

### OOPS THROUGH JAVA LAB

- Use JDK 1.5 or above on any platform e.g. Windows or Unix.
  - Student is expected to complete any 16 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 nth 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 upto 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 that illustrates how runtime polymorphism is achieved.
  8. WAJP to create and demonstrate packages.
  9. WAJP, using String Tokenizer class, which reads a line of integers and then displays each integer and the sum of all integers.
  10. WAJP that reads on file name form 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 using FileInputStream class.
  11. WAJP that displays the number of characters, lines and words in a text/text file.
  12. Write an Applet that displays the content of a file.
  13. WAJP that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +-\*?% operations. Add a text field to display the result.
  14. WAJP for handling mouse events.
  15. WAJP demonstrating the life cycle of a thread.
  16. WAJP that correctly implements Producer-Consumer problem using the concept of Inter Thread Communication.

17. WAJP that lets users create Pie charts. Design your own user interface(with Swings & AWT).
18. WAJP that allows user to draw lines, rectangles and ovals.
19. 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. For ex: The data send form the client is the radius of a circle and the result produced by the server is the area of the circle.
20. WAJP to generate a set of random numbers between two numbers  $x_1$  and  $x_2$ , and  $x_1 > 0$ .
21. WAJP to create an abstract class named shape, that contains an empty method named number Of Sides(). Provide three classes named Trapezoid, Triangle and Hexagon, such that each one of the classes contains only the method number Of Sides(), that contains the number of sides in the given geometrical figure.
22. WAJP to implement a Queue, using user defined Exception Handling (also make use of throw, throws).
23. WAJP that creates 3 threads by extending Thread class. First thread displays “Good Morning” every 1 sec, the second thread displays “Hello” every 2 seconds and the third displays “Welcome” every 3 seconds. (Repeat the same by implementing Runnable).
24. Create an inheritance hierarchy of Rodent, Mouse, Gerbil, Hamsteretc. In the base class provide methods that are common to all Rodents and override these in the derived classes to perform different behaviours, depending on the specific type of Rodent. Create an array of Rodent, fill it with different specific types of Rodents and call your base class methods.