**15.)Develop a java class to read data of 10 students (With ID, name, gender, age as private instance members). Draw the class diagram and define the following methods**

**a) toString ()**

**b) setDetails ()**

**the main () method must create an array, store reference of 10 students. There must be menu with the following options:**

**1.New Student**

**2.Print all Students**

**3.Search based on ID**

**4.Exit**

**//Student Class**

**package** P4;

**public** **class** Student {

**private** String ID;

**private** String Name;

**private** String gender;

**private** String age;

Student(String id,String name,String gend,String a){

ID=id;

Name=name;

gender=gend;

age=a;

}

**public** String getID()

{

**return** ID;

}

**public** String getName()

{

**return** Name;

}

**public** String getG()

{

**return** gender;

}

**public** String getage()

{

**return** age;

}

**public** String toString()

{

String s=String.*format*("Student ID=%s%n Student Name=%s%n Gender=%s%n Age=%s%n",getID(),getName(),getG(),getage());

**return** s;

}

}

**//StudentDemo**

**package** P4;

**import** java.util.ArrayList;

**import** java.util.Scanner;

**public** **class** StudentDemo {

**private** **static** Scanner *s*;

**private** **static** ArrayList<Student> *stud*;

**private** **static** **void** initialize() {

*s*=**new** Scanner(System.***in***);

*stud*=**new** ArrayList<Student>();

}

**private** **static** **int** menuoption()

{

System.***out***.println(">>>>>>>>>>>>>>>>>>>>>>Main Menu>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>");

System.***out***.println("1.Add new Student");

System.***out***.println("2.Print all student");

System.***out***.println("4.Search based on ID");

System.***out***.println("5.Exit");

System.***out***.println(">>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>");

System.***out***.println("Enter the choice:");

**return** *s*.nextInt();

}

**public** **static** **void** main(String[] args) {

**int** ch;

*initialize*();

**while**(**true**)

{

ch=*menuoption*();

**switch**(ch)

{

**case** 1:

*stud*.add((Student) *getStudDetail*());

**break**;

**case** 2:

System.***out***.println(">>>>>>>All Student Detail>>>>>>>");

**for**(Student c: *stud*)

System.***out***.println(c);

**break**;

**case** 3:

*searchBasedonID*();

**break**;

**case** 4:

System.*exit*(0);

}

}

}

**private** **static** **void** searchBasedonID() {

System.***out***.println("Enter ID to Search");

String search=*s*.nextLine();

**for**(Student sid:*stud*)

{

**if**(sid.getID()==search)

{

System.***out***.println("ID Found");

System.***out***.println(sid);

**return**;

}

System.***out***.println("ID not Found");

}

}

**private** **static** Object getStudDetail() {

System.***out***.println("Enter the following: (ID,Name,Gender<Male/female>,age) ");

**return** **new** Student(*s*.nextLine(),*s*.nextLine(),*s*.nextLine(),*s*.nextLine());

}

}

**16.** )Modularize the design to package level and develop the code. A Vehicle registration portal accepts the following data from Vehicle owners: a) Vehicle Number b)Wheeler(either 4 or 6)-validate in setter c) Owner name d) Mobile. The Vehicle class contains parameterised constructor, toString() methods. The vehicle demo class has a main() method which reads and stores data of 8 vehicles and displays the menu with following operations: a) Add data 2) Display data based on vehicle number.

**//Vehicle**

**package** p5;

**public** **class** Vehicle {

**private** String vnum;

**private** **int** vwheel;

**private** String vown;

**private** **long** vmob;

**public** Vehicle(String num, **int** wheel, String own, **long** mob) {

vnum=num;

vwheel=wheel;

vown=own;

vmob=mob;

}

**public** String getNum()

{

**return** vnum;

}

**public** **int** getWh()

{

**return** vwheel;

}

**public** String getName()

{

**return** vown;

}

**public** **long** getMob()

{

**return** vmob;

}

**public** String toString()

{

String s=String.*format*("Vehicle Number=%s%n Vehicle wheel =%d%n Owner Name=%s%n Mobile Number=%d%n",getNum(),getWh(),getName(),getMob());

**return** s;

}

}

**//VehicleDemo**

**package** p5Demo;

**import** java.util.ArrayList;

**import** java.util.Scanner;

**import** p5.Vehicle;

**public** **class** VechicleDemo {

**private** **static** Scanner *s*;

**private** **static** ArrayList<Vehicle> *vehi*;

**private** **static** **void** initialize() {

*s*=**new** Scanner(System.***in***);

*vehi*=**new** ArrayList<Vehicle>();

}

**private** **static** **int** menuoption()

{

System.***out***.println(">>>>>>>>>>>>>>>>>>>>>>Main Menu>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>");

System.***out***.println("1.Add new Vehicle");

System.***out***.println("2.Print all student");

System.***out***.println("4.Display based on ID");

System.***out***.println("5.Exit");

System.***out***.println(">>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>");

System.***out***.println("Enter the choice:");

**return** *s*.nextInt();

}

**public** **static** **void** main(String[] args) {

**int** ch;

*initialize*();

**while**(**true**)

{

ch=*menuoption*();

**switch**(ch)

{

**case** 1:

*vehi*.add((Vehicle) *getVehiDetail*());

**break**;

**case** 2:

System.***out***.println(">>>>>>>All Vehicle Detail>>>>>>>");

**for**(Vehicle v: *vehi*)

System.***out***.println(v);

**break**;

**case** 3:

*DisplayBasedonNumber*();

**break**;

**case** 4:

System.*exit*(0);

}

}

}

**private** **static** **void** DisplayBasedonNumber() {

System.***out***.println("Enter Vehicle number to Search");

String search=*s*.nextLine();

**for**(Vehicle vid:*vehi*)

{

**if**(vid.getNum()==search)

{

System.***out***.println("Vehicle Number Found");

System.***out***.println(vid);

**return**;

}

System.***out***.println("Vehicle Number not Found");

}

}

**private** **static** Vehicle getVehiDetail() {

System.***out***.println("Enter the following: (Vehicle Number,Wheeler<2/4>,Name,Mobile NUMBER) ");

**return** **new** Vehicle(*s*.next(),*s*.nextInt(),*s*.next(),*s*.nextLong());

}

}