

**SSN College of Engineering**

**Department of Computer Science and Engineering**

**UCS1313 – Object Oriented Programming using Java Laboratory**

**II Year CSE - A Section ( III Semester)**

**Academic Year 2019-20**

**Exercise - 4A – Interfaces**

**Objective:**

1. To test the working of interfaces and to perform multiple inheritance

**Sample Learning Outcome:**

1. Need of interface and it's implementation in Java
2. Multiple inheritance
3. Inheritance in interfaces

**Best Practices:**

1. Class Diagram usage
2. Naming convention – for file names, variables
3. Comment usage at proper places
4. Prompt messages during reading input and displaying output
5. Incremental program development
6. Modularity
7. All possible test cases in output

1. Design a Java interface for ADT Stack with the following methods.

Maximum size of stack=15

boolean isFull()

boolean isEmpty()

void push(int element)

int pop()

int peep()

Implement this interface using a class with an integer array to store the elements to perform the following stack operations.

Boolean balanceParanthesis(String expression)

boolean checkTwoStacks(Stack s1, Stack s2)

2. Create an interface named "Vehicle" which consists of the following methods

a. getName()

b. setName(String)

c. getMaxPassengers()

d. setMaxPassengers(int)

e. getMaxSpeed()

f. setMaxSpeed(int)

Inherit an interface named "LandVehicle" from "Vehicle" which contains the following methods

a) getNumWheels()

b) setNumWheels(int)

c) drive()

Inherit an interface named "SeaVehicle" from "Vehicle" which contains the following methods

a) getDisplacement()

b) setDisplacement(int)

c) launch()

Create a class "Jeep" inherits from "LandVehicle" which has soundHorn() method.

Create a class "Frigate" inherits from "SeaVehicle" which has fireGun() method.

Create a class "HoverCraft" inherits from both "LandVehicle" and "SeaVehicle" which has enterLand() and enterSea() methods.

Create an Interface "EmergencyVehicle" which contains soundSiren() method.

Create a class "Ambulance" inherits from "LandVehicle" and "EmergencyVehicle" which has patientIn() method.

Draw the class diagram which shows the above problem and implement it.