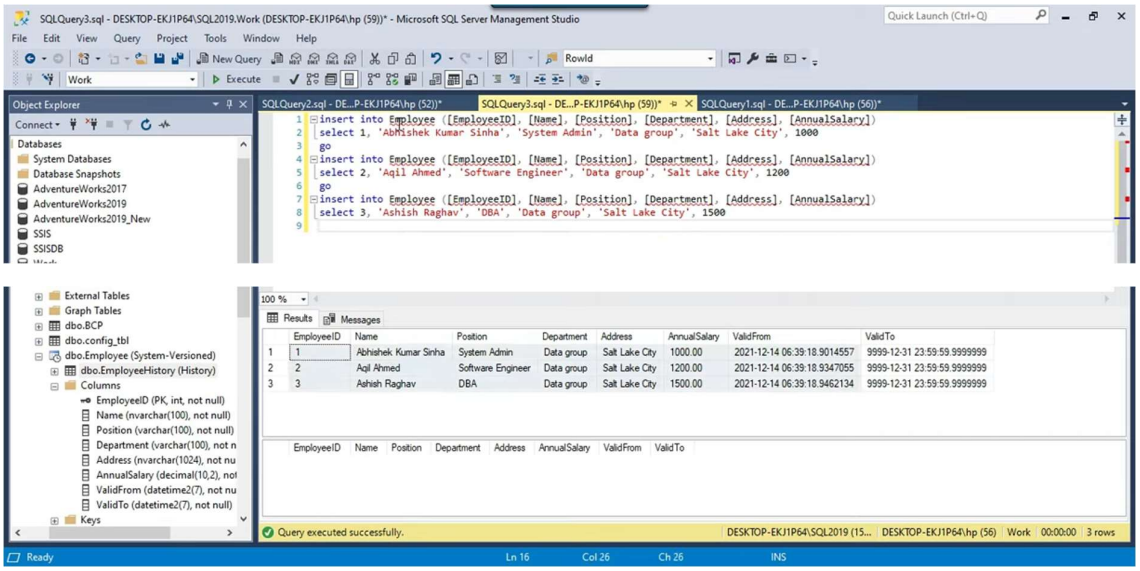
Step 1 : Start ⟶ Open Microsoft SQL Server Management Studio.

Step 2 : Create Temporal table.

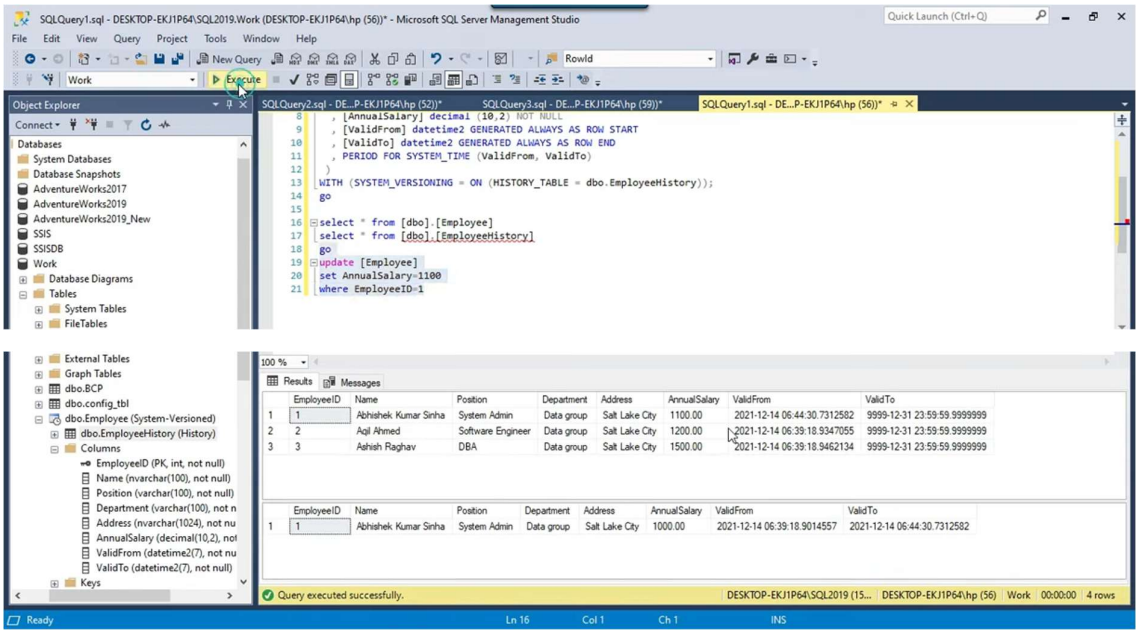


System versioned temporal table is created and Employee history table is created as well.

Step 3 : Using **insert** command , insert records in table.

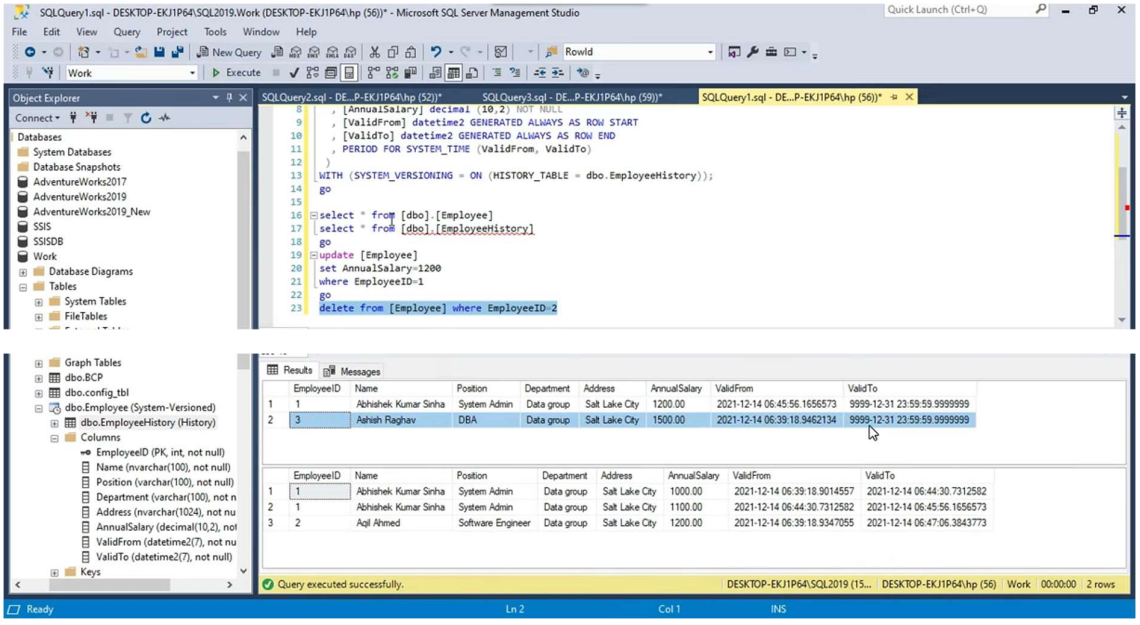


Step 4 : To Update temporal table.



Record is updated.

Step 5 : To delete record from temporal table.



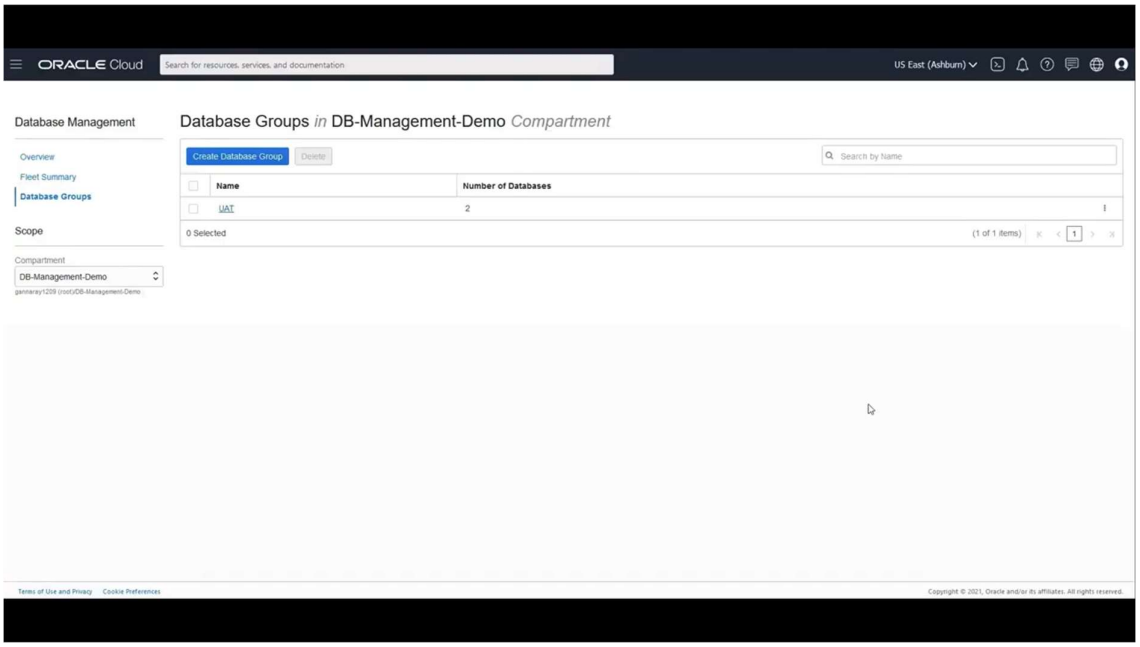
Practical No 4

Demonstrate the use of data management and operations using NoSQL in the Cloud.

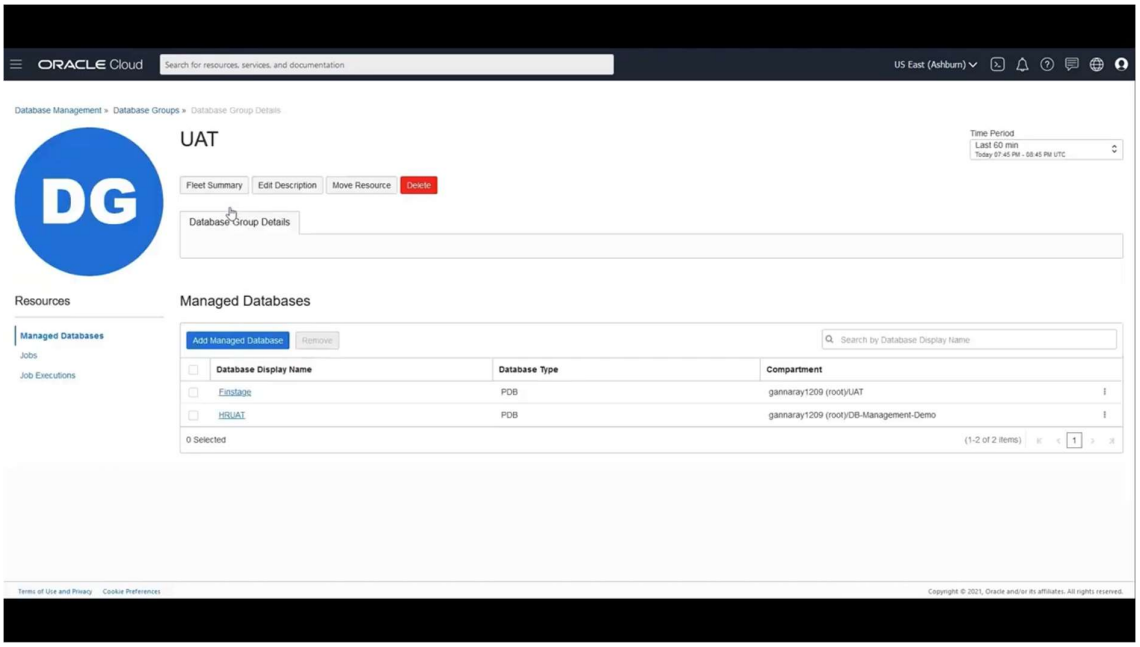
Solution :

Step 1 : : Start → www.oracle.com → Sign in 0R Sign up

Step 2 : Open database management console.

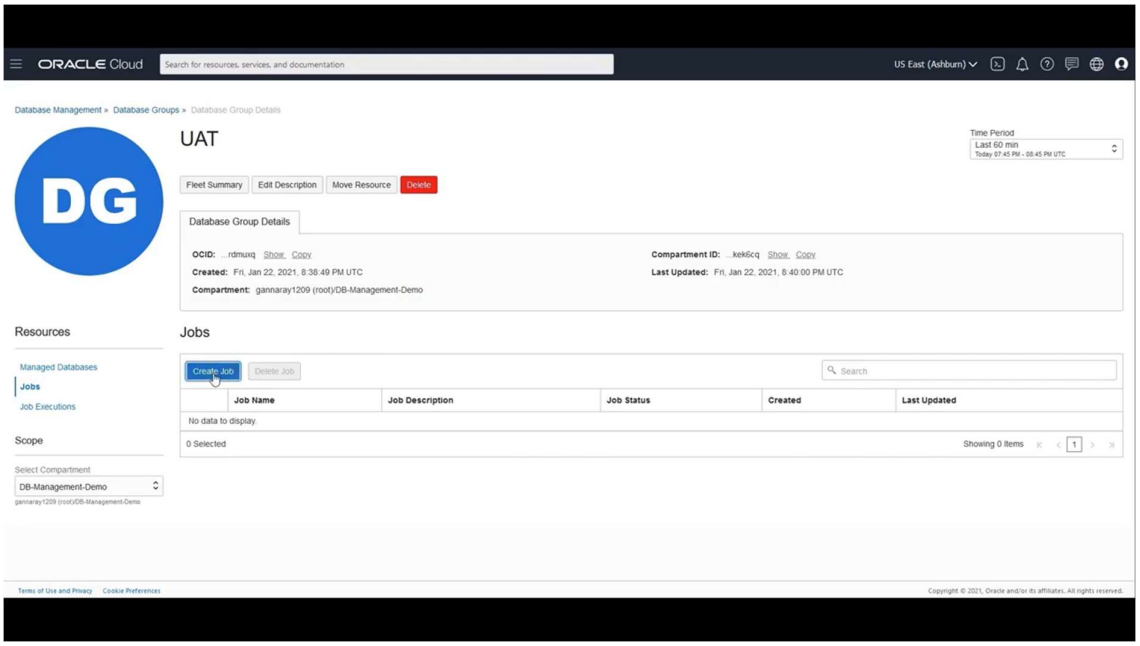


Step 3 : Click on UAT database Group.

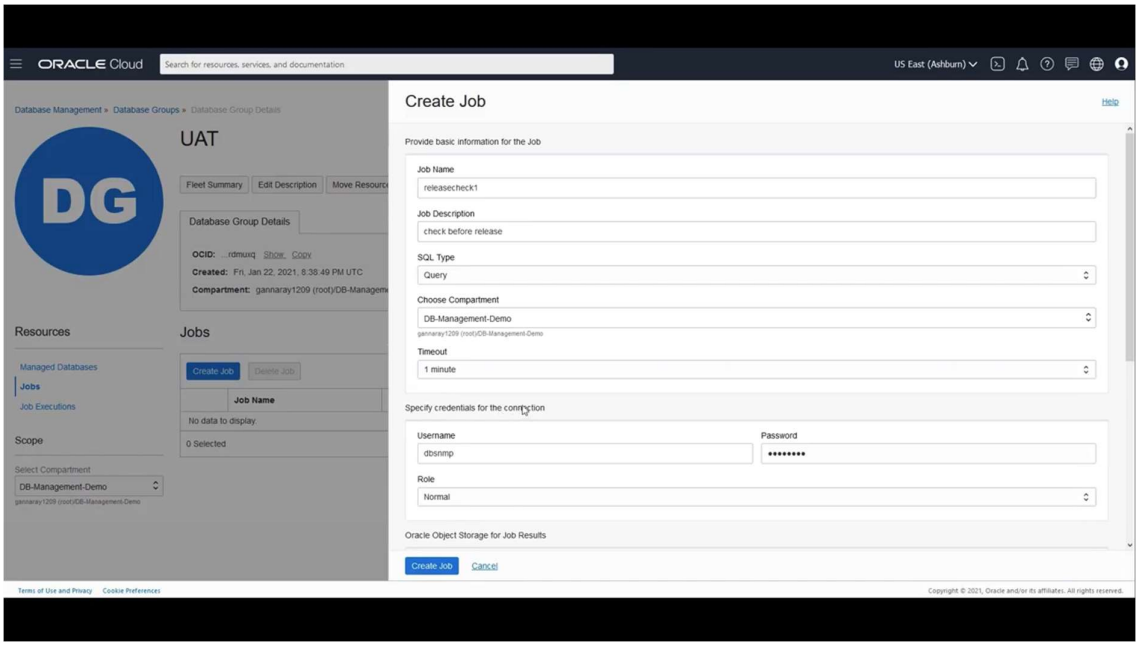


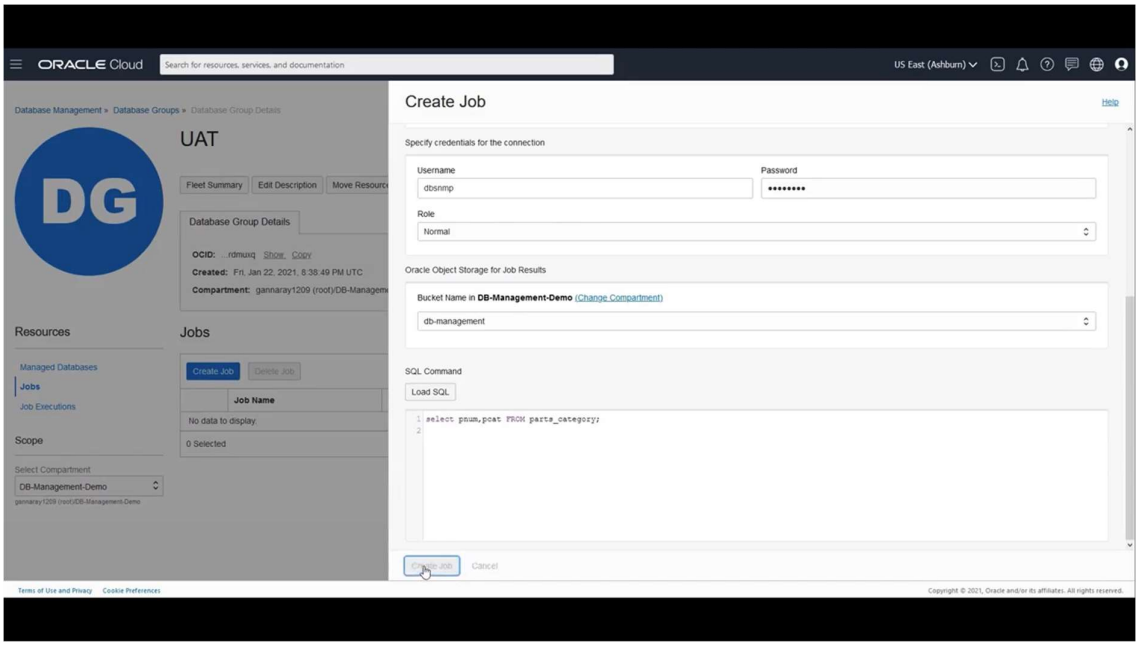
Step 4 : To create Job.

Click on create Job.

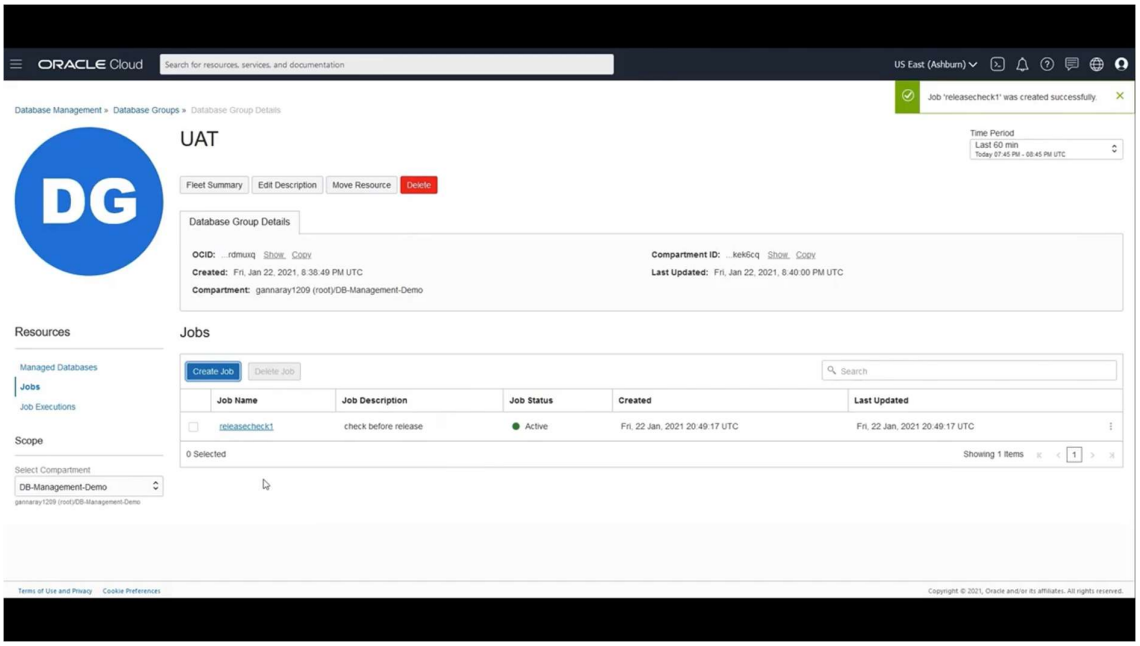


Step 5 : Fill the basic information in the box like Job name , description , SQL type etc.

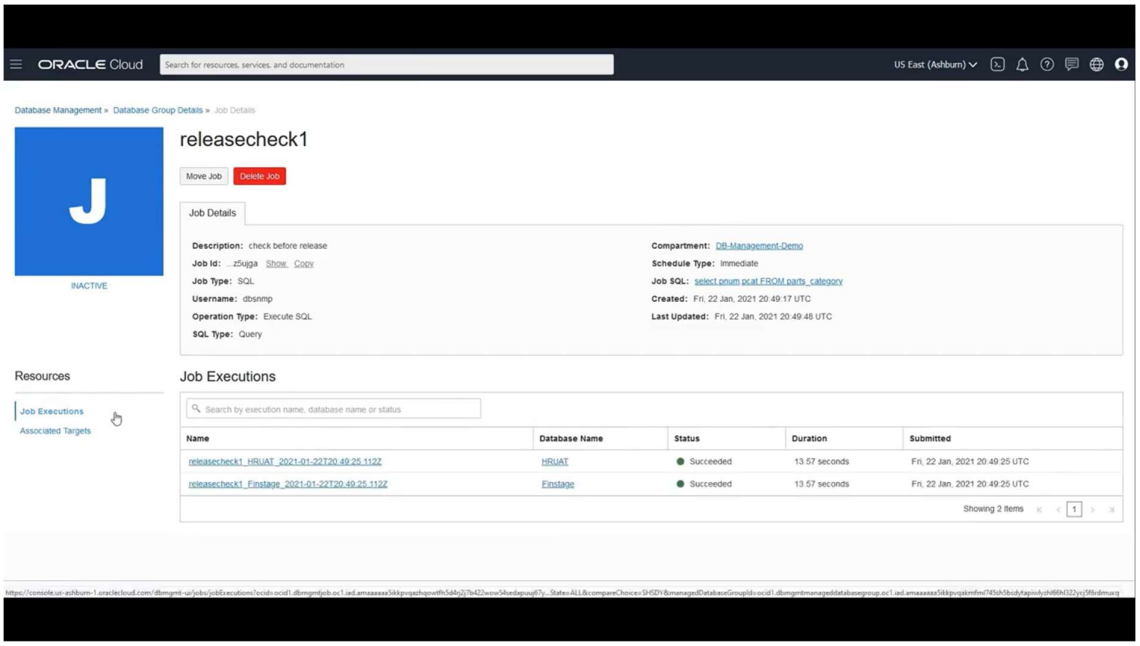




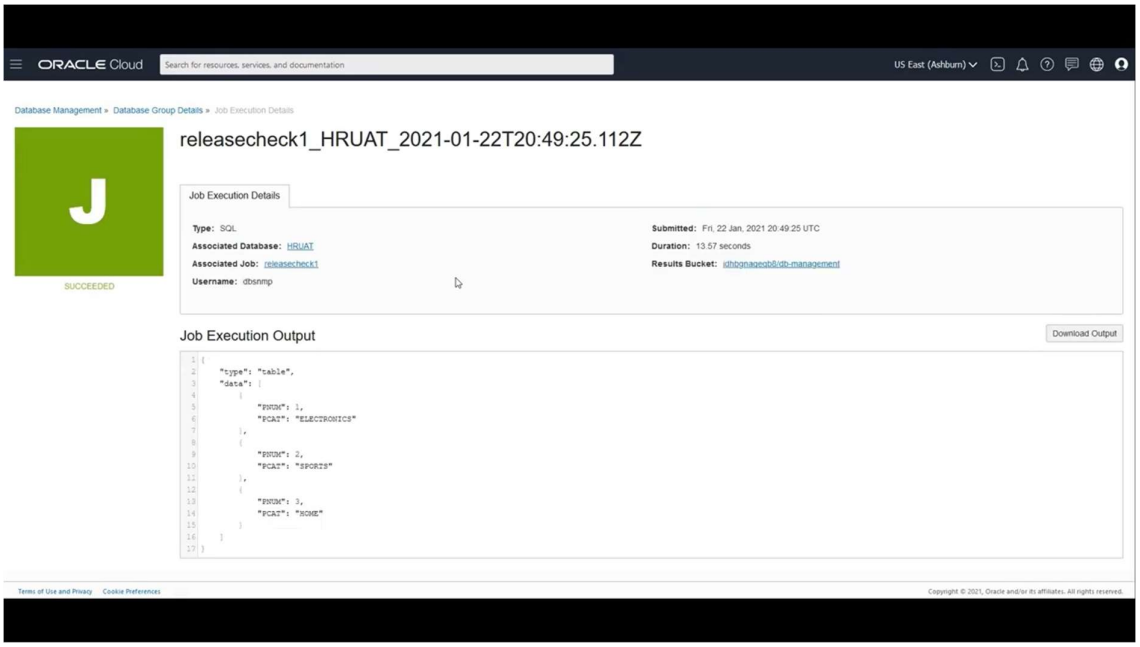
Job release check has created.



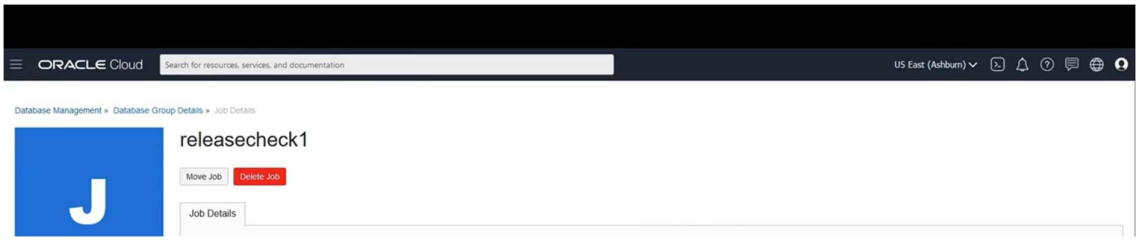
Step 6 : To check job execution , click on job name.



Step 7 : To check job execution output , click on one of the executions.



Step 8 : To delete Job , click on above option **Delete Job.**

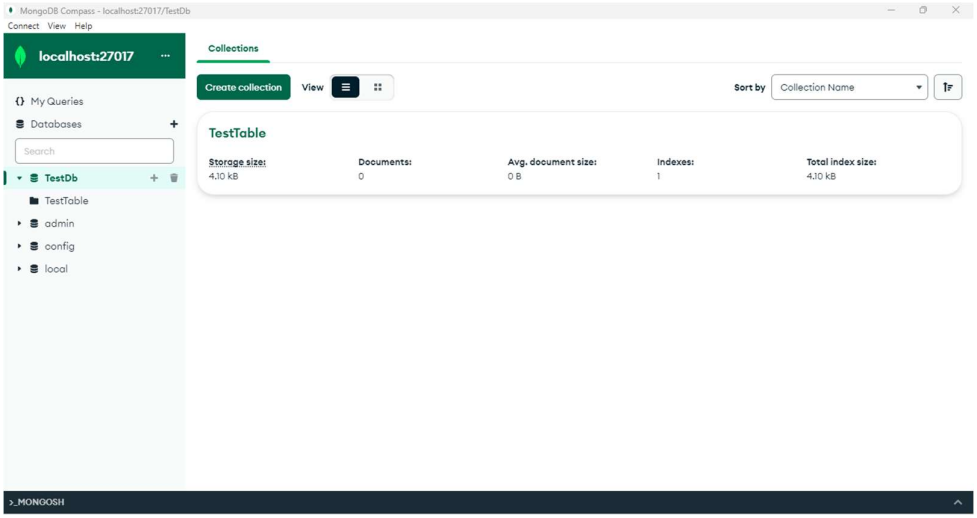


Practical No 5

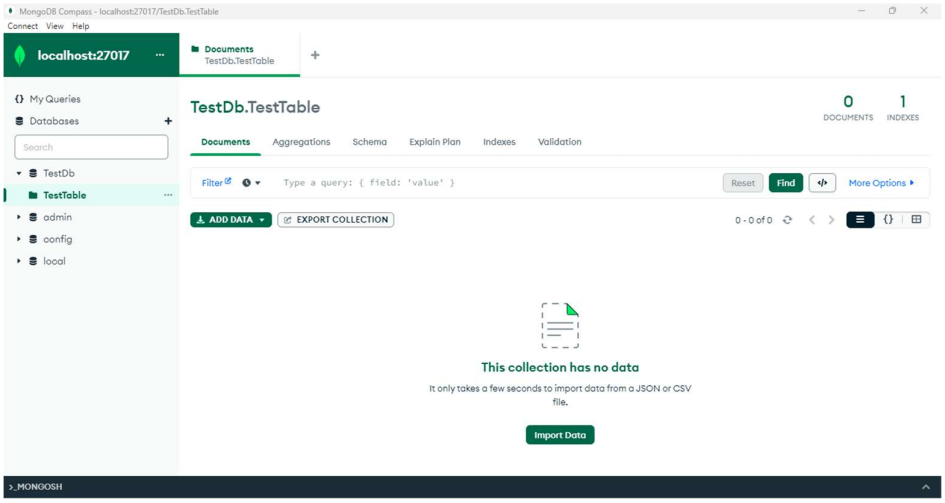
Demonstrate the Accessing and Storing and performing CRUD operations in MongoDB.

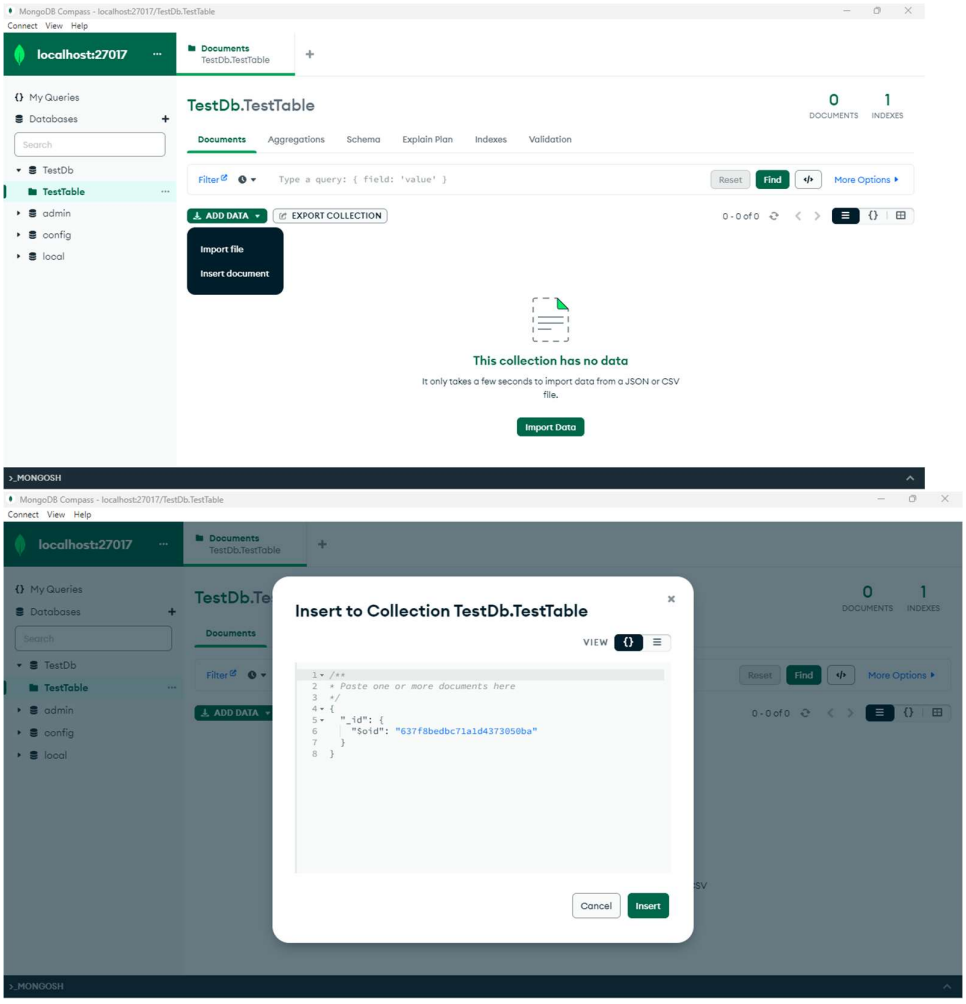
Solution :

Step 1 : Start ⟶ Open MongoDB.

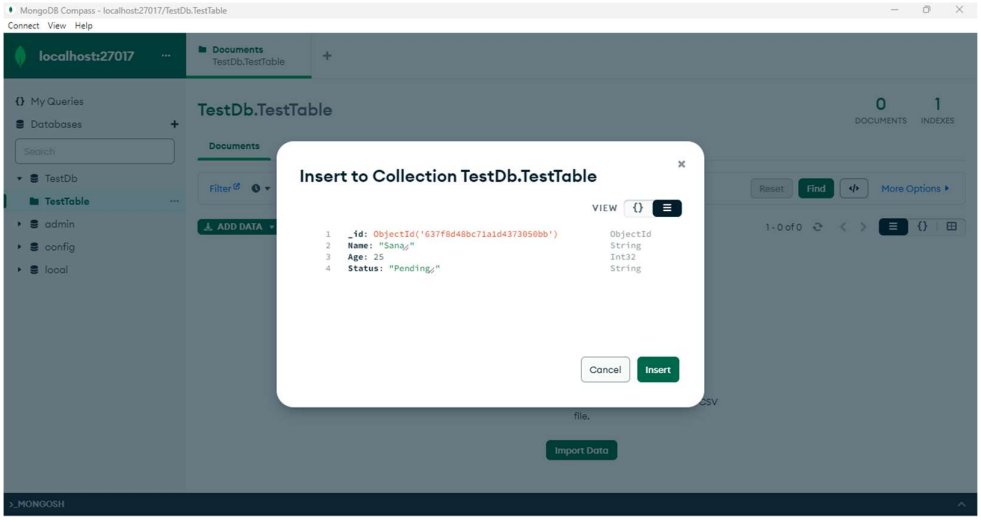


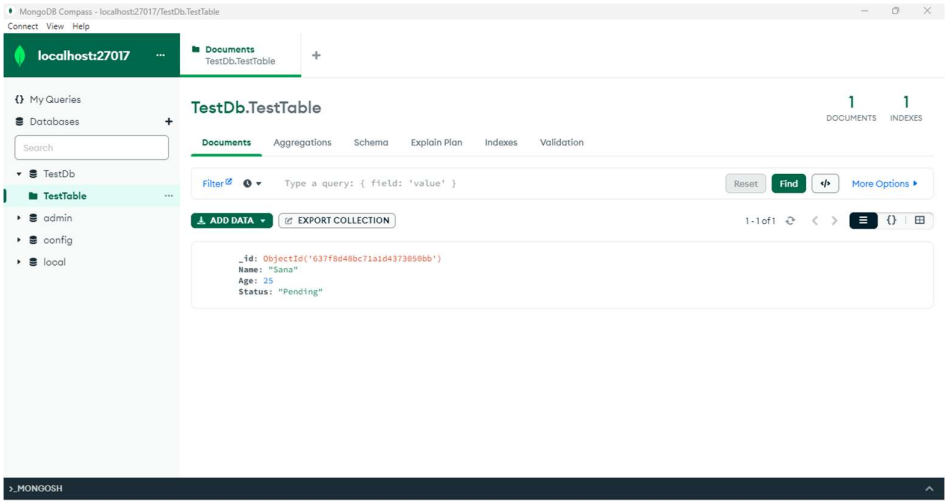
Step 2 : Select create database and then click on Add data and then choose Insert document.



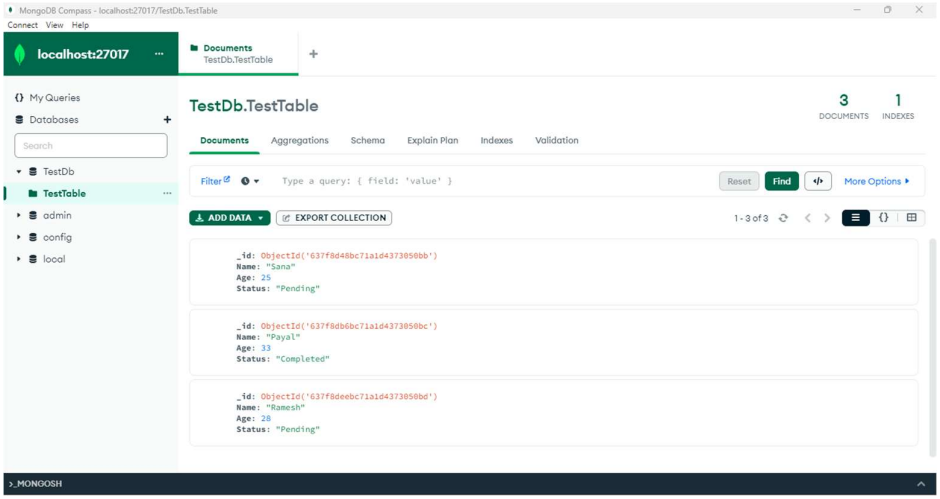


Insert data like name, age, status etc.

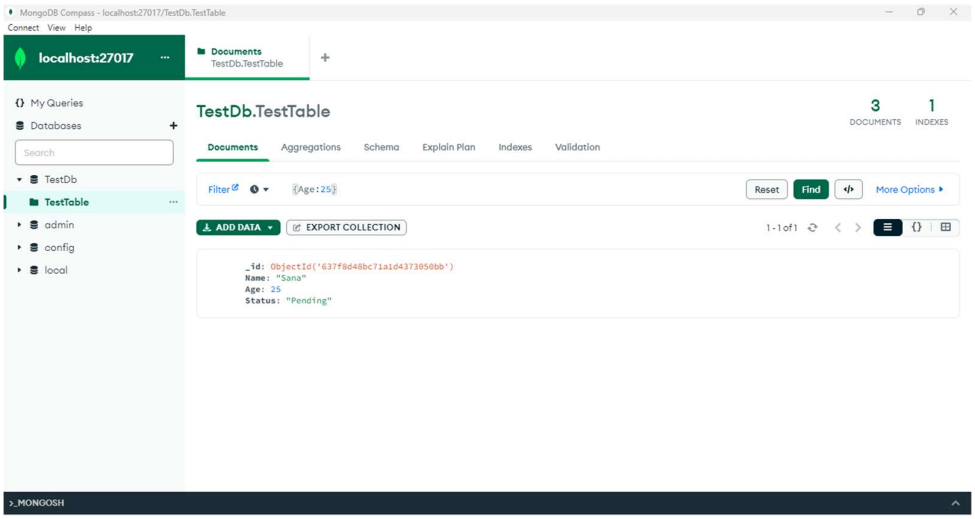




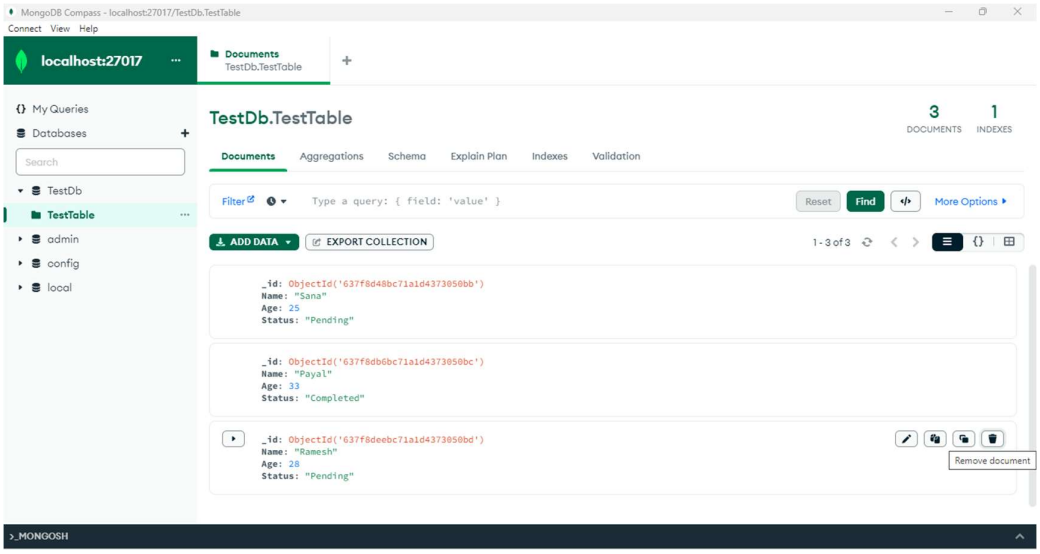
Step 3 : You can add new data and update it.



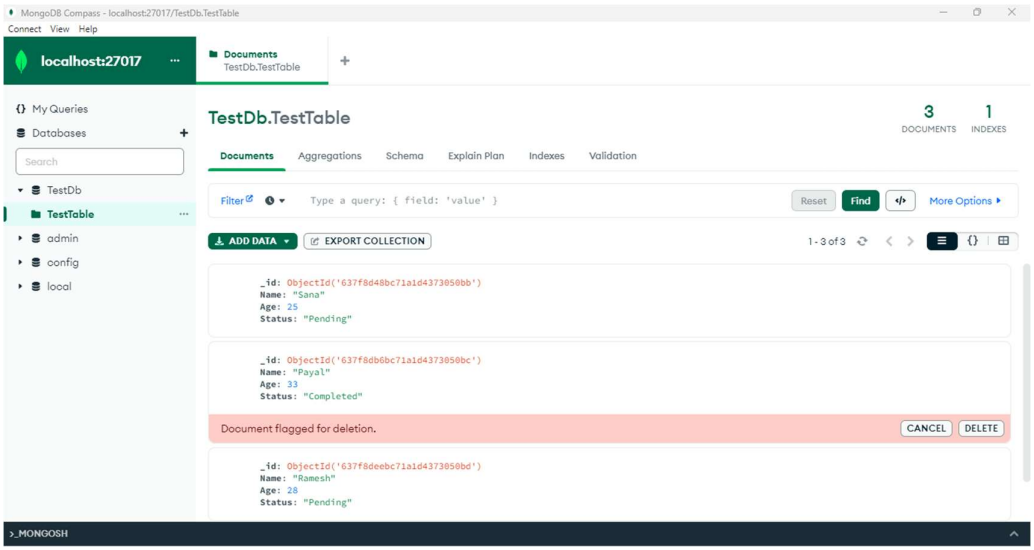
Step 4 : We can see access data by mentioning its values or names in Filter menu.



Step 5 : To delete data, click on remove document.



The updated database will look like :



Practical No 6

Demonstrate the indexing and ordering operations in MongoDB.

Solution :

Step 1 : Create Index for database.

```
> //Indexing in Mongodb
> //Large collections,large documents
> db.student.find().pretty()
```

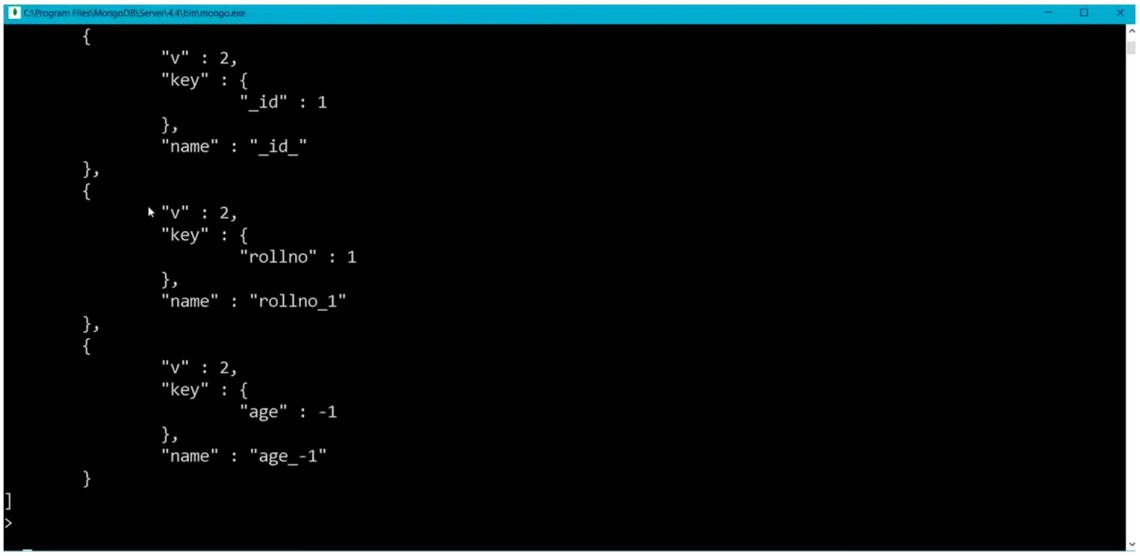
```
{
        "_id" : ObjectId("5f6b0c7a4e771ff7653faf87"),
        "rollno" : 1,
        "fname" : "Ram",
        "cname" : "te"
}
{
        "_id" : ObjectId("5f6b0cc14e771ff7653faf88"),
        "rollno" : 2,
        "fname" : "Siya",
        "cname" : "be"
}
{
        "_id" : ObjectId("5f7bee0fb44f6e405e4e61c6"),
        "name" : {
                "fname" : "Ram",
                "lname" : "Sharma"
        },
        "cname" : "ME"
}
{
        "_id" : ObjectId("5f7c0b90b44f6e405e4e61c7"),
        "name" : "Siya",
```

Step 2: For Single key index

```
        "name" : "Shreya",
        "cname" : "te"
}
{ "_id" : ObjectId("5f7eb5dbfcb4fafd7d773050"), "name" : "shyam" }
> //single_key_index
> db.student.createIndex({rollno:1})
{
        "createdCollectionAutomatically" : false,
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "ok" : 1
}
```

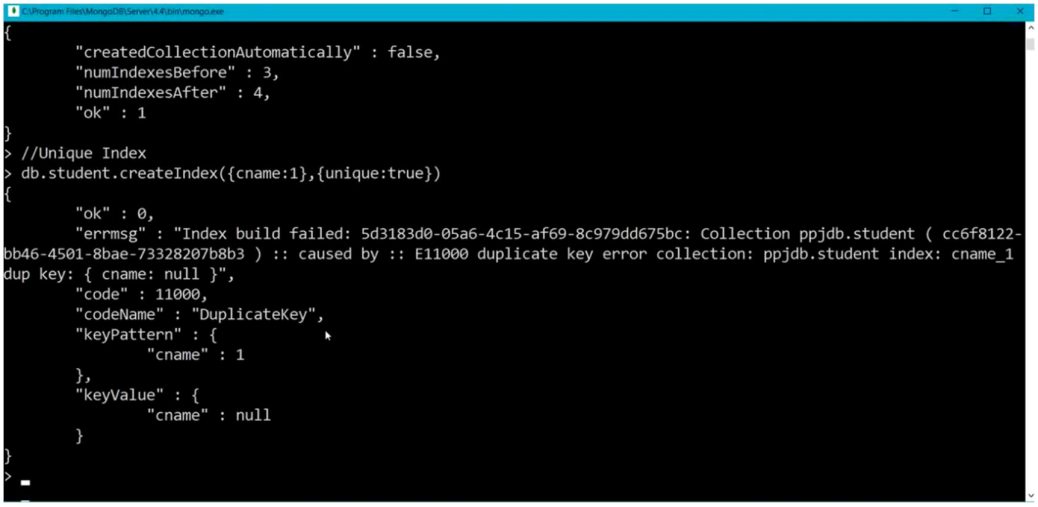
Another method to create index is Ensure index.

```
> db.student.createIndex({rollno:1})
{
        "createdCollectionAutomatically" : false,
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "ok" : 1
}
> db.student.ensureIndex({age:-1})
{
        "createdCollectionAutomatically" : false,
        "numIndexesBefore" : 2,
        "numIndexesAfter" : 3,
        "ok" : 1
}
> db.student.getIndexes()
```



Step 3 : For compund key index.

Step 4 : For Unique key index.




C:\Program Files\MongoDB\Server\4.4\bin\mongo.exe
"code" : 11000,
"codeName" : "DuplicateKey",
"keyPattern" : {
"fname" : 1
},
"keyValue" : {
"fname" : null
}
}
> db.studentnew.find()
{ "_id" : ObjectId("5f9605fb8195e5f0e2d97816"), "name" : "Ram" }
{ "_id" : ObjectId("5f9606078195e5f0e2d97817"), "name" : "Siya" }
> db.studentnew.createIndex({name:1},{unique:true})
{
"createdCollectionAutomatically" : false,
"numIndexesBefore" : 1,
"numIndexesAfter" : 2,
"ok" : 1
}
>

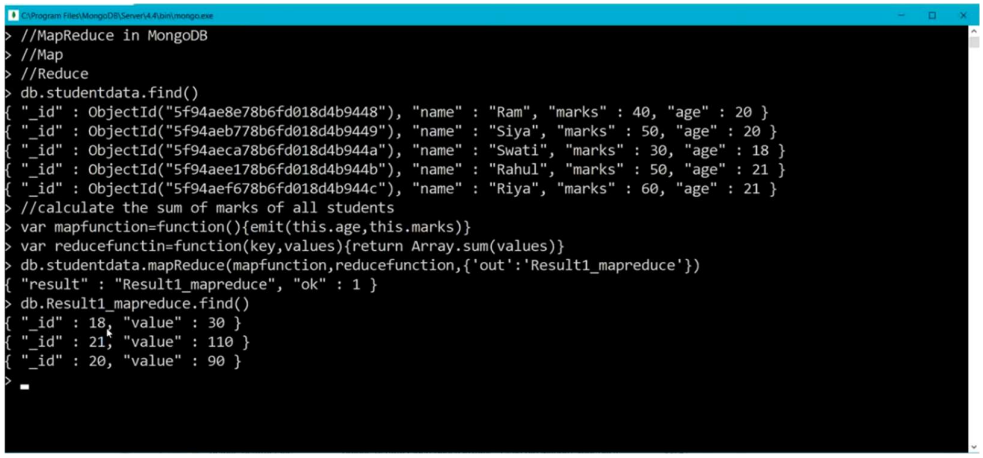
Practical No 7

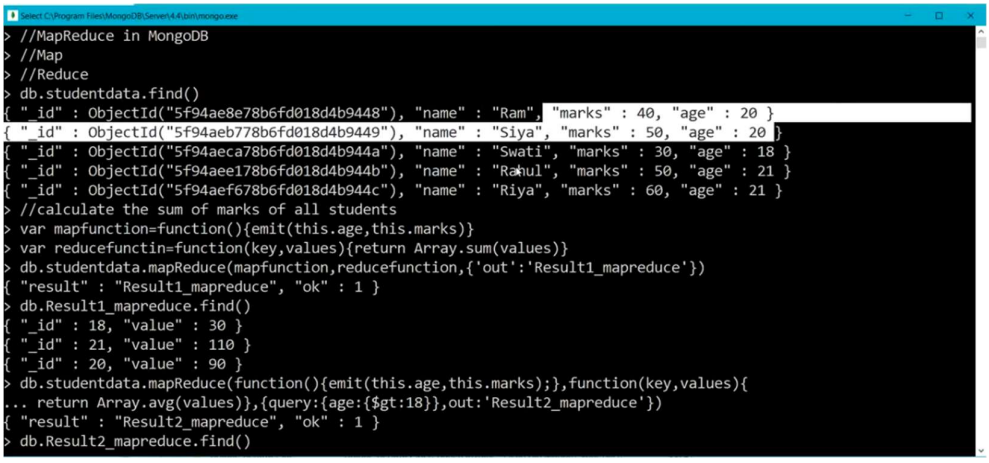
Demonstarting Map reduce in MongoDB.

Solution:

Step 1 : Create Data collection

Step 2 : To perform Map reduce function.



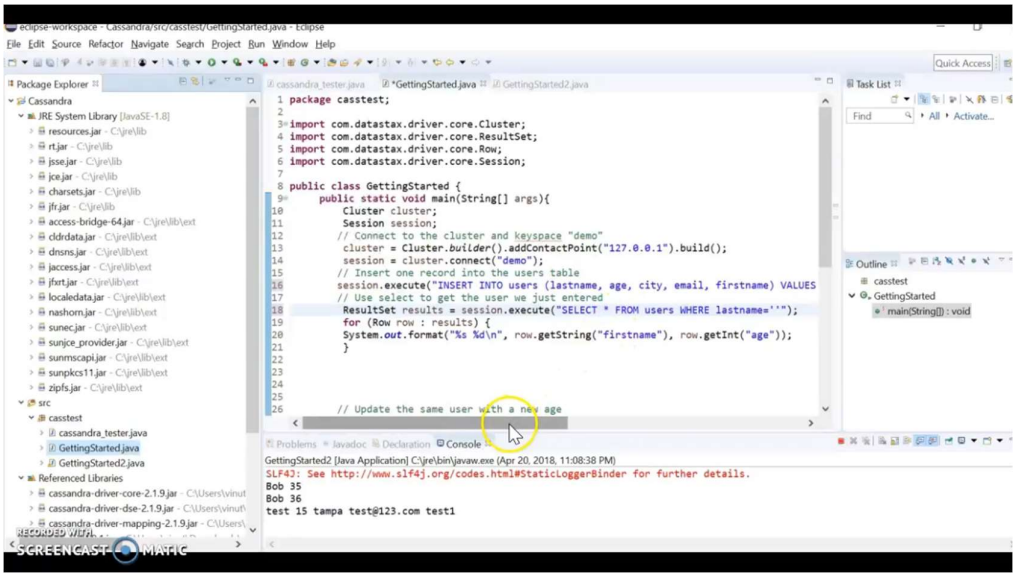


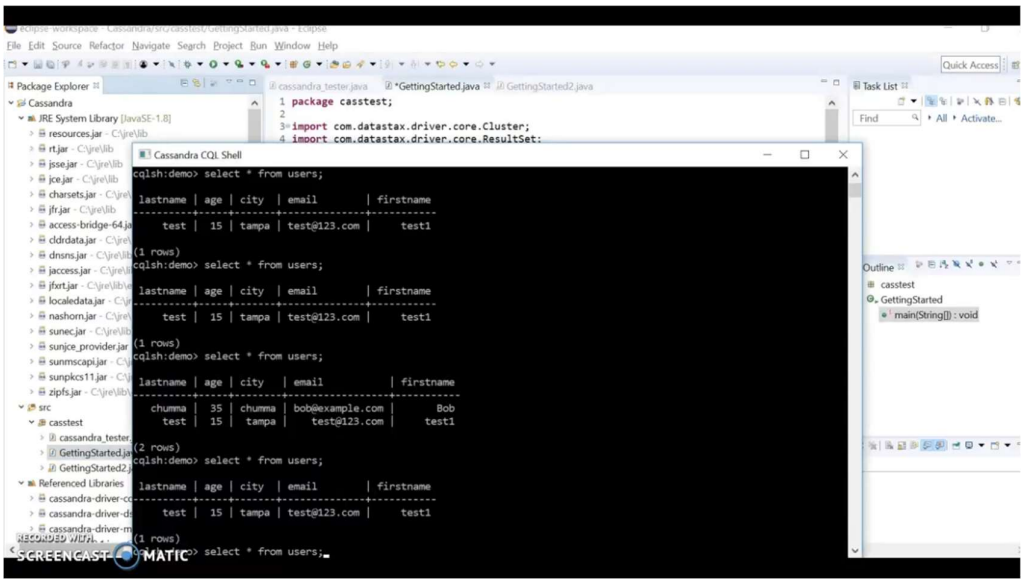
Practical No 8

Demonstrate the Accessing and Storing and performing CRUD operations in Apache Cassandra.

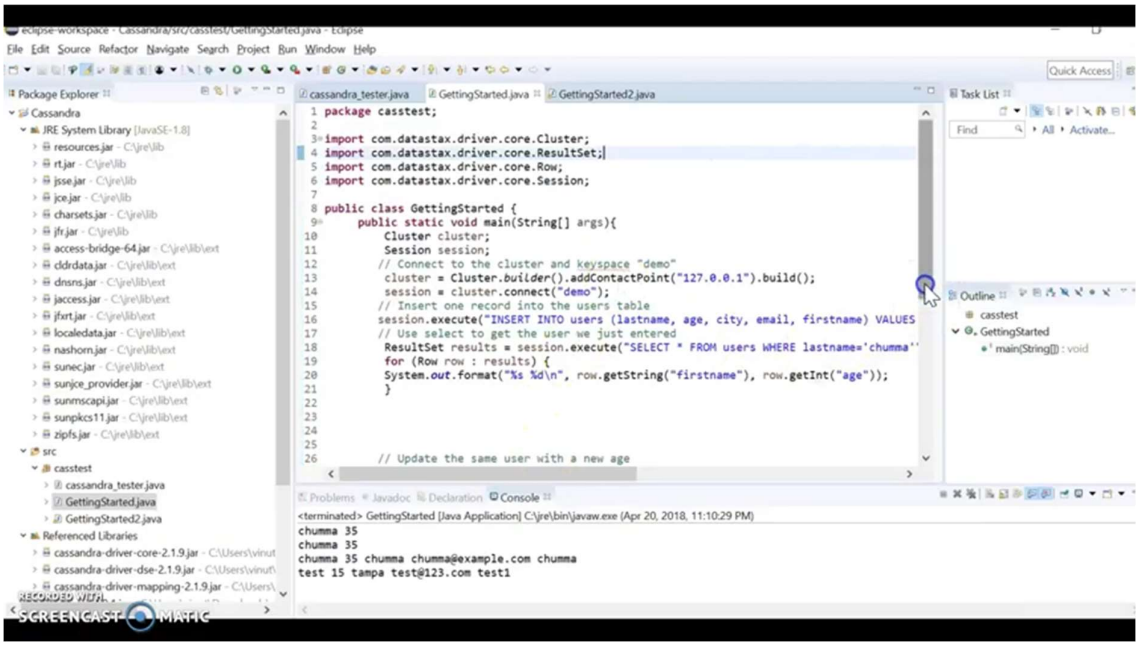
Solution :

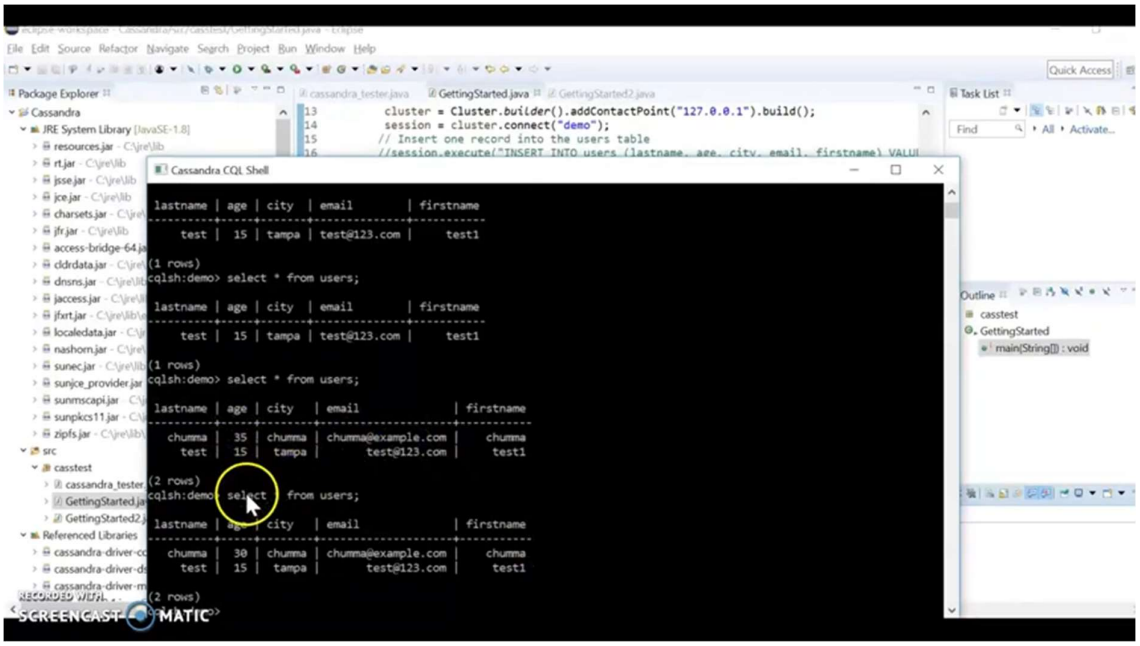
Step 1 : Create Record



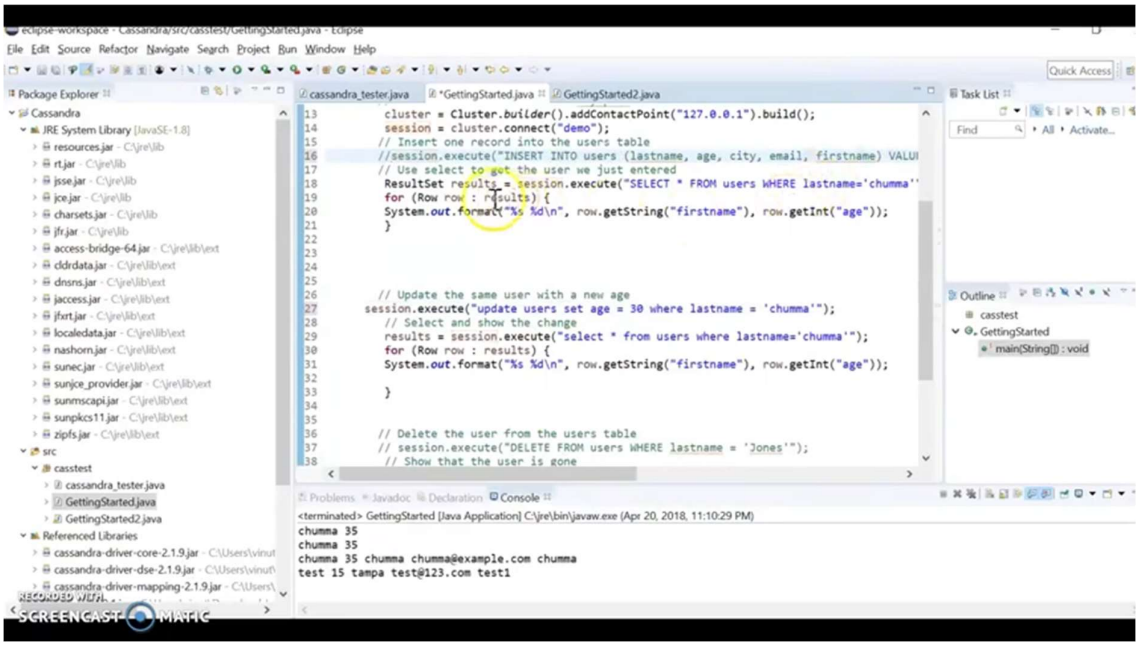


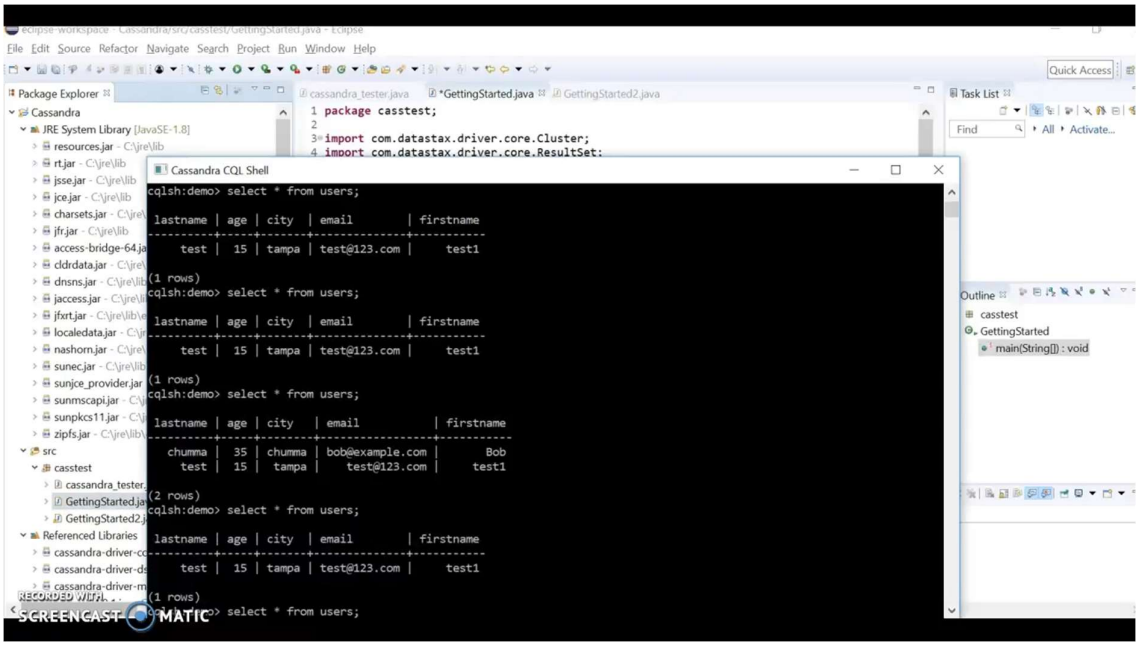
Step 2 : To insert record.





Step 3 : To update Record.





Step 4 : To delete record.