Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III
2021-22

Lab Number:	**4**
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Title:

4.1 Write a Java program to Create a class Student with two method getData() and printData(). getData() to get the value from the user and display the data in printData(). Create the two objects s1 ,s2 to declare and access the values from class StudentTest.

4.2 Write a Java program for Basic bank Management System

Learning Objective:

- Students will be able to write C++ and java program for using classes and objects.

Learning Outcome:

- Ability to execute a simple C++and Java program by accepting and displaying values using functions
- Understanding the classes and objects concept in C++ and Java.

Course Outcome:

ECL304.1	Understand object-oriented programming concepts and implement using C++ and Java

Faculty: Ms. Deepali Kayande

Theory:

Explain about Constructor.:

A constructor in Java is a **special method** that is used to initialize objects. The constructor is called when an object of a class is created. It can be used to set initial values for object attributes.

It has the same name as that of the class. It is always public and it does not have any return value. Constructors can also take parameters, which is used to initialize attributes.

All classes have constructors, whether you define one or not, because Java automatically provides a default constructor that initializes all member variables to zero. However, once you define your own constructor, the default constructor is no longer used.

Java has two types of constructors ; namely " No argument constructors" and " Parameterized constructors ".

No argument Constructors:

As the name specifies the no argument constructors of Java does not accept any parameters instead, using these constructors the instance variables of a method will be initialized with fixed values for all objects.

Parameterized Constructors:

Most often, you will need a constructor that accepts one or more parameters. Parameters are added to a constructor in the same way that they are added to a method, just declare them inside the parentheses after the constructor's name.

Explain about classes and objects in Java:

A class is a user-defined type that describes what a certain type of object will look like. A class description consists of a declaration and a definition. ... An object is a single instance of a class. You can create many objects from the same class type

• **Object** - Objects have states and behaviors. Example: A dog has states - color, name, breed as well as behaviors -wagging, barking, eating. An object is an instance of a class.

• **Class** - A class can be defined as a template/blue print that describes the behaviors/states that object of its type support.

How to access class attributes and methods? Explain with example

Any variable that is bound in a class is a class attribute . Any function defined within a class is a method . Methods receive an instance of the class, conventionally called self , as the first argument.

Example:

```
package javaprogramming;

public class sampleclass {   //creating a class
   int n1 = 10;     //attributes of the class
   int n2 = 20;   //attributes of the class
   int result ;   //attributes of the class
   void multiplication()    //method is created
   {
        result = n1*n2;
        System.out.println("Result = "+result);
   }

        public static void main(String[] args) {
           sampleclass obj = new sampleclass();   //creating the object
           System.out.println("The multiplication of the 2 nos is as follows:\n");
```

```
        System.out.println(obj.n1);
        System.out.println("\n");
        System.out.println(obj.n2);
        System.out.println("\n");
        obj.multiplication();   //calling the method using the object

    }

}
```

Explanation:

1. As we can see in the above example, we have created a class named 'sampleclass' and we have declared its attributes n1=10, n2=20 , and result.
2. Now we have created a method named multiplication , which as the name suggests will take the numbers n1 and n2 to perform its product and display it on the screen.
3. Then we created a object in order to access the attributes of the declared class also using dot operator and we have created the object using new keyword.
4. Then , we call the method using the object and the dot operator which will display the product of the 2 nos. as the output.
5. Hence , in this way we can access the attributes of the class and methods of the class using objects.

4.1 Write a Java program to Create a class Student with two method getData() and printData(). getData() to get the value from the user and display the data in printData(). Create the two objects s1 ,s2 to declare and access the values from class StudentTest.

Algorithm:

Step 1: Create a class named 'Student' with attributes such as name, roll ,cgpa and branch.

Step 2: Create two methods in the same class for getting the data and printing the data.

Step 3: Input the student details name, roll no, cgpa , and branch.

Step 4: Display the data entered by the user for one student and the other student's data in parameterized manner by calling the methods.

Program:

```
/*Write a program to create a class Stduent along with two methods getData(), printData()to
 get the value through the argument and display the data in printData().
 Create the two objects and access the values from class StudentTest.*/


package javaprogramming;
 import java.util.InputMismatchException;
import java.util.Scanner;
class Student {
```

```
Scanner in=new Scanner(System.in);
String name;
int roll_no;
float cgpa;
String branch;



void getdata()      //method of class Student to input the data
{
        System.out.println("Enter your name:");
        name=in.next(); //string input
        System.out.println("Enter your roll number:");
        roll_no=in.nextInt();
        System.out.println("Enter your CGPA:");
        cgpa=in.nextFloat();
        System.out.println("Enter your Branch: ");
        branch=in.next();


}


    void getdata(String n,int r,float c,String b)  //parameterized method to
get the data
    {
        name=n;
        roll_no=r;
```

```
            cgpa=c;
      branch=b;


        }


        void printdata()
        {
                System.out.println("\n\nName of the student: "+name);
                System.out.println("Roll-no of the student: "+roll_no);
                System.out.println("Cgpa of the student: "+cgpa);
                System.out.println("Branch  of the student: "+branch);
        }


};
 public class StudentTest {   //class where two objects are created to display data of 2 students


        public static void main(String[] args) {


                Student s1=new Student();
                Student s2=new Student();
                s1.getdata(); // getting data in non parameterized manner
                s1.printdata();
                s2.getdata("Shubham",27,(float)8.94,"EXTC"); // getting data in parameterized manner
```

```
            s2.printdata();


        }
}
```

Input Given:

Name: Shreyas

Roll_no : 39

CGPA : 10

Branch: EXTC

Output :

```
<terminated> StudentTest [Java Application] C:\Users\Shreyas\.p2\pool\plugins
Enter your name:
Shreyas
Enter your roll number:
39
Enter your CGPA:
10
Enter your Branch:
EXTC


Name of the student: Shreyas
Roll-no of the student: 39
Cgpa of the student: 10.0
Branch  of the student: EXTC


Name of the student: Shubham
Roll-no of the student: 27
Cgpa of the student: 8.94
Branch  of the student: EXTC
```

4.2 Write a Java program for Basic bank Management System

Algorithm :

Step 1 : Create a class named Banklab with attributes such as name, account type, account number, amount and balance.

Step 2 : Create methods to input the values of the attributes.

Step 3 : Create a method for displaying the user's details entered through the constructor.

Step 4 : Create an option so that the user can choose what sort of operation they want to perform.

Step 5 : Using the user given data display the required output.

Program :

```
/*4.2 Write a Java program for Basic bank Management System */


package javaprogramming;

import java.util.Scanner;

public class BankLab2 {

	Scanner in=new Scanner(System.in);

	String name;

	char account_type;

	int account_number,amount;

	float balance;


	public BankLab2(String n,int a, char t, float b) {
```

```
            name = n;
        account_number=a;
        account_type=t;
        balance=b;

}

int deposit()
{

      System.out.println("Enter the amount to      deposit: ");

      int amount=in.nextInt();

      if(amount<0)

      {

            System.out.println("Invalid amount,Enter a valid amount");

            return 0;

      }
```

```
        balance=balance+amount;

        return 1;

}

int withdraw()

{

        System.out.println("Your Balance= "    +balance );

        System.out.println("Enter amount to withdraw: ");

        int amount=in.nextInt();

        if (balance<amount)

        {

                System.out.println("Insufficient Balance:      ");

                return 0;
```

```
        }

        if(amount<0)

        {

                System.out.println("Invalid       amount" );

                return 0;

        }

        balance=balance-amount;

        return 1;

}


void display()
{

        System.out.println("Name :"+name);
```

```
        System.out.println("Account Number:" +account_number);
        System.out.println("Account Type:" +account_type);
        System.out.println("Balance: " +balance);

}

public static void main(String[] args) {

        Scanner in=new Scanner(System.in);
        BankLab2 b1=new BankLab2("salman",1,'s',2000);
        BankLab2 b2=new BankLab2("makarand",2,'s',2000);
        BankLab2 b3=new BankLab2("siddharth",3,'s',2000);


        System.out.println("Menu");
        System.out.println("1.Deposit");
        System.out.println("2.Withdraw");
        System.out.println("3.Display");
        System.out.println("Enter option");

        int op=in.nextInt();
        char ans;
```

```
do
{

        System.out.println("Please enter your account number:");
        int account_number=in.nextInt();
                switch(account_number)
                {

                        case 1:         if(op==1)

                                                b1.deposit();

                                        if(op==2)

                                                b1.withdraw();

                                        if(op==3)

                                                b1.display();

                                        break;

                        case 2:         if(op==1)
```

```
                    b2.deposit();

                if(op==2)

                    b2.withdraw();

                if(op==3)

                    b2.display();

                break;

        case 3:     if(op==1)

                    b3.deposit();

                if(op==2)

                    b3.withdraw();

                if(op==3)

                    b3.display();
```

```
                                        break;
                        default: System.out.println("Enter value
between 1 to 3");
                                        break;
                }
                System.out.println("Do you want to continue?[Y/N]");
                ans=in.next().charAt(0);  //char input in variable ans
                if(ans=='Y' || ans == 'y')
                {
                        System.out.println("Menu");
                        System.out.println("1.Deposit");
                        System.out.println("2.Withdraw");
                        System.out.println("3.Display");
                        System.out.println("Enter option");
                        op=in.nextInt();
                }
                else if(ans=='N' || ans=='n')
                {
                        break;
                }
        }

        while(ans!='N' || ans!='n');
```

```
        }
}
```

Input Given:

Enter option: 2

Account No. : 2

Amount to withdraw: 1500

Do you want to continue? Y

Enter option : 3

Account No.: 2

Output:

```
<terminated> BankLab2 [Java Application] C:\Users\Shreyas\.p2\pool\plugins\org.e
Menu
1.Deposit
2.Withdraw
3.Display
Enter option
2
Please enter your account number:
2
Your Balance= 2000.0
Enter amount to withdraw:
1500
Do you want to continue?[Y/N]
y
Menu
1.Deposit
2.Withdraw
3.Display
Enter option
3
Please enter your account number:
2
Name :makarand
Account Number:2
Account Type:s
Balance: 500.0
Do you want to continue?[Y/N]
n
```