
Object Oriented Programming with Java

Lab Exercise

Lab Unit – 1 (2 Hrs actual Time)

- 1.1 Write a program to display any message:
- 1.2 Write a Java program to display default value of all primitive data types of Java.
- 1.3 Write a program check two strings are equal or not.

Lab Unit – 2 (2 Hrs actual time)

- 2.1 Write a program to give the examples of operators.
 - 2.1.1 Increment and decrement operators.
 - 2.1.2 Bitwise Complement Operator.
 - 2.1.3 Arithmetic operator.
 - 2.1.4 Relational Operator
 - 2.1.5 Bitwise operator.
 - 2.1.6 Conditional Operator.
- 2.2 Write a program to give the example of control statements.
 - 2.2.1 If statements.
 - 2.2.2 Switch Statements.
 - 2.2.3 For loop.
 - 2.2.4 While Statements.
 - 2.2.5 Do statements
- 2.3 Write a program to calculate the following
 - 2.3.1 Find the length of array.
 - 2.3.2 Demonstrate a one-dimensional array.
 - 2.3.3 Demonstrate a two-dimensional array.
 - 2.3.4 Demonstrate a multi-dimensional array.
- 2.4 Write a program give example for command line arguments.

2.4.1 To find the sum of command line arguments and count the invalid integers entered.

2.4.2 To get the name using command line.

2.5 Write a program to print the following triangle of binary digits.

2.5.1	1	2.5.2	5
	1 0 1		4 5
	1 0 0 1		3 4 5
	1 0 0 0 0 1		2 3 4 5
	1 0 0 0 0 0 0 1		1 2 3 4 5
			0 1 2 3 4 5
2.5.3	1		
	1 2		
	1 2 3		
	1 2 3 4		
	1 2 3 4 5		

2.6. Write a program to find the following

2.6.1 Prime number checking

2.6.2 Sum of digit

2.7 Write a program to arrange the numbers in ascending order.

2.8 Write a program to calculate the roots of Quadratic equations.

2.9 Write a program for calculating Matrix Operations.

2.9.1 Addition.

2.9.2 Multiplication.

Lab Unit – 3 (2 Hrs Real Time)

3.1 Write a program to create a room class, the attributes of this class is roomno, roomtype, roomarea and ACmachine. In this class the memberfunctions are setdata and displaydata.

- 3.2 Write a program create a class 'simpleobject'. Using constructor display the message.
- 3.3 Write a program for the following
1. Example for call by value.
 2. Example for call by reference.
- 3.4 Write a program to give the example for 'this' operator. And also use the 'this' keyword as return statement.

Lab - 4 (2 Hrs Real Time)

- 4.1 Write a program to demonstrate static variables, methods, and blocks.
- 4.2 Write a program for reuse class. For this program use the above 'room class' program.
- 4.3 Create class named as 'a' and create a sub class 'b'. Which is extends from class 'a'. And use these classes in 'inherit' class.
- 4.4 Write a program to give the example for method overriding concepts.
- 4.5 Write a program to give the example for 'super' keyword.

Lab - 5 (2 Hrs Real Time)

- 5.1 Write a program to create a class named shape. In this class we have three sub classes circle, triangle and square each class has two member function named draw () and erase (). Create these using polymorphism concepts.
- 5.2 Write a program to give a simple example for abstract class.
- 5.3 Write a program suppose, it is required to build a project consisting of a number of classes, possibly using a large number of programmers. It is necessary to make sure that every class from which all other classes in the project will be inherited. Since any new classes in the project must inherit from the base class, programmers are not free to create a different interface. Therefore, it can be guaranteed that all the classes in the project will respond to the same debugging commands.

Lab – 6 (2 Hrs Real Time)

- 6.1 Write a program to create interface A in this interface we have two method meth1 and meth2. Implements this interface in another class named MyClass.
- 6.2 Write a program to give example for multiple inheritance in Java.
- 6.3 Write a program to create interface named test. In this interface the member function is square. Implement this interface in arithmetic class. Create one new class called ToTestInt in this class use the object of arithmetic class.
- 6.4 Create an outer class with a function display, again create another class inside the outer class named inner with a function called display and call the two functions in the main class.

Lab – 7 (2 Hrs Real Time)

- 7.1 Write a class called ColourChecking. Define a color with red = 193, green =255 and blue = 183. No separate the rgb values. Find the Hue, saturation and brightness of this color.
- 7.2 Write a program to check the font class method as follows: Create a font TimesRoman bold and Italic size 12. In this object use the font methods. Then display the attributes of the font.
- 7.3 Write a program to find the solution for the following problems using Recursion.
- 7.3.1 Find the maximum of an array. Let $a[]$ be an array of integers. if $n = 1$, $a[0]$ is the only number in the array and so, maximum = $a[0]$. if $n > 1$, then do the following: find the maximum of $n-1$ entries of the array. Compare this maximum with the last entry $a[n-1]$ and finalize.
- 7.3.2 Find the Fibonacci numbers are defined as $F_0=1, F_1=1$ and $F_i=F_{i-1}+F_{i-2}$ for $i > 2$.

Lab – 8 (2 Hrs Real Time)

8.1 Create class point with following instance variable and methods.

Instance variable: private int x,y

Constructors: public Point(), Point(int x, int y)

Methods: public void setX(int x), setY(int y), setXY(int x,int y)

8.2 Create class Number with only one private instance variable as a double primitive type. To include the following methods (include respective constructors) isZero(), isPositive(), isNegative(), isOdd(), isEven(), isPrime(), isAmstrong() the above methods return boolean primitive type. getFactorial(), getSqrt(), getSqr(), sumDigits(), getReverse() the above methods return double primitive type. void listFactor(), void dispBinary().

8.3 Write a program to create a package named mypack and import it in circle class.

8.4 Write a program to create a package named pl, and implement this package in ex1 class.

Lab – 9 (2 Hrs Real Time)

9.1 Write a program to create automatic type conversions apply to overriding.

9.2 Create class box and box3d. box3d is extended class of box. The above two classes going to pull fill following requirement

- ❖ Include constructor.
- ❖ set value of length, breadth, height
- ❖ Find out area and volume.

Note: Base class and sub classes have respective methods and instance variables.

9.3 Write a program using vector class.

Lab 10:

- 10.1 Write a program for example of try and catch block. In this check whether the given array size is negative or not.
- 10.2 Write a program for example of multiple catch statements occurring in a program.
- 10.3 Write a program to illustrate sub class exception precedence over base class.
- 10.4 Write a program to illustrate usage of try/catch with finally clause.
- 10.5 Write a program to describe usage of throws clause.
- 10.6 Write a program for creation of user defined exception.

Lab - 11 (2 Hrs Real Time)

- 11.1 Write a program to create a text file in the path c:\java\abc.txt and check whether that file is exists. Using the command exists(), isDirectory(), isFile(), getName() and getAbsolutePath().
- 11.2 Write a program to rename the given file, after renaming the file delete the renamed file. (Accept the file name using command line arguments.)
- 11.3 Write a program to create a directory and check whether the directory is created.
- 11.4 Write a program to open one application using process class.
- 11.5 Write a program using modifiers.

Lab - 12 (2 Hrs Real Time)

- 12.1 Write a program to create a file and write data into it using the methods OutputStream class.

- 12.2 Write a program to accept specified number of characters as input and converts them into uppercase characters.
- 12.3 Write a program to get the input from the user and store it into file. Using Reader and Writer file.

Lab - 13 (2 Hrs Real Time)

- 13.1 Write a program to illustrate creation of threads using runnable class.(start method start each of the newly created thread. Inside the run method there is sleep() for suspend the thread for 500 milliseconds).
- 13.2 Write a program to create a class MyThread in this class a constructor, call the base class constructor, using super and starts the thread. The run method of the class starts after this. It can be observed that both main thread and created child thread are executed concurrently.

Lab - 14 (2 Hrs Real Time)

- 14.1 Write a program to get the reference to the current thread by calling currentThread() method.
- 14.2 Write a program to create two threads. In this class we have one constructor used to start the thread and run it. Check whether these two threads are run or not.

Lab - 15 (2 Hrs Real Time)

- 15.1 Create a multithreaded program by creating a subclass of Thread and then creating, initializing, and starting two Thread objects from your class. The threads will execute concurrently and display Java is hot, aromatic, and invigorating to the console window.
- 15.2 Create a multithreaded program as in the previous exercise by creating the MyThread subclass of Thread. But create threads as objects of the class MyClass, which is not a subclass of Thread. MyClass will implement the runnable interface and objects of MyClass will be executed as threads by passing them as arguments to the Thread constructor.

- 16.1 Write a program for inventory problem in this to illustrates the usage of synchronized keyword.
- 16.2 Write a program to show how synchronized methods and objects monitors are used to coordinate access to a common object by multiple threads. Clue use first program of this section for use will synchronized methods.
- 16.3 Write a complex program to illustrate how the thread priorities? Imagine that the first thread has just begun to run, even before it has a chance to do anything. Now comes the higher priority thread that wants to run as well. Now the higher priority thread has to do its work before the first thread starts.
- 16.4 Write a program for interthread communication process. In this they have three classes consumer, producer and stock.



