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Assignment - IV

Title :-

Design at least 10 SQL queries for suitable database application using SQL DML statements, All types of join, subquery & views.

Problem Statement :-

Design at least 10 SQL queries for suitable database application using DML statements, All types of join, subquery & view.

Objective :-

To understand · Types of joiner
· subquery & its type
· complex view

S/w & H/w requirements :-

MySQL, 64 bit Fedora OS.

Concept related theory :-

JOIN : SQL join is used to refer data from two or more tables which is joined to appear as single set of data. SQL join is used for combining colum from two or more tables.

minimum required condition for joining table is (n-1) where n is no. of tables

Types of Join :-

Cross join : this type of join returns the cartesian product of rows from tables in join it will return a table which consist of records which combines each row from the first table with each row of second table.

```
select column_name_list
from table_name_1
cross join
tablename_2
```

Inner Join : This is simple join in which the result is based on matched data as per the equality condition specified in the query.

```
select column_name_list
From table_name_1
Inner join
table_name_2
where tablename1.columnname =
      tablename2.columnname;
```

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Natural join :-

A natural join is a type of inner join which is based on column having same name & same datatype present in both the tables to be joined

```
select * from
  table_name1
  natural join
  tablename2.
```

Outer join :-

Outer join is based on both matched & unmatched data. outer join subdivide further into

left outer join
right outer join
full outer join

left outer join :-

The left outer join returns a result table with the matched data of two tables then remaining rows of the left table & null for the right table column.

```
select column_name_list
from tablename1
left outer join
table name2 on
```

value name 1. column name =
~~table name~~ table name 2. column name ;

Right outer join :- The right outer join returns a result table with matched data of two tables the remaining rows of the right table & null the left table columns

```
select column_name-list
from tablename1
right outer join
table name 2 on
tablename1.column name =
tablename2.column name ;
```

Full Outer join :-

returns a result table with matched data of two table then remaining rows of left table & right table

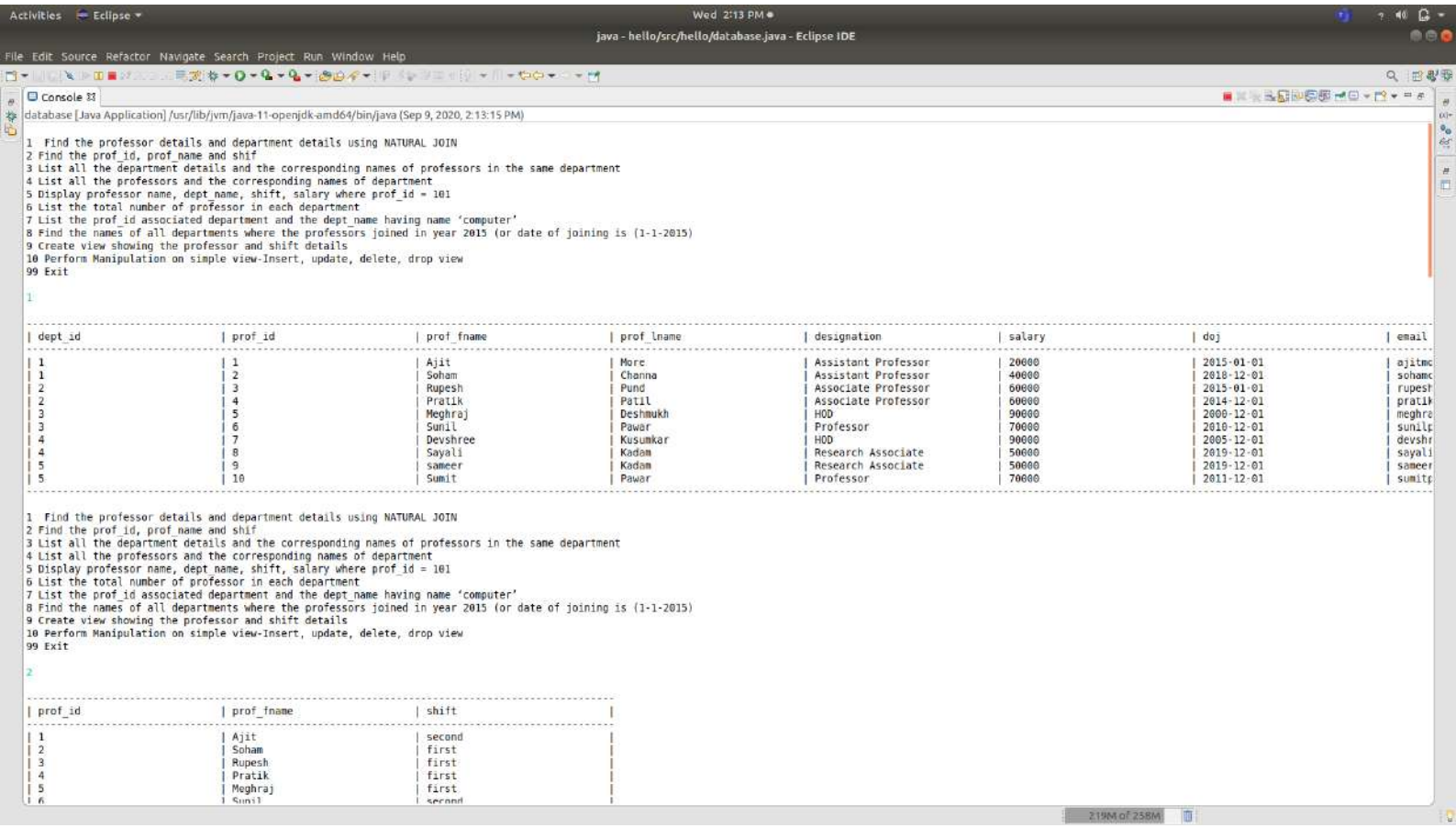
Conclusion :-

We successfully designed SQL queries for suitable database applications using SQL DML statements.

```
import java.io.DataOutputStream;
import java.io.IOException;
import java.sql.*;
import java.util.Scanner;
public class database {
public static     Connection con;
public static     Statement st;

       public static void print(String s,int num)
          {
           {
               if(s==null)
                     num=30-4;
               else
                num=num-s.length();

               System.out.print(" "+s);
               for(int i=0;i<num;i++)
               {
                     System.out.print(" ");
               }
               System.out.print("|");
             }

             }
       public static void  queryexecute(String query)
       {

                   try {
                          ResultSet rs1 = st.executeQuery(query);
                             ResultSetMetaData rsmd;
                           rsmd = rs1.getMetaData();
                           System.out.println();
                            for(int j=0;j<30*rsmd.getColumnCount()
+rsmd.getColumnCount()+4;j++)
                           {
                                 System.out.print("-");
                           }
                               System.out.println();
                            for(int i=1;i<=rsmd.getColumnCount();i++)
                               {
                                  if(i==1)
                                  System.out.print("|");
                                  String s=rsmd.getColumnName(i);
                                 print(s,30);

                               }
                            System.out.println();
                            for(int j=0;j<30*rsmd.getColumnCount()
+rsmd.getColumnCount()+4;j++)
                           {
                                 System.out.print("-");
                           }
                               System.out.println();
                               while(rs1.next())
                               {
                                  for(int i=1;i<=rsmd.getColumnCount();i++)
                                  {
                                        if(i==1)
```

```
                                        System.out.print("|");
                                   // int len=rs1.getString(i).length();
                                    print(rs1.getString(i),30);
                                }
                                System.out.println();

                            }
                            for(int j=0;j<30*rsmd.getColumnCount()
+rsmd.getColumnCount()+4;j++)
                            {
                                  System.out.print("-");
                            }
                                System.out.println();

                    } catch (SQLException e) {
                          // TODO Auto-generated catch block
                          e.printStackTrace();
                    }

       }
       public static void main(String[]args) throws Exception
      {
            String query="";
            String url="jdbc:mysql://localhost:3306/professor";
            String uname="root";
            String pass="";
            //String query="select*from Customer where cust_no=2";
            Class.forName("com.mysql.cj.jdbc.Driver");
             con=DriverManager.getConnection(url, uname, pass);
             st=con.createStatement();

             String str="";
             Scanner sc=new Scanner(System.in);
                  int ch,flag=0;
                  while(true)
                  {

                        System.out.println("\n1  Find the professor details and
department details using NATURAL JOIN ");
                        System.out.println("2 Find the prof_id, prof_name and
shif");
                        System.out.println("3 List all the department details and
the corresponding names of professors in the same department");
                        System.out.println("4 List all the professors and the
corresponding names of department");
                        System.out.println("5 Display professor name, dept_name,
shift, salary where prof_id = 101");
                        System.out.println("6 List the total number of professor in
each department");
                        System.out.println("7 List the prof_id associated
department and the dept_name having name ‘computer’");
                        System.out.println("8 Find the names of all departments
where the professors joined in year 2015 (or date of joining is (1-1-2015)");
                        System.out.println("9 Create view showing the professor and
shift details");
                        System.out.println("10 Perform Manipulation on simple view-
Insert, update, delete, drop view");
                        System.out.println("99 Exit\n");
                        ch=sc.nextInt();
```

```
                        switch(ch)
                        {
                        case 1 : str="select *from Professors natural join
Departments;";
                                        queryexecute(str);
                                        break;
                        case 2 : str="select p.prof_id,p.prof_fname,s.shift from
Professors p , Shift s where p.prof_id=s.prof_id;";
                                        queryexecute(str);
                                break;
                        case 3 : str="select
Departments.dept_id,Departments.dept_name,Professors.prof_fname from Departments
left join Professors on  Departments.dept_id=Professors.dept_id order by
Departments.dept_id;";
                                        queryexecute(str);
                                break;
                        case 4 : str="select
Professors.prof_fname,Professors.prof_lname,Departments.dept_name from Departments
inner join Professors on  Departments.dept_id=Professors.dept_id;";
                                        queryexecute(str);
                                break;
                        case 5 : str="select prof_fname,dept_name,shift,salary from
Professors inner join Departments using (dept_id) inner join Shift using(prof_id)
inner join Works using (prof_id) where prof_id=1;";
                                        queryexecute(str);
                                break;
                        case 6 :       break;
                        case 7 : str="select prof_id,dept_name from Professors
inner join Departments  using(dept_id) where dept_name=\"Computer Engineering\"
order by prof_id;";
                                        queryexecute(str);
                                break;
                        case 8 : str="select dept_name from Professors inner join
Departments  using(dept_id) where doj=\"2015-01-01\";";
                                        queryexecute(str);
                                break;
                        case 9 : str="";
                                        queryexecute(str);
                                break;
                        case 10: str="";
                                        queryexecute(str);
                                break;
                        case 99: flag=1;
                                 break;
                        }
                         if(flag==1)
                    {
                        flag=0;
                        break;
                    }
                   }
                     st.close();
                     con.close();


                }
               }
```


Activities
Eclipse
Wed 2:13 PM
java - hello/src/hello/database.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Console
database [Java Application] /usr/lib/jvm/java-11-openjdk-amd64/bin/java (Sep 9, 2020, 2:13:15 PM)
1 Find the professor details and department details using NATURAL JOIN
2 Find the prof_id, prof_name and shif
3 List all the department details and the corresponding names of professors in the same department
4 List all the professors and the corresponding names of department
5 Display professor name, dept_name, shift, salary where prof_id = 101
6 List the total number of professor in each department
7 List the prof_id associated department and the dept_name having name 'computer'
8 Find the names of all departments where the professors joined in year 2015 (or date of joining is (1-1-2015)
9 Create view showing the professor and shift details
10 Perform Manipulation on simple view-Insert, update, delete, drop view
99 Exit
1
| dept_id | prof_id | prof_fname | prof_lname | designation | salary | doj | email
| 1 | 1 | Ajit | More | Assistant Professor | 20000 | 2015-01-01 | ajitmo
| 1 | 2 | Soham | Channa | Assistant Professor | 40000 | 2018-12-01 | sohamc
| 2 | 3 | Rupesh | Pund | Associate Professor | 60000 | 2015-01-01 | rupesh
| 2 | 4 | Pratik | Patil | Associate Professor | 60000 | 2014-12-01 | pratik
| 3 | 5 | Meghraj | Deshmukh | HOD | 90000 | 2000-12-01 | meghra
| 3 | 6 | Sunil | Pawar | Professor | 70000 | 2010-12-01 | sunilp
| 4 | 7 | Devshree | Kusumkar | HOD | 90000 | 2005-12-01 | devshr
| 4 | 8 | Sayali | Kadam | Research Associate | 50000 | 2019-12-01 | sayali
| 5 | 9 | sameer | Kadam | Research Associate | 50000 | 2019-12-01 | sameer
| 5 | 10 | Sumit | Pawar | Professor | 70000 | 2011-12-01 | sumitp
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9 Create view showing the professor and shift details
10 Perform Manipulation on simple view-Insert, update, delete, drop view
99 Exit
2
prof_id	prof_fname	shift
1	Ajit	second
2	Soham	first
3	Rupesh	first
4	Pratik	first
5	Meghraj	first
6	Sunil	second
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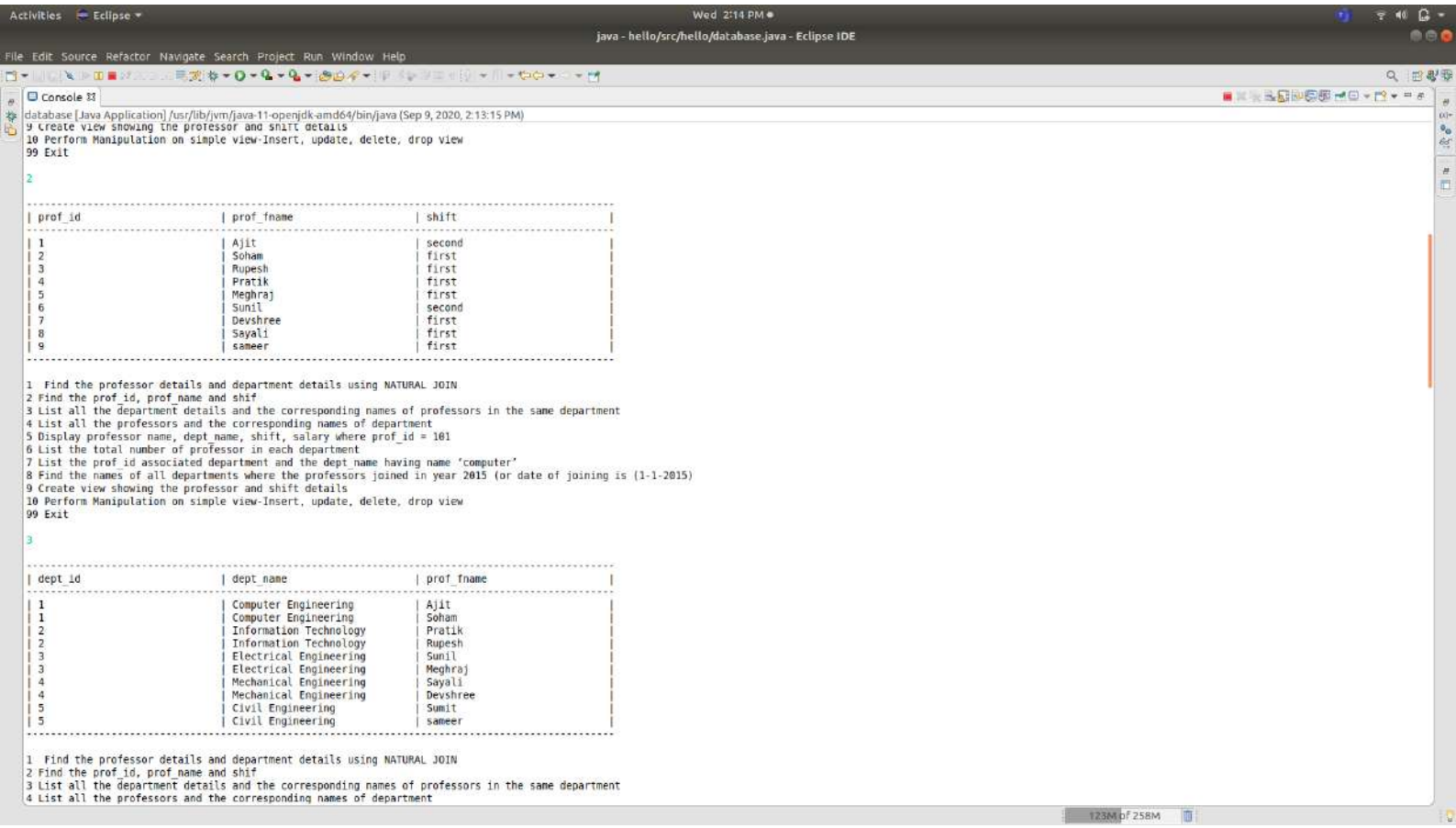
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99 Exit
2
prof_id	prof_fname	shift
1	Ajit	second
2	Soham	first
3	Rupesh	first
4	Pratik	first
5	Meghraj	first
6	Sunil	second
7	Devshree	first
8	Sayali	first
9	sameer	first
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3
dept_id	dept_name	prof_fname
1	Computer Engineering	Ajit
1	Computer Engineering	Soham
2	Information Technology	Pratik
2	Information Technology	Rupesh
3	Electrical Engineering	Sunil
3	Electrical Engineering	Meghraj
4	Mechanical Engineering	Sayali
4	Mechanical Engineering	Devshree
5	Civil Engineering	Sumit
5	Civil Engineering	sameer
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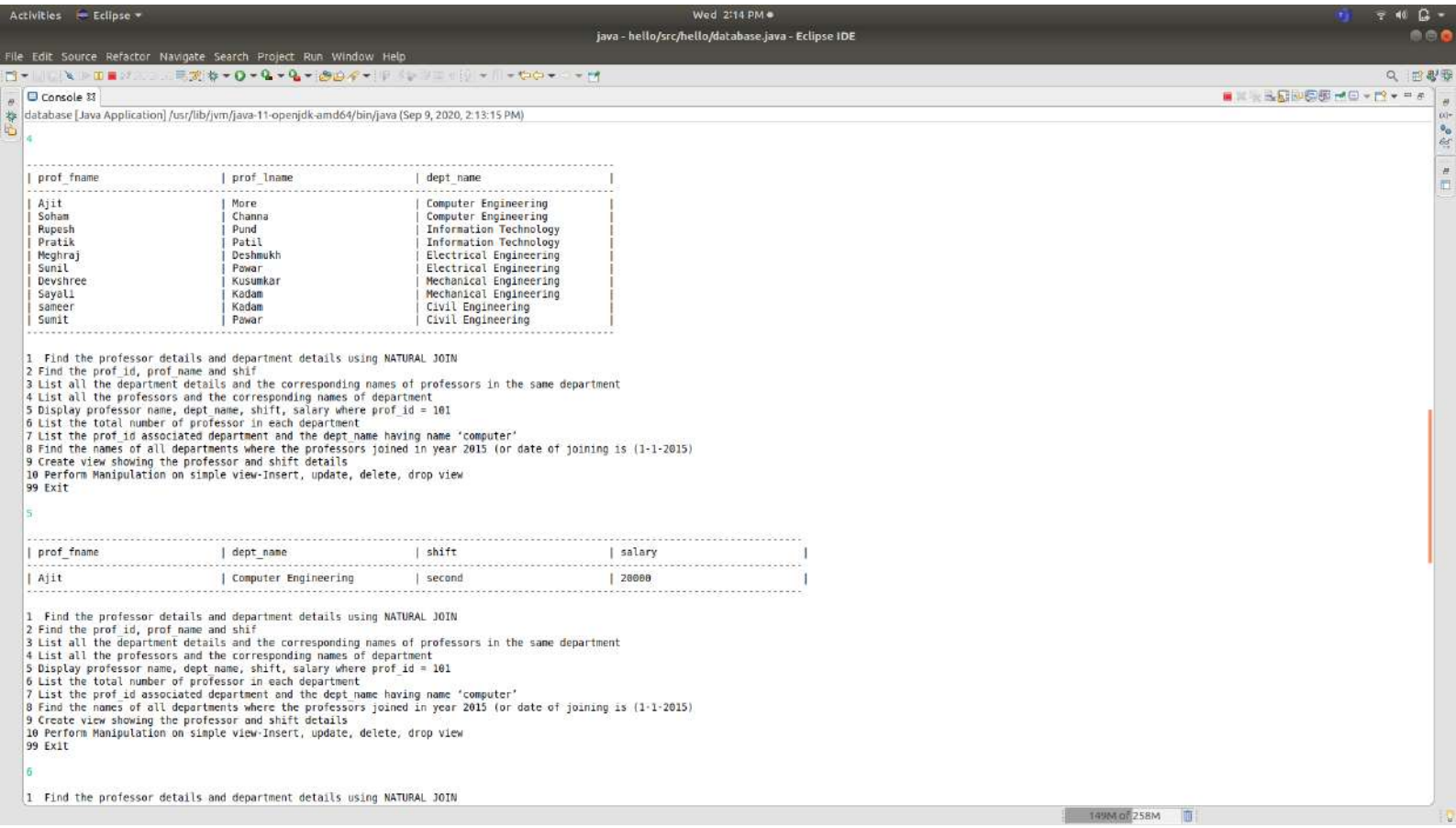
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4
prof_fname	prof_lname	dept_name
Ajit	More	Computer Engineering
Soham	Channa	Computer Engineering
Rupesh	Pund	Information Technology
Pratik	Patil	Information Technology
Meghraj	Deshmukh	Electrical Engineering
Sunil	Powar	Electrical Engineering
Devshree	Kusumkar	Mechanical Engineering
Sayali	Kadam	Mechanical Engineering
sameer	Kadam	Civil Engineering
Sumit	Powar	Civil Engineering
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5
prof_fname	dept_name	shift	salary
Ajit	Computer Engineering	second	20000
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4 List all the professors and the corresponding names of department
5 Display professor name, dept_name, shift, salary where prof_id = 101
6 List the total number of professor in each department
7 List the prof_id associated department and the dept_name having name 'computer'
8 Find the names of all departments where the professors joined in year 2015 (or date of joining is (1-1-2015)
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1 Find the professor details and department details using NATURAL JOIN
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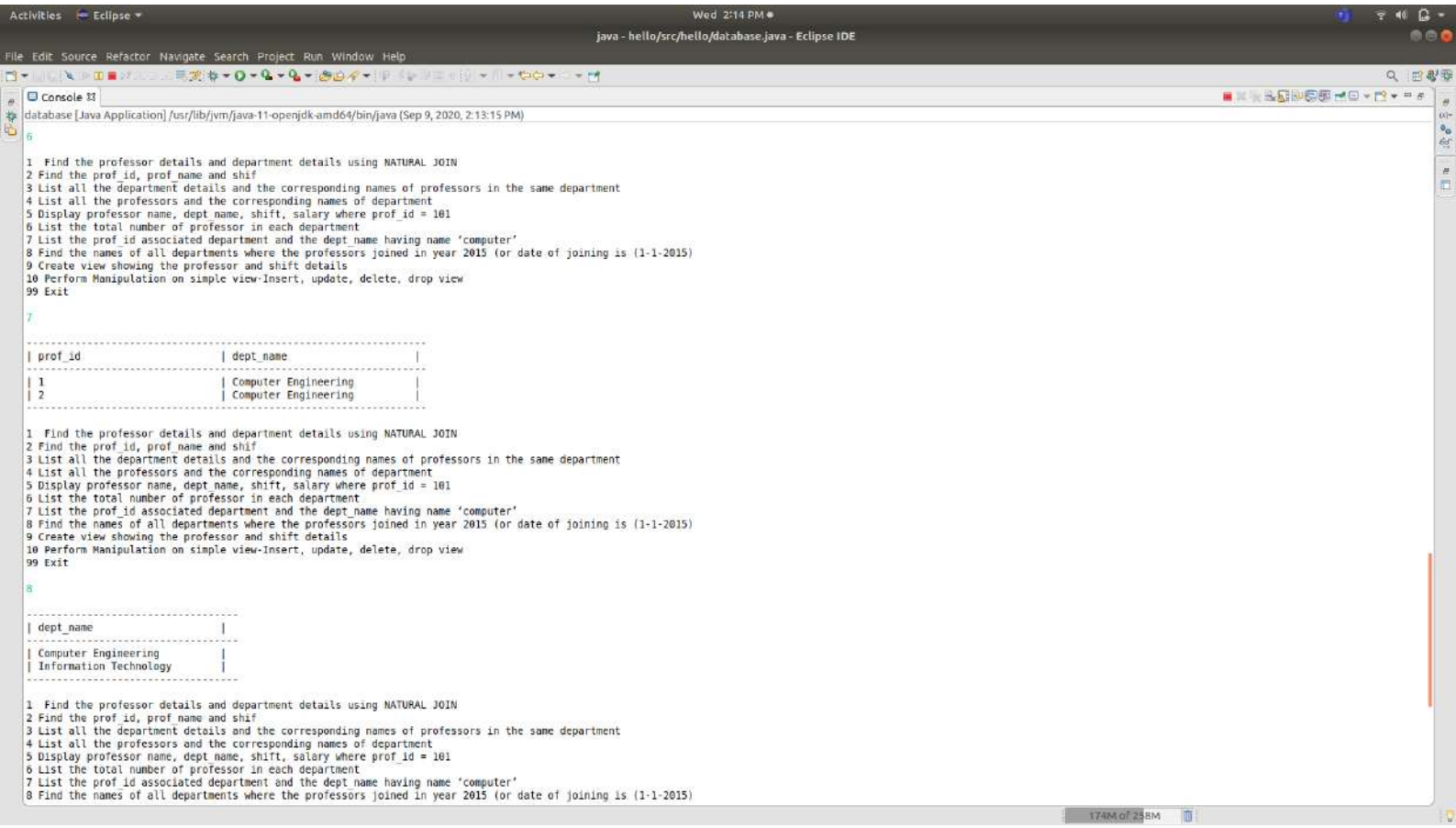
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7
prof_id	dept_name
1	Computer Engineering
2	Computer Engineering
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8
dept_name
Computer Engineering
Information Technology
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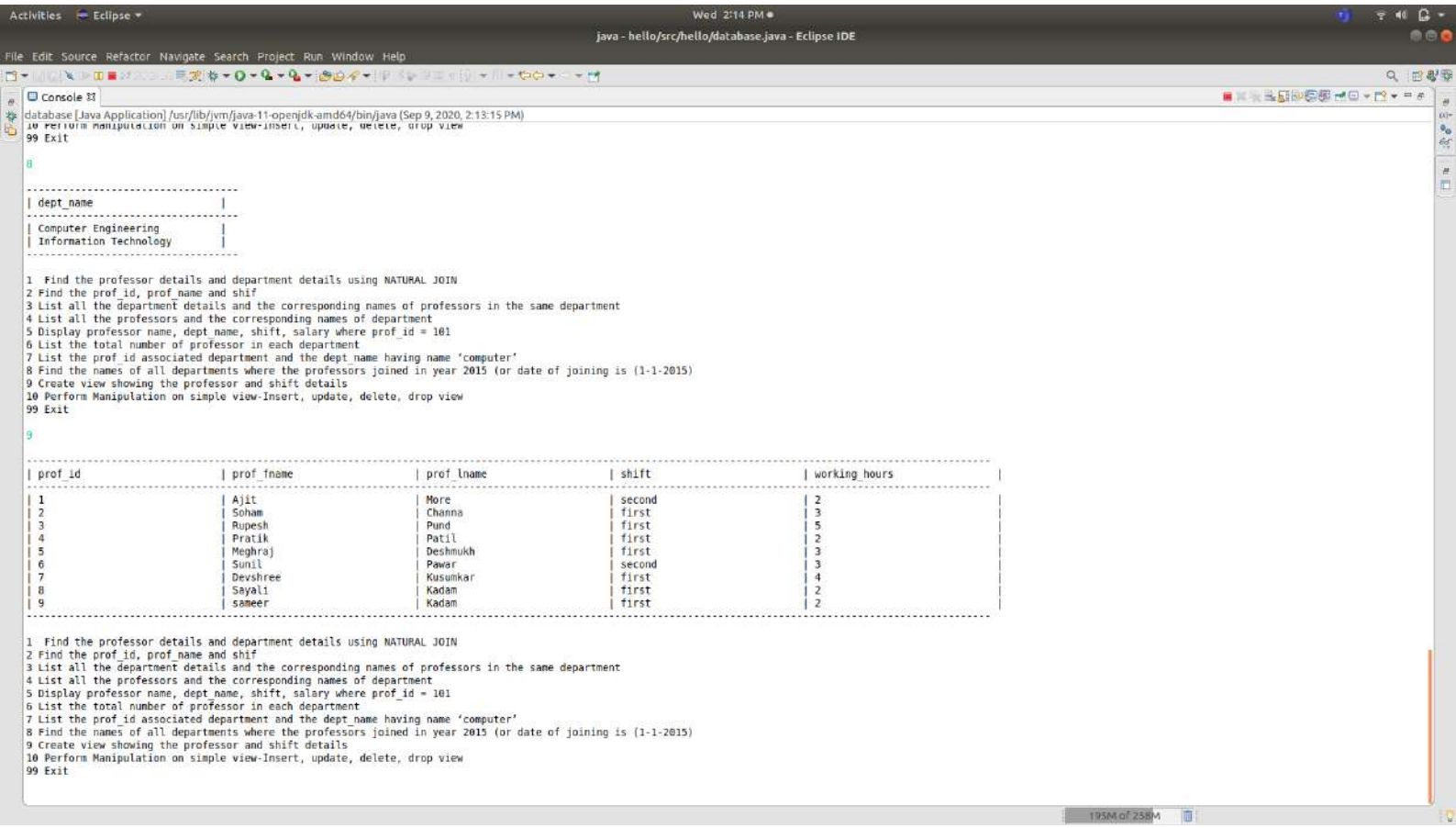
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8
| dept_name |
| Computer Engineering |
| Information Technology |
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99 Exit
9
prof_id	prof_fname	prof_lname	shift	working_hours
1	Ajit	More	second	2
2	Soham	Channa	first	3
3	Rupesh	Pund	first	5
4	Pratik	Patil	first	2
5	Meghraj	Deshmukh	first	3
6	Sunil	Pawar	second	3
7	Devshree	Kusumkar	first	4
8	Sayali	Kadam	first	2
9	sameer	Kadam	first	2
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