2/4 B.Tech. FOURTH SEMESTER

EM4L3 OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB Credits:2

Lab/Practice: 3 periods/week **Internal assessment: 25 marks**
Semester end examination: 50 marks

Course Objectives:

- To make the student learn a object oriented way of solving problems.
- To teach the student to write programs in Java to solve the problems

Learning Outcomes:

At the end of this course the student will be able to

- Develope object oriented programs using objects, classes , inheritance ,and interfaces, exceptions, Multithreading.
- Understand the API of java
- Design GUI using applets,awt,swings and understands event handling
- Write client/server programs usng sockets.

Recommended Systems/Software Requirements:

- Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and
  100 MB free disk space
- JDK Kit. Recommended

Student is expected to complete any 20 programs.

1. The Fibonacci sequence is defined by the following rule. The first 2 values in the sequence are 1, 1. Every subsequent value is the sum of the 2 values preceding it. Write A Java Program (WAJP) that uses both recursive and non-recursive functions to print the n^{th} value of the Fibonacci sequence.
2. WAJP to demonstrate wrapper classes, and to fix the precision.
3. WAJP that prompts the user for an integer and then prints out all the prime numbers up to that Integer.
4. WAJP that checks whether a given string is a palindrome or not. Ex: MALAYALAM is a palindrome.
5. WAJP for sorting a given list of names in ascending order.
6. WAJP to check the compatibility for multiplication, if compatible multiply two matrices and find its transpose.
7. WAJP, using *StringTokenizer* class, which reads a line of integers and then displays each integer and the sum of all integers.
8. Write a java program that demonstrates the uses of super keyword.
9. WAJP to create an abstract class named Shape, that contains an empty method named numberOfSides(). Provide three subclasses of Shape named Trapezoid, Triangle andHexagon, such that each one of the classes contains only the method numberOfSides(), that contains the number of sides in the given geometrical figure.
10. WAJP that illustrates how runtime polymorphism is achieved.
11. WAJP to create and demonstrate packages.
12. WAJP that reads on file name from the user then displays information about whether the file exists, whether the file is readable/writable, the type of file and the length of the file in bytes.And display the content of the file using *FileInputStream* class.

13. WAJP that displays the number of characters, lines and words in a text/text file.
14. WAJP to demonstrate interface .
15. WAJP to create custome Excetion.(i.e the exception should araise when result of modulus opreration is even number.The name of custome exception is EvenNumberException).
16. WAJP demonstrating the life cycle of a thread.
17. WAJP that creates 3 threads by implementing Runable interface. First thread displays "Good Morning" every 1 sec, the second thread displays "Hello" every 2 seconds and the third displays "Welcome" every 3 seconds.
18. WAJP that correctly implements Producer-Consumer problem using the concept of Inter Thread Communication.
19 WAJP demonstrating the life cycle of an applet.
20. Write an applet and allows user to draw lines, rectangles and ovals.\
21. Write an applet that display the content of a file.
22. WAJP to demonstrate mouse events and keyboard events.
23. WAJP that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the + - x / % operations. Add a text field to display the result.
24. WAJP that lets users create Pie charts. Design your own user interface (using Swings).
25. WAJP that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result and then sends the result back to the client. The client displays the result on the console.
26.WAJP to create menu bar,menu,menu item's using awt.

Learning resources

Reference:

Java; the complete reference, 5th editon, Herbert schildt, TMH