1) Create below given classes and configure as entities using xml configuration and provide persistence unit information in persistence.xml class Ticket attributes: source, destination, price, date class Person, attributes :personName,personEmail,personPhone class Employee ,attributes:employeeName,employeeDepartment,employeeDesignation class Student,attributes:studentName,marks,semester

Employee.java:

```
package com;


public class Employee {

	private String employeeName;

	private String employeeDepartment;

	private String employeeDesignation;

	public Employee() {}

	public Employee(String employeeName, String employeeDepartment, String
employeeDesignation) {

		this.employeeName = employeeName;

		this.employeeDepartment = employeeDepartment;

		this.employeeDesignation = employeeDesignation;

	}

	public String getEmployeeName() {

		return employeeName;

	}

	public void setEmployeeName(String employeeName) {

		this.employeeName = employeeName;


	public String getEmployeeDepartment() {

		return employeeDepartment;

	}

	public void setEmployeeDepartment(String employeeDepartment) {

		this.employeeDepartment = employeeDepartment;
```

```
	}
	public String getEmployeeDesignation() {
		return employeeDesignation;
	}
	public void setEmployeeDesignation(String employeeDesignation) {
		this.employeeDesignation = employeeDesignation;
	}
}
```

Person.java:

```
package com;


public class Person {
	private String personName;
	private String personEmail;
	private long personPhone;
	public Person() {}
	public Person(String personName, String personEmail, long personPhone) {
		this.personName = personName;
		this.personEmail = personEmail;
		this.personPhone = personPhone;
	}
	public String getPersonName() {
		return personName;
	}
	public void setPersonName(String personName) {
		this.personName = personName;
	}
	public String getPersonEmail() {
		return personEmail;
```

```
	}
	public void setPersonEmail(String personEmail) {
		this.personEmail = personEmail;
	}
	public long getPersonPhone() {
		return personPhone;
	}
	public void setPersonPhone(long personPhone) {
		this.personPhone = personPhone;
	}
}
```

Student.java:

```
package com;

public class Student {
	private String studentName;
	private int marks;
	private String semester;
	public Student() {}
	public Student(String studentName, int marks, String semester) {
		this.studentName = studentName;
		this.marks = marks;
		this.semester = semester;
	}

	public String getStudentName() {
		return studentName;
	}
	public void setStudentName(String studentName) {
```

```
		this.studentName = studentName;
	}
	public int getMarks() {
		return marks;
	}
	public void setMarks(int marks) {
		this.marks = marks;
	}
	public String getSemester() {
		return semester;
	}
	public void setSemester(String semester) {
		this.semester = semester;
	}
}
```

Ticket.java:

```
package com;
import java.util.Date;

import javax.persistence.Entity;
import javax.persistence.Id;



@Entity
public class Ticket {
	private String source;
	private String destination;
	private int price;
	@Id
```

```
private Date date;
public String getSource() {
        return source;
}
public Ticket() {}
public Ticket(String source, String destination, int price, Date date) {
        this.source = source;
        this.destination = destination;
        this.price = price;
        this.date = date;
}

public void setSource(String source) {
        this.source = source;
}
public String getDestination() {
        return destination;
}
public void setDestination(String destination) {
        this.destination = destination;
}
public int getPrice() {
        return price;
}
public void setPrice(int price) {
        this.price = price;
}
public Date getDate() {
        return date;
```

```
	}
	public void setDate(Date date) {
		this.date = date;
	}
	@Override
	public String toString() {
		return "Ticket [source=" + source + ", destination=" + destination + ", price=" + price + ",
date=" + date
+ "]";
	}
}
```

Library.java:

```
package JPALAB;

import java.sql.Date;

import javax.persistence.EntityManager;
import javax.persistence.EntityManagerFactory;
import javax.persistence.Persistence;

import com.Person;
public class Library {
   public boolean someLibraryMethod() {
      return true;
   }
   public static void main(String[] args) {
		EntityManagerFactory emf = Persistence.createEntityManagerFactory("TicketPU");
		EntityManager entitymanager = emf.createEntityManager();
		Person obj = new Person();
```

```
                obj.setPersonName("Harsha Vardhan");
                obj.setPersonEmail("harsha23@gmail.com");
                obj.setPersonPhone(9010034879);



                entitymanager.getTransaction().begin();
                entitymanager.persist(obj);
                entitymanager.flush();
                entitymanager.getTransaction().commit();
        }
}
```

orm.xml:

```
<?xml version="1.0" encoding="UTF-8"?>
<entity-mappings xmlns="http://java.sun.com/xml/ns/persistence/orm"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://java.sun.com/xml/ns/persistence/orm
  http://java.sun.com/xml/ns/persistence/orm_1_0.xsd"
  version="1.0">
   <entity class="com.Person">
    <table name="Person">

    </table>

    <attributes>
      <id name="personName"></id>

      <basic name="personPhone">

        <column name="personPhone"/>
```

```
      </basic>

    </attributes>


  </entity>

   <entity class="com.Student">
    <table name="Student">

    </table>
    <attributes>
      <id name="studentName"></id>
      <basic name="semester">
          <column name="semester"/>
      </basic>

    </attributes>

   </entity>

 </entity-mappings>
```

persistence.xml:

```
<?xml version="1.0" encoding="UTF-8"?>
<persistence xmlns="http://java.sun.com/xml/ns/persistence"

      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
    xsi:schemaLocation="http://java.sun.com/xml/ns/persistence
        http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd"

    version="2.0">

    <persistence-unit name = "TicketPU">
    <provider>org.hibernate.ejb.HibernatePersistence</provider>
    <properties>
  <property name="hibernate.connection.url" value="jdbc:postgresql://localhost:5432/postgres"/>
  <property name="hibernate.connection.driver_class" value="org.postgresql.Driver"/>
  <property name="hibernate.connection.username" value="postgres"/>
  <property name="hibernate.connection.password" value="postgres"/>
  <property name="hibernate.archive.autodetection" value="class"/>
  <property name="hibernate.hbm2ddl.auto" value="create"/>
  <property name="hibernate.show_sql" value="true"/>
  <property name="hibernate.format_sql" value="true"/>

    </properties>

    </persistence-unit>
     </persistence>
```

2) Jason wants to create a class for storing details of Customer

The attributes are customerName and customerEmail

The details of customerAddress have to be created as a separate class Address and used as attributes in Customer class

The final design is given below

public class Customer

{

private String customerName;

private String customerEmail;

private Address customerAddress

//getter setter methods and constructor

}

create the above classes and configure as entity using Annotations

Define persistence unit for above classes in xml file and persist information to database

Address.java:

```
package com;

import java.io.Serializable;

public class Address implements Serializable{
	private String customerAddress;
	public Address() {}
	public Address(String customerAddress) {
		this.customerAddress = customerAddress;
	}
	public String getCustomerAddress() {
		return customerAddress;
	}
	public void setCustomerAddress(String customerAddress) {
		this.customerAddress = customerAddress;
	}
	@Override
	public String toString() {
		return customerAddress;
```

```
	}
}
```

Customer.java:

```
package com;


import javax.persistence.Entity;
import javax.persistence.Id;
@Entity
public class Customer {
	@Id
	private String customerName;
	private String customerEmail;
	private Address customerAddress;
	public Customer() {}
	public Customer(String customerName, String customerEmail, Address customerAddress) {
		this.customerName = customerName;
		this.customerEmail = customerEmail;
		this.customerAddress = customerAddress;
	}
	public Address getCustomerAddress() {
		return customerAddress;
	}
	public void setCustomerAddress(Address customerAddress) {
		this.customerAddress = customerAddress;
	}
	public String getCustomerName() {
		return customerName;
	}
	public void setCustomerName(String customerName) {
```

```
		this.customerName = customerName;
	}
	public String getCustomerEmail() {
		return customerEmail;
	}
	public void setCustomerEmail(String customerEmail) {
		this.customerEmail = customerEmail;
	}
}
```

Library.java:

```
/*
 * This Java source file was generated by the Gradle 'init' task.
 */
package petdemo;
import javax.persistence.EntityManager;



import javax.persistence.EntityManagerFactory;
import javax.persistence.Persistence;

import com.Address;
import com.Customer;

public class Library {
   public boolean someLibraryMethod() {
      return true;
   }
   public static void main(String[] args) {
		EntityManagerFactory emf = Persistence.createEntityManagerFactory("CustomerPU");
```

```
        EntityManager entitymanager = emf.createEntityManager();
        Address add = new Address();
        add.setCustomerAddress("3-54, besides Ranjini Theatre");


        Customer custo = new Customer();
    custo.setCustomerName("Laxmi Prasad");
    custo.setCustomerEmail("potnurulaxmiprasad2001@gmail.co
    m");
        custo.setCustomerAddress(add);

        entitymanager.getTransaction().begin();
        entitymanager.persist(custo);
        entitymanager.flush();
        entitymanager.getTransaction().commit();

        Customer mycustomer = entitymanager.find(Customer.class, " Laxmi Prasad ");
        System.out.println(mycustomer.getCustomerName());
        System.out.println(mycustomer.getCustomerEmail());
        System.out.println(mycustomer.getCustomerAddress());


    }
}
```

persistence.xml:

```
<?xml version="1.0" encoding="UTF-8"?>
<persistence xmlns="http://java.sun.com/xml/ns/persistence"

    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
    xsi:schemaLocation="http://java.sun.com/xml/ns/persistence
        http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd"

    version="2.0">

    <persistence-unit name = "CustomerPU">
    <provider>org.hibernate.ejb.HibernatePersistence</provider>
    <properties>
  <property name="hibernate.connection.url" value="jdbc:postgresql://localhost:5432/postgres"/>
  <property name="hibernate.connection.driver_class" value="org.postgresql.Driver"/>
  <property name="hibernate.connection.username" value="postgres"/>
  <property name="hibernate.connection.password" value="postgres"/>
  <property name="hibernate.archive.autodetection" value="class"/>
  <property name="hibernate.hbm2ddl.auto" value="create"/>
  <property name="hibernate.show_sql" value="true"/>
  <property name="hibernate.format_sql" value="true"/>

    </properties>

    </persistence-unit>
     </persistence>
```

3) View the below given classes public class PassengerId

```
{
private String passengerEmail;
private String passengerMobile
}
```

The above class PassengerId has to be used to create composite key in class Passenger with attributes passengerName,source an destination

Passenger.java:

```
package com;

import javax.persistence.Entity;
import javax.persistence.Id;
import javax.persistence.IdClass;

@Entity
@IdClass(PassengerId.class)
public class Passenger {
	@Id private String passengerEmail;
	@Id private long passengerMobile;
	public String getPassengerEmail() {
		return passengerEmail;
	}
	public void setPassengerEmail(String passengerEmail) {
		this.passengerEmail = passengerEmail;
	}
	public long getPassengerMobile() {
		return passengerMobile;
	}
	public void setPassengerMobile(long passengerMobile) {
		this.passengerMobile = passengerMobile;
	}

	private String passengerName;
	private String Source;
```

```
	private String destination;
	public Passenger() {}
	public Passenger(String passengerName, String source, String destination) {
		this.passengerName = passengerName;
		Source = source;
		this.destination = destination;
	}
	public String getPassengerName() {
		return passengerName;
	}
	public void setPassengerName(String passengerName) {
		this.passengerName = passengerName;
	}
	public String getSource() {
		return Source;
	}
	public void setSource(String source) {
		Source = source;
	}
	public String getDestination() {
		return destination;
	}
	public void setDestination(String destination) {
		this.destination = destination;
	}
}
```

PassengerId.java:

```
package com;
```

```
import java.io.Serializable;


public class PassengerId implements Serializable{
	private String passengerEmail;
	private long passengerMobile;
	public PassengerId() {}
	public PassengerId(String passengerEmail, long passengerMobile) {
		this.passengerEmail = passengerEmail;
		this.passengerMobile = passengerMobile;
	}
	public String getPassengerEmail() {
		return passengerEmail;
	}
	public void setPassengerEmail(String passengerEmail) {
		this.passengerEmail = passengerEmail;
	}
	public long getPassengerMobile() {
		return passengerMobile;
	}
	public void setPassengerMobile(long passengerMobile) {
		this.passengerMobile = passengerMobile;
	}
}
```

Library.java:

```
/*
 * This Java source file was generated by the Gradle 'init' task.
 */
package petdemo;
import javax.persistence.EntityManager;
```

```
import javax.persistence.EntityManagerFactory;
import javax.persistence.Persistence;

import com.PassengerId;
import com.Passenger;

public class Library {
   public boolean someLibraryMethod() {
      return true;
   }
   public static void main(String[] args) {
                        EntityManagerFactory emf = Persistence.createEntityManagerFactory("PetPU");
                        EntityManager entitymanager = emf.createEntityManager();

                        PassengerId pid = new PassengerId();
                        pid.setPassengerEmail("kidharvinodh198@gmail.com");
                        pid.setPassengerMobile(9283391839l);

                        Passenger pass = new Passenger();
                        pass.setPassengerEmail(pid.getPassengerEmail());
                        pass.setPassengerMobile(pid.getPassengerMobile());
                        pass.setPassengerName("Shweta");
                        pass.setSource("Visakhapatnam");
                        pass.setDestination("Tirupathi");

                        entitymanager.getTransaction().begin();
```

```
                entitymanager.persist(pass);
                entitymanager.flush();
                entitymanager.getTransaction().commit();

        }
}
```

build.gradle:

```
plugins {
    // Apply the java-library plugin to add support for Java Library
    id 'java-library'
}

repositories {
    // Use jcenter for resolving dependencies.
    // You can declare any Maven/Ivy/file repository here.
    jcenter()
}

dependencies {
    // This dependency is exported to consumers, that is to say found on their compile classpath.
    api 'org.apache.commons:commons-math3:3.6.1'

    // This dependency is used internally, and not exposed to consumers on their own compile classpath.
    implementation 'com.google.guava:guava:28.0-jre'

    // Use JUnit test framework
    testImplementation 'junit:junit:4.12'
```

```
    // https://mvnrepository.com/artifact/org.eclipse.persistence/javax.persistence
implementation group: 'org.eclipse.persistence', name: 'javax.persistence', version: '2.0.0'

    // https://mvnrepository.com/artifact/org.hibernate/hibernate-entitymanager
implementation group: 'org.hibernate', name: 'hibernate-entitymanager', version: '3.5.6-Final'

    // https://mvnrepository.com/artifact/org.postgresql/postgresql
implementation group: 'org.postgresql', name: 'postgresql', version: '42.2.23'

compile 'org.slf4j:slf4j-api:1.7.24'
compile 'org.slf4j:slf4j-simple:1.7.24'
}
```