Lab Tasks

1.Write a class Car that contains the following attributes:

The name of the Car

The direction of car (E, W, N, S)

The position of car (from imaginary zero point)

The class has the following member functions:

A constructor to initialize the attributes.

Turn function to change the direction of car to one step right side (e.g. if the direction is to E, it should be change to S and so on.)

Overload the Turn function to change the direction to any side directly. It should accept the direction as parameter.

Move function to change the position of car away from zero point. It should accept the distance as a parameter.

2.Write a Java program to create a class known as "BankAccount" with methods called deposit() and withdraw(). Create a subclass called SavingsAccount that overrides the withdraw() method to prevent withdrawals if the account balance falls below one hundred.

3.Write a class Teacher that contains the attribute teacher name, age and address. It also contains member function to input and display its attributes. Write another class Author that contains the attributes author name, address and number of books written by him. It also contains member functions to input and display its attributes. Write a third class Scholar that inherits both Teacher and Writer classes.

4. Write a Java program to create an abstract class Vehicle with abstract methods startEngine() and stopEngine(). Create subclasses Car and Motorcycle that extend the Vehicle class and implement the respective methods to start and stop the engines for each vehicle type.

5.Create a java abstract class called GameTester. Include an abstract method calculateSalary() to determine the salary.

Create two concrete sub classes called FullTimeGameTester, PartTimeGameTester. Note FullTimeGameTester getting a base salary of $3000 and PartTimeGameTester getting $20 per hour.

In the main function create objects of both sub-classes. Note Allow the user to choose game tester type and display the salary. Also allow the user to enter number of hours for the part-time game tester.

6.Write a java program that performs method overloading, and overloads a method given below:

```
int static show (int a)
{
 return a;
}
```

The overloading method will take two integer type variables as parameters and prints the integers with a space in between. Store the sum in another variable and return it. In the main function, call and print both the methods.

7. Write a java program that perform method overloading and overloads a method given below:

```
int maximum(int a, int b)
  {
   If(a>b)
   {
    return a;
   }
   else
```

```
  {
    return b;
  }
}
```

The overloading method will take three integer type variables as parameters and find and return the maximum among three numbers. In the main function call and print both the methods.

8.Create a java class called CarbonFootprint with getCarbonFootPrint method.

Create three subclasses Building, Car, Bicycle. Give each class some unique attributes and behaviours.

In the main create objects of CarbonFootprint class with reference to these three classes, place those objects in an array of CarbonFootprint then iterate it polymorphically and invoke each object's getCarbonFootPrint method.

Note: Calculation of CarbonFootprint

For Home/Building: [no of burners*CO2 emission per hour i.e. 22.14]

For Car: Kilometers travel: Distance travelled*FuelperKM*CO2 emission per hour i.e. 22.14