ADVANCED JAVA

AMITY INSTITUTE OF INFORMATION TECHNOLOGY

LAB-4

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Program/Semester : BCA – 6 'B'
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Submitted to :-

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Department:- Amity Institude Of Information Technology
Session:- 2021-20

HIBERNATE (THROUGH ANNOTATIONS)

Problem Statement :

Hibernate Configuration program to demonstrate crud operations with the help of annotations.

Introduction :

The objective of this proj ect is to develop a Hibernate program that performs CRUD (Create, Read, Update, Delete) operations on a table named "employe". The program will utilize two XML files for configuration and mapping purposes. The first XML file, hibernate.cfg.xml, will contain properties related to the database connection, including driver class name, URL username, password, dialect, and a mapping tag specifying the location of the second XMLT11e, leaders.hbm.xml. The second XML file, leaders.hbm.xml, will define the mapping between Java objects and the "politics" table, linking each attribute of the employe class to the corresponding columns in the table.

Problem Description:

The program will consist of the following functionalities:

1. Insert Record :

Users will have the option to insert a new record into the "employe" table. Upon selecting this option, the program will prompt the user to enter details about the employe, including the employe's name, Salary, and idt. The entered information will then be added as a new record in the database.

2. Update Record :

Users will be able to update information about a particular employe. Upon selecting this option, the program will prompt the user to enter the ID of the leader whose information they want to update. If the provided ID corresponds to a leader in the database, the program will allow the user to modify the id. If the leader is not found, the program will display a message indicating that the leader with the entered ID is not found.

3. Delete Record :

Users can delete a record from the "employe" table by providing the employe's ID. If the provided ID matches a leader in the database, the program will delete the corresponding record.
If the leader is not found, the program will display a message indicating that the leader with the entered ID is not found.

4. Exit Program :

Users will have the option to exit the program. Upon selecting this option, the program will close the Hibernate session and factory, allowing users to exit the program gracefully.

Implementation Approach:

The program will be implemented using Hibernate, a popular object-relational mapping (ORM) framework for Java. Hibernate will handle the mapping between Java objects and the database tables, utilizing a separate mapping file to define the mapping configuration. The program will provide a userfriendly menu interface for interacting with the database, ensuring ease of use and clarity for users. Each CRUD operation will be implemented as a separate method or class, following a modular and object-oriented approach.

Expected Input and Output:

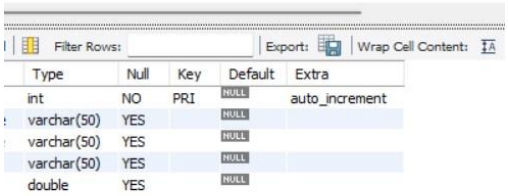
1. Insert Record :
User inputs : name, id, salary.

2.Update Record :
User inputs : employe's ID and new name.
Output : Confirmation message upon successful update, or a message indicating that the employe with the entered ID is not found.

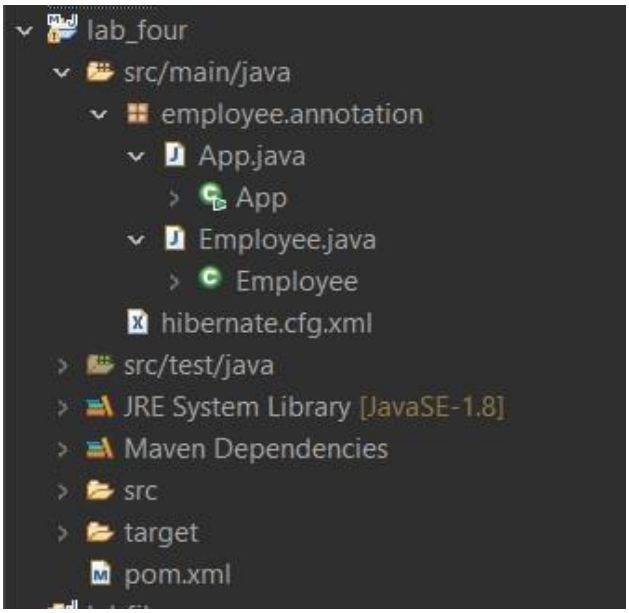
3.Delete Record :
User inputs : employe's ID.
Output : Confirmation message upon successful deletion, or a message indicating that the leader with the entered ID is not found.

4.Exit Program :
Output : Termination of the program.

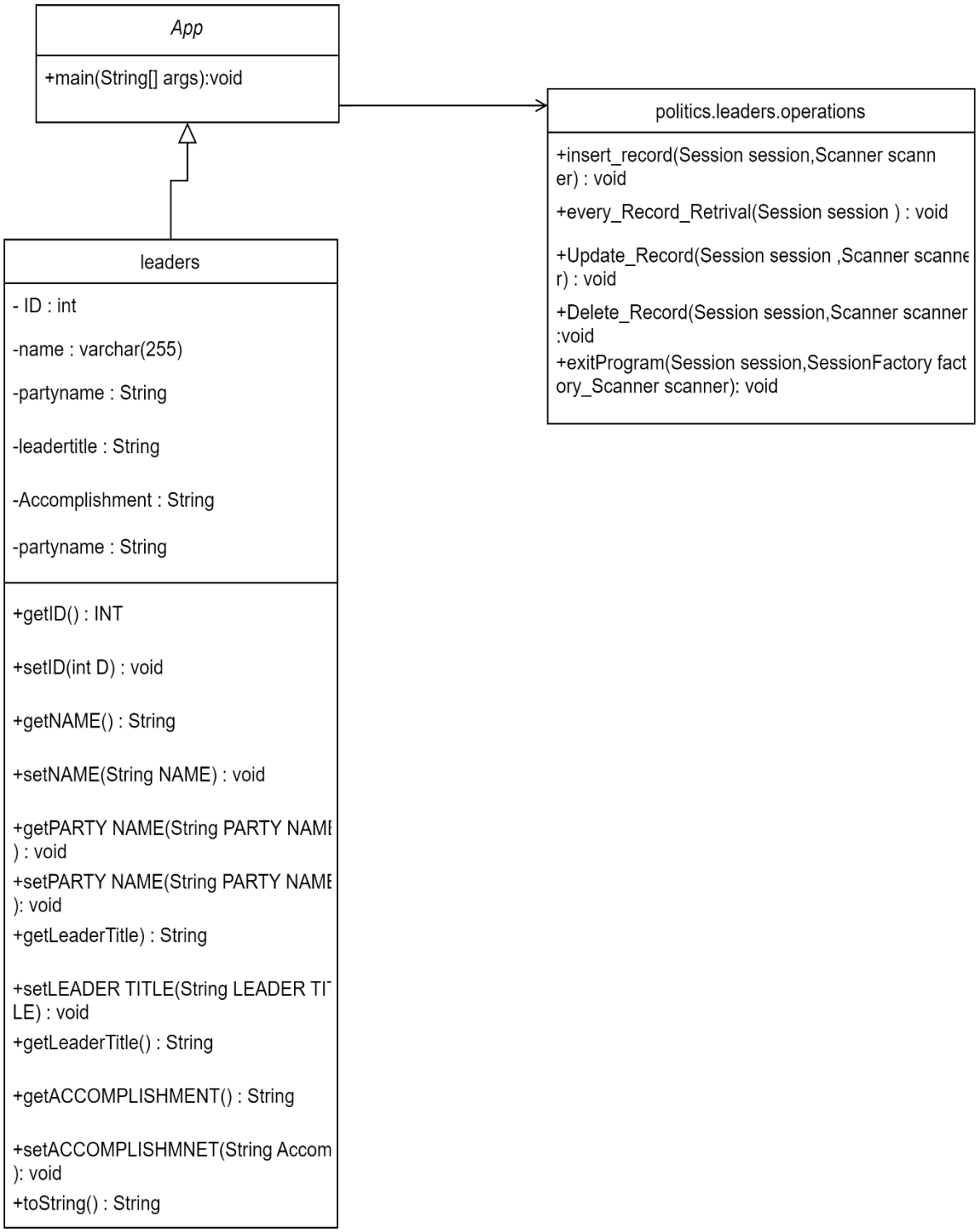
Tools and Technologies used:



Folder Structure



Class Diagram —



CODE

App.java

```
package employee.annotation;
import org.hibernate.Session;
import org.hibernate.SessionFactory;
import org.hibernate.Transaction;
import org.hibernate.cfg.Configuration;
import java.util.List;
 import java.util.Scanner;
import org.hibernate.query.Query;
 public class App
{     public static void main( String[] args )
    {
     Configuration config = new Configuration();
                        config.configure();
                                SessionFactory factory = config.buildSessionFactory();
                    Session session = factory.openSession();
Scanner sc = new Scanner(System.in);
while(true)
                    {
   System.out.println("\nChoose the operation you want to perform :");

          theSystem.out.println("3. Retrieve all the records from
table");
              System.out.println("4. Update some record from the

table ");
              System.out.println("5. Delete some record from the

table ");
              System.out.println("7. Exit");

              System.out.println("\nPlease enter your choice :");

              int choice = sc.nextInt();

              switch(choice)

              {

              case 1 : insert_record(session, sc);
```

CODE

```
                    break;

            case 2 : retrieve_record(session, sc);

  System.out.println("1. Insert a record into the table");
  System.out.println("2. Retrieve a particular record from the table");
                    break;                          case          3          :
retrieve_all_records(session);
                    break;
                            case 4 : update_record(session, sc);
                        break;
                            case 5 : delete_record(session, sc);
                        break;
                              case 6 : exit_program(session, factory, sc);
                        break;
                    }
                }
   }    private static void insert_record(Session session, Scanner sc)
   {
            Transaction transaction =
session.beginTransaction();
                System.out.println("\nPerforming INSERT operation.....");
     System.out.println("\nPlease enter the first name of the employee -");
                        String fname = sc.next();
     System.out.println("Please enter the last name of the employee -");
                        String lname = sc.next();
     System.out.println("Please enter the department of the employee -");
                        String dept = sc.next();
     System.out.println("Please enter the salary of the employee -");
                        double sal = sc.nextDouble();
                        System.out.println();
                Employee emp_insert = new Employee();
         emp_insert.setF_name(fname);
    emp_insert.setL_name(lname);
    emp_insert.setE_dept(dept);
    emp_insert.setE_sal(sal);
    session.save(emp_insert);
                        transaction.commit();
   }    private static void retrieve_record(Session session, Scanner sc)
   {
    Transaction transaction = session.beginTransaction();
System.out.println("\nRetrieving a particular employee
```

CODE

```
from the table based on his/her id.....");
                        System.out.println("\nEnter the id of the employee who's
information you want to retrieve - ");                  int
retrieved_id = sc.nextInt();
                    System.out.println();
 Employee E = session.get(Employee.class, retrieved_id);
if (E != null)
                {
                    System.out.println("Employee - " + E);
                }
            else
              {
   System.out.println("Employee with ID " + retrieved_id + " doesn't exist.\n");
              }
                    transaction.commit();
  }    private static void retrieve_all_records(Session session)
  {
   Transaction transaction = session.beginTransaction();
 System.out.println("\nRetrieving everything from the table.....\n");
                Query<Employee>    query    =    session.createQuery("FROM    leaders",
Employee.class);
                        List<Employee> employees_list = query.list();
                    for (Employee emp : employees_list)
                {
                    System.out.println("Employee - " + emp);
                }
                    transaction.commit();
  }    private static void update_record(Session session, Scanner sc)
  {
   Transaction transaction = session.beginTransaction();
                System.out.println("\nUpdating the department of the employee.....");
                System.out.println("\nEnter the id of the employee who's department you want
to update -");
                    int id = sc.nextInt();
                        Employee emp_update = session.get(Employee.class, id);
                    if(emp_update != null)
                {
                        System.out.println("\nEnter the name of the new
department for the employee -");                String
new_dept = sc.next();                   System.out.println();
```

CODE

```
        emp_update.setE_dept(new_dept);
        session.saveOrUpdate(emp_update);
                System.out.println("Department - " + emp_update + " updated successfully.\n");
                }
                 else
                {
  System.out.println("\nEmployee with ID " + id + " doesn't exist.\n");
                }
                    transaction.commit();
   }    private static void delete_record(Session session, Scanner sc)
   {
    Transaction transaction = session.beginTransaction();
        System.out.println("\nDeleting some record from the table.....");
                System.out.println("\nEnter the id of the employee whose information you want
to delete -");
                     int id = sc.nextInt();
                    System.out.println();
                         Employee emp_delete = session.get(Employee.class, id);
                     if (emp_delete != null)
                {
                     session.delete(emp_delete);
  System.out.println("Record - " + emp_delete + " deleted successfully.\n");
                }
                 else
                {
   System.out.println("\nEmployee with ID " + id + " is not found.\n");
                }
                    transaction.commit();
   }    private static void exit_program(Session session, SessionFactory factory, Scanner sc)
   {
     System.out.println("\nExiting...\n");            sc.close();
            session.close();          factory.close();
                System.exit(0);
   }
}
```

CODE

Employee.java

```
package employee.annotation;
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;
import javax.persistence.Table;

@Entity
@Table(name = "employee") public class
Employee {
@Id
@GeneratedValue(strategy = GenerationType.IDENTITY)
 private int e_id;
private String F_name;
private String L_name;
private String e_dept;
 private double e_sal;
public Employee() {
            super();
                // TODO Auto-generated constructor stub
} public Employee(int e_id, String f_name, String l_name, String e_dept, double
e_sal) {
          super();
this.e_id = e_id;
F_name = f_name;
L_name = l_name;
this.e_dept = e_dept;
this.e_sal = e_sal;
}   public   int   getE_id()   {
          return e_id;
} public void setE_id(int e_id) {
              this.e_id = e_id;
}   public   String   getF_name()   {
          return F_name;
} public void setF_name(String f_name) {
            F_name = f_name;
}   public   String   getL_name()   {
          return L_name;
} public void setL_name(String l_name) {
```

CODE

```
        L_name = l_name;
}  public  String  getE_dept()  {
        return e_dept;
}  public  void  setE_dept(String  e_dept)  {
        this.e_dept = e_dept;
}  public  double  getE_sal()  {
        return e_sal;
}
public void setE_sal(double e_sal) {
this.e_sal = e_sal;
}  @Override  public  String
toString() {
                return "Employee [e_id=" + e_id + ", F_name=" + F_name + ",
L_name=" + L_name + ", e_dept=" + e_dept + ", e_sal="
                        + e_sal + "]";
}
```

hibernate.cfg.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE hibernate-configuration PUBLIC
 "-//Hibernate/Hibernate Configuration DTD 3.0//EN"
 "http://www.hibernate.org/dtd/hibernate-configuration-3.0.dtd">

 <hibernate-configuration>
 <session-factory>

     <property name="connection.driver_class">com.mysql.cj.jdbc.Driver</proper ty>
    <property name="connection.url">jdbc:mysql://localhost:3306/student</prop erty>
      <property name="connection.username">root</property>
      <property name="connection.password">Mysql@2024</property>
      <property name="dialect">org.hibernate.dialect.MySQLDialect</property>
      <property name="current_session_context_class">thread</property>
      <property      name="cache.provider_class">org.hibernate.cache.internal.NoCach
eProvider</property>
      <property name="show_sql">true</property>
      <property name="hbm2ddl.auto">update</property>
    <mapping class="employee.annotation.Employee"/>


   </session-factory>
 </hibernate-configuration>
```

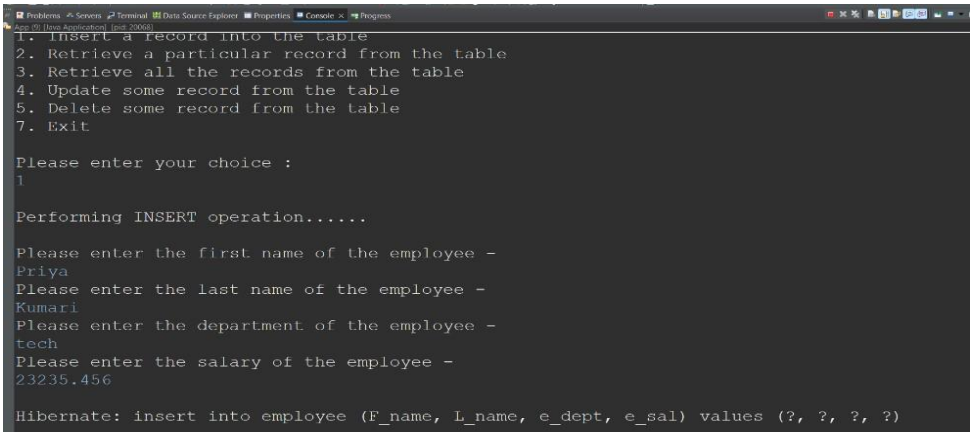
CODE

pom. Xml

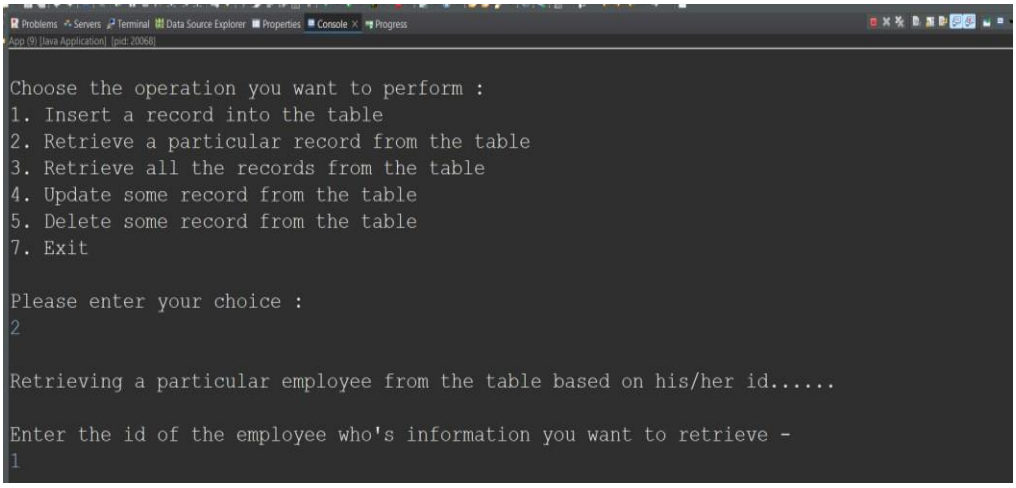
```
<project
xmlns="http://maven.apache.org/POM/4.0.0"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
            <modelVersion>4.0.0</modelVersion>
<groupId>employee</groupId>
              <artifactId>annotation</artifactId>
          <version>0.0.1-SNAPSHOT</version>
        <packaging>jar</packaging>
        <name>annotation</name>
            <url>http://maven.apache.org</url>
 <properties>
                    <project.build.sourceEncoding>UTF-
8</project.build.sourceEncoding>
          </properties>
 <dependencies>
                <dependency>
                        <groupId>junit</groupId>
                           <artifactId>junit</artifactId>
                         <version>3.8.1</version>
                        <scope>test</scope>
                 </dependency>
 <!-- https://mvnrepository.com/artifact/mysql/mysqlconnector-java -->
                <dependency>
                        <groupId>mysql</groupId>
                             <artifactId>mysql-connector-java</artifactId>
                         <version>8.0.33</version>
                 </dependency>
        <!-- https://mvnrepository.com/artifact/org.hibernate/hibernate-core -->
                <dependency>
                         <groupId>org.hibernate</groupId>
                            <artifactId>hibernate-core</artifactId>
                         <version>5.4.5.Final</version>
                 </dependency>
          </dependencies>
</project>
```

INPUT/OUTPUT

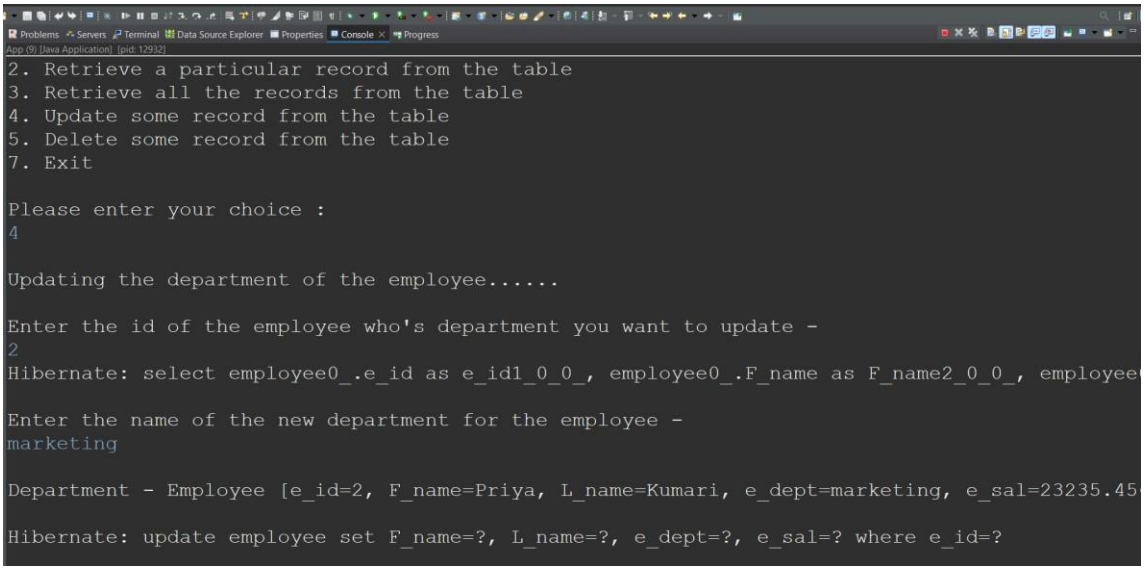
Inserting into database



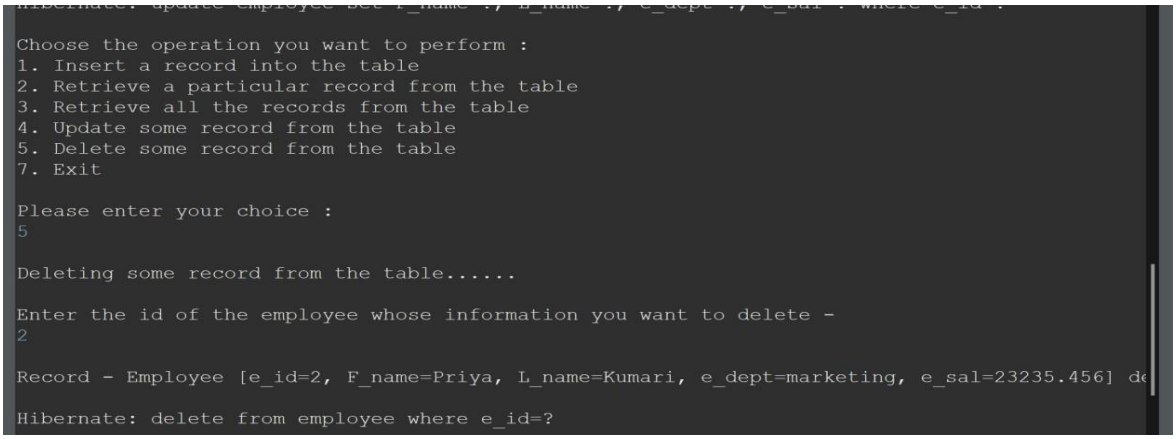
Retrieving a particular record from the table



Updating any record from the table



Deleting any record from the table



Existing the program