**Problem 1 : Accelerate the Car (20 Marks)**

**Program:**

public class Car{

private int year;

private String make;

private double speed;

Car(int year,String make,double speed){

this.year=year;

this.make=make;

this.speed=speed;}

public int getyear(){

return year;}

public String getmake(){

return make;}

public double getspeed(){

return speed;}

void accelerate (){

speed=speed+1;

}

}

class RaceTrack{

public static void main(String[]args){

Car a=new Car(2010,"Porsche",25.0);

System.out.println("car's year model="+a.getyear()+"\n make of the car="+a.getmake()+"\n speed of the car="+a.getspeed());

a.accelerate();

System.out.println("speed of the car="+a.getspeed());

}

}

**Output:**

D:\cdac\CDAC Notes\java\src\exam>javac Car.java

D:\cdac\CDAC Notes\java\src\exam>javac Racetrack.java

D:\cdac\CDAC Notes\java\src\exam>java RaceTrack

car's year model=2010

make of the car=Porsche

speed of the car=25.0

speed of the car=26.0

**Problem 2 : Inventory Management (20 Marks)**

**Program:**

import java.util.\*;

class Item{

int itemId;

String itemName;

Item(int itemId,String itemName ){

this.itemName=itemName;

this.itemId=itemId;

}

Item(){}

void setitemId(int itemId){

this.itemId=itemId;

}

void setitemName(String itemName){

this.itemName=itemName;

}

public String toString(){

return this.itemId+" "+this.itemName;

}

}

class namesort implements Comparator<Item>{

public int compare(Item I1,Item I2){

return I1.itemName.compareTo(I2.itemName);

}

}

class idsort implements Comparator<Item>{

public int compare(Item I1,Item I2){

return I1.itemId-(I2.itemId);

}

}

class Inventory{

static Item I=new Item();

static ArrayList<Item> list=new ArrayList<> ();

public static void main(String[] args){

Scanner sc=new Scanner(System.in);

int choice;

Item I1=new Item(1,"A");

Item I2=new Item(3,"B");

Item I3=new Item(2,"C");

Item I4=new Item(4,"D");

Item I5=new Item(10,"E");

list.add(I1);

list.add(I2);

list.add(I3);

list.add(I4);

list.add(I5);

do{

System.out.println("Enter your choice ==");

System.out.println("1) Add Item.\n2) Display complete inventory in sorted order of item names as well as itemId.\n3) Remove Item.\n4) Exit");

choice=sc.nextInt();

switch(choice){

case 1:

System.out.println("Enter Item you want add");

System.out.println("Enter your details as follows");

//int n=sc.nextInt();

for(int i=1;i<=1;i++){

System.out.println("Enter id of item ");

int d=sc.nextInt();

I.setitemId(d);

System.out.println("Enter name of item ");

sc.nextLine();

String ss=sc.nextLine();

I.setitemName(ss);

list.add(I);

}

System.out.println("Added items as follows");

System.out.println(list);

break;

case 2:

System.out.println("before sorting");

System.out.println(list);

System.out.println("Sorting by id");

idsort n2=new idsort();

Collections.sort(list,n2);

System.out.println(list);

System.out.println("Sorting by name");

namesort n1=new namesort();

Collections.sort(list,n1);

System.out.println(list);

break;

case 3:

System.out.println("List as follows");

System.out.println(list);

System.out.println("Enter index od item which you want to remove index start from 0");

int re=sc.nextInt();

list.remove(re);

System.out.println("List after removal");

System.out.println(list);

break;

case 4:

System.out.println("Thank you");

break;

}

}while(choice!=4);

}

}

**Output:**

D:\cdac\CDAC Notes\java\src\exam>javac Inventory.java

D:\cdac\CDAC Notes\java\src\exam>java Inventory

Enter your choice ==

1) Add Item.

2) Display complete inventory in sorted order of item names as well as itemId.

3) Remove Item.

4) Exit

1

Enter Item you want add

Enter your details as follows

Enter id of item

11

Enter name of item

amey

Added items as follows

[1 A, 3 B, 2 C, 4 D, 10 E, 11 amey]

Enter your choice ==

1) Add Item.

2) Display complete inventory in sorted order of item names as well as itemId.

3) Remove Item.

4) Exit

2

before sorting

[1 A, 3 B, 2 C, 4 D, 10 E, 11 amey]

Sorting by id

[1 A, 2 C, 3 B, 4 D, 10 E, 11 amey]

Sorting by name

[1 A, 3 B, 2 C, 4 D, 10 E, 11 amey]

Enter your choice ==

1) Add Item.

2) Display complete inventory in sorted order of item names as well as itemId.

3) Remove Item.

4) Exit

3

List as follows

[1 A, 3 B, 2 C, 4 D, 10 E, 11 amey]

Enter index od item which you want to remove index start from 0

2

List after removal

[1 A, 3 B, 4 D, 10 E, 11 amey]

Enter your choice ==

1) Add Item.

2) Display complete inventory in sorted order of item names as well as itemId.

3) Remove Item.

4) Exit

2

before sorting

[1 A, 3 B, 4 D, 10 E, 11 amey]

Sorting by id

[1 A, 3 B, 4 D, 10 E, 11 amey]

Sorting by name

[1 A, 3 B, 4 D, 10 E, 11 amey]

Enter your choice ==

1) Add Item.

2) Display complete inventory in sorted order of item names as well as itemId.

3) Remove Item.

4) Exit

4

Thank you