Week 8 Lab

1. Using the concept of Inheritance and Encapsulation, solve the following:

   Create a class Vehicle with the following:

   a. Instance variables: name, type and price
   b. Parameterized constructor with name and type as parameter
      i. Assign the value of parameters in instance variables
   c. Getter and setter methods for all the variables
   d. print() method to print all the values of variables

   Create a class Car inheriting Vehicle class with the following:

   e. Instance variables: modelNo and fuelType
   f. Parameterized methods with name, type and fuelType as parameters
      i. Call super constructor by passing name and type as parameters
      ii. Assign the values of fuelType to instance variables
   g. Getter and setter methods of all variables
   h. print() method
      i. Call super class print method
      ii. Print the values of modelNo and fuelType

   Create a class Bus inheriting Vehicle class with the following:

   i. Instance variables: noOfWheels and fuelCapacity
   j. Parameterized methods with name, type and fuelCapacity as parameters
      i. Call super constructor by passing name and type as parameters
      ii. Assign the values of fuelCapacity to instance variables
   k. Getter and setter methods of all variables
   l. print() method
      i. Call super class print method
      ii. Print the values of noOfWheels and fuelCapacity

Test Case: A

a) Create an object of Car class
b) Inspect the object
c) Call parent class setter method to assign the value of price
d) Inspect the object
e) Call setter method assign the value of modelNo
f) Inspect the object
g) Call print method

Test Case: B

a) Create an object of Bus class
b) Inspect the object
c) Call parent class setter method to assign the value of price
d) Inspect the object
e) Call setter method assign the value of noOfWheels
f) Inspect the object
g) Call print method

2. Write a Java program to:
    a. Input 5 colors and store in an array list.
    b. Ask user to input a number (let it be m)
    c. Loop to input new colors according to the input number (m) and add them to array list
    d. Print the size of the array.
    e. Print all the values.

3. Write a program to:
    a. Create an array list
    b. Loop until user inputs 5
        i. Ask user to input the number from 1 to 5
        ii. If the input number is 1, add a student name in array list using scanner
        iii. If the input number is 2, input a name and remove that name from array list
        iv. If the input number is 3, print all the values of array list
        v. If user inputs 4, clear the array list
        vi. If user inputs 5, exit from loop

4. Write a Java program to:
    a. Input 5 number and store in an array list.
    b. Now, input another number.
    c. Check if the new number exist in the array list or not.
    d. If it does not exist, then add it to the array list else print the suitable message.
    e. Print the collection using for each loop.
    f. Again, input another number (index).
    g. Check if this index exists in array list or not.
    h. If exists, the remove the value by index.
    i. Now, print the collection using for each loop.

5. Write a program to store names of your 5 friends name in an array list. Now, convert the numbers of array list into array and print the names.

6. Write a program to:

    i. Take 5 integer inputs from user and store them in an **array**.
    ii. Input another number (let it be **m**).
    iii. Now, tell user whether that number (m) is present in array or not.

7. Write a program to:

    i. Take 5 integer inputs from user and store them in an **array list**.
    ii. Input another number (let it be **m**).
    iii. Now, tell user whether that number (m) is present in array or not.