

Day 11 Assignment

Q1) Create a Java bean class Car that has following fields:

```
numberOfPassenger :int  
numberOfKms:int
```

Create a class Sedan that extends Car that has following fields:

```
final int farePerKm =20;
```

Create a class HatchBack that extends Car that has following fields:

```
final int farePerKm =15;
```

Create a class OLA that has following methods-

```
public Car bookCar(int numberOfPassenger, int numberOfKms)  
public int calculateBill(Car car)
```

Implement the bookCar method in such a way that if the numberOfPassenger is less than or equal to 3 then you should return the object of HatchBack else you should return the object of Sedan.

Implement calculateBill method to calculate the total fare by using-

```
Total fare=numberOfKms*farePerKm
```

Create a Main class with main method inside this main method take the input from the user for the number of passengers and number of kms using the Scanner class and call bookCar method using appropriate arguments and use this returned object in the calculate bill method to calculate the total fare.

```
public static void main(String[] args) {  
    Scanner scanner = new Scanner(System.in);  
  
    //Write logic to get numberOfPassenger and numberOfKms  
  
    Ola myOla = new Ola();  
    Car myCar = myOla.bookCar(numberOfPassenger, numberOfKms);  
    int res = myOla.calculateBill(myCar);  
  
    System.out.println("The total fare amount is"+ res);  
}
```

Q2) One of the least Insurance agencies recruited employees for their collection department. Now the HR needs a report as the average age of all the employees working in that department. Write a code to calculate the average age. Implement a method "calculateAverage(int[] age)" to calculate the average age and return the result to the caller function.

Note : Minimum of 2 employees is mandatory to calculate average age, if fails, the output should be "Please enter a valid employee count"

Refer the sample given for read and display the output.

Sample Input 1:

Enter total no.of employees:

3

Enter the age for 3 employees:

30

31

32

Sample Output 1:

The average age is 31.00

Sample Input 2:

Enter total no.of employees:

2

Enter the age for 2 employees:

29

36

Sample Output 2:

The average age is 32.50

Sample Input 3:

Enter total no.of employees:

1

Sample Output 3:

Please enter a valid employee count

Q3) We have to calculate the area of a rectangle, a square and a circle.

Create an abstract class 'Shape' with three **abstract methods**

```
public int rectangleArea(int length, int breadth);  
public int squareArea(int side);  
public int circleArea(int radius);
```

Now create another class 'Area' which extends this Shape class and contains all the three methods

'RectangleArea', 'SquareArea' and 'CircleArea' for printing the area of rectangle, square and circle respectively.

Inside the main method of Main class, create an object of class 'Area' and call all the three methods.

Q4) Create a Student bean class having the following properties:

Instance variables:

```
roll,  
name,  
marks,  
grade:char,
```

Provide suitable constructors, and following methods:

```
public displayDetails(): void  
private calculateGrade(): char
```

if marks ≥ 500 : Grade is A
if marks < 500 and ≥ 400 : Grade is B
if marks < 400 : Grade is C

Override the toString() method to print all the details of Student object.
inside the displayDetails() method, create the Student class object by taking (roll, name, marks) from the user and call the calculateGrade() method to get the Grade of the Student.

Create another class Demo in which create two Student objects, and invoke the displayDetails(). It should also display the student grade.