**Fr. Conceicao Rodrigues College Of Engineering**

Father Agnel Ashram, Bandstand, Bandra-west, Mumbai-50

**Department of Information Technology**

**S.E. (IT) (semester III)  (2019-2020)**

**Lab Plan**

**Lab Name:** Java Programming Lab ITL304  **Credits: 2**

**Lab Outcomes:**

1. Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
3. Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
4. Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
5. Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events
6. Identify, Design & develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture

**Lab Plan:**

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| Java Programming Lab ITL304 2019-2020 Dept. of Info Tech. | | | |
| Lab Plan | | | |
| Lab No. | Problem Statement | Planned Date | Actual Date |
| 1 | 1. Study Scanner Class and Output statement in Java 2. Check if string is palindrome | Home Assignment:   1. Write a program to print roots of quadratic equation. 2. WAP to count number of alphabets, numbers, spaces and special symbols in given input. | Week1 |
| Dates: | |  |  |
| 2 | (1)Write a menu driven java program which will read a number and implement the  following methods.  a. factorial() ,  b. reverse(),  c. testArmstrong() | Home Assignment:   1. WAP to count vowels and consonant. 2. WAP to demonstrate method overloading by creating area () to calculate area of circle, rectangle and triangle. | Week2 |
| Dates: | |  |  |
| 3 | (1) Write a program to create class named ‘Student’ with instance variables as roll no,  name and age . Program should demonstrate the use of  1. default constructor to initialize default values to parameters.  2. parameterized constructor to initialize two instance variables  3. demonstrate overloading by creating parameterized constructor to initialize three instance variables  4. method to print values of instance variables.  #Create objects of class Students to demonstrate the use of above constructors.  (2) Write a menu driven program to implement recursive functions for following  1. To find reverse of a number  2. To calculate 1+2+3+…….+(n-1) + n | Home Assignment:   1. Create a class Account with members as account\_id and balance. Demonstrate constructor overloading by Creating a constructor to initialize balance to 0. Create another constructor to initialize the object by values read from user. 2. WAP to read two strings through command line arguments. Compare the two strings for equality using inbuilt String class methods. | Week3 |
| Dates: | |  |  |
| 4 | 1. Write a menu driven program to perform the following functions  1. Addition of two matrices of order M X N and P X Q  2. Multiplication of two matrices of order M X N and N X Q  2. Write a program to add ‘n’ strings in a vector array. Input new string and check whether it is present in the vector. If it is present delete it otherwise add it to the vector. | Home Assignment:  (1)Write a Java program to perform addition of diagonal and non-diagonal elements.  (2)Write a Java programs to find frequency of an element in the given Vector array.  (3)Write a program to input 2 strings using command line. Demonstrate the use of following StringBuffer methods.  a. append() , b. insert() , c. replace() , d. delete() , e. reverse() , f. capacity() , g. ensureCapacity(), h. charAt(), i. length(), j. substring() | Week4 |
| Dates: | |  |  |
| 5 | Create an abstract class ‘ Instrument ‘ which is having the abstract function play( ).  Create three more sub classes from Instrument which is ‘ Piano’, ‘ Flute’ , ‘Guitar’.  Override the play( ) method inside all three classes printing a message,  “Piano is playing tan tan tan tan ” for Piano class  “Flute is playing toot toot toot toot” for Flute class  “Guitar is playing tin tin tin ” for Guitar class  You must not allow the user to declare an object of Instrument class. Create an array of 10 Instruments.  Assign different type of instrument to Instrument reference. Check for the polymorphic behavior of play method. Use the instanceof operator to print that which object stored at which index of instrument array. | Create a package **frcrce.it.SE<your batch id>.ITL304<your roll>.<your first name>.**  For e.g., frcrce.it.SEA.ITL304.8041.Sojan  Now create a **Greeter class** in this package having the following features:  **Attributes:**  name string //indicates name of the person to be greeted  **Member functions:**  Greeter(aName)//constructor to initialize the name of the //person to be greeted by this greeter.  sayHello() //returns a hello message with the name of the //person initialized earlier.  sayGoodBye() //bids goodbye to the person named earlier.  Create another class in the same package called **Advisor** that has the following features:  **Attributes:**  message string[5] //contains five advice messages  **Member functions:**  Advisor() //default constructor to initialize an array of //strings with atleast five advice messages  getAdvice() //randomly selects an advice from the available //list of messages and returns it to the caller of this method  Outside the package, from your working directory, create a class **GreeterTest** that constructs Greeter objects for all **command-line arguments** and prints out the results of calling sayHello().  The program should then display an advice and finally bid goodbye to each of the persons/entities in reverse order of the names entered at the command line.  For e.g.,  java GreeterTest Mars Venus  then the program should print  Hello, Mars!  Hello, Venus!  Advice: Never say No  Goodbye Venus!  Goodbye Mars! | Week5 |
| Dates: | |  |  |
| 6 | (1) Write a java program to create a user defined Exception class known as PayOutOfBoundsException. Organization does not offer basic salary less than 8000. If entered salary is less than 8000 the program should create an Exception of type PayOutOfBoundsException, program should calculate gross salary by considering salary parameters such as DA, HRA,CA,TA, Professional tax, TDS, PF..etc.  (2) a. Write a java program to create the child thread, comment on the execution of main and child thread.  b. using above example demonstrate the following methods.  sleep(), join(), getPrioity(), setPriority(), getName(), setName(), yield(), suspend(), resume().  c. Demonstrate Thread synchronization. | Home Assignment:  (1)Write a Java Program to calculate the Result. Result should consist of name, seatno, date, center number and marks of semester three exam. Create a User Defined Exception class MarksOutOfBoundsException, If Entered marks of any subject is greater than 100 or less than 0, and then program should create a user defined Exception of type MarksOutOfBoundsException and must have a provision to handle it.  (2)Write a java program to print first 20 prime numbers and 15 Fibonacci numbers by creating two child threads and also print the total time taken by each thread for the execution. | Week6 |
| Dates: | |  |  |
| 7 | (1)Write a java program to draw the face shapeusing Applet.  (2) Write a java program to create applet that takes ‘Login’ and ‘Password’ from the user and display it on a TextField which appears only on clicking ‘OK ’ button. The program should clear the TextField on clicking ‘Reset’ button. Demonstrtate it using AWT. | Home Assignment:  (1)Write a program to demonstrate traffic signal using Applet. The signal must be time controlled. | Week7 |
| Dates: | |  |  |
| 8 | Write a java program to create an Advertisement banner for a product (like soap, TV, movie etc )on an applet. Use multi-threads to create complete banner.  (Note: Every student should select **unique product** **and concept** for building advertisement) | Write a java program to create applet that takes ‘Login’ and ‘Password’ from the user and display it on a TextField which appears only on clicking ‘OK ’ button. The program should clear the TextField on clicking ‘Reset’ button. Demonstrtate it using Swings. | Week8 |
| Dates: | |  |  |

**Term Work:** The term Work shall consist of at least 12 to 15 practical’s based on the above list. The also Term work Journal must include at least 2 assignments.

**Term Work Marks:** 50 Marks (Total marks) = 40 Marks (Experiment) + 5 Marks (Assignments) + 5 Marks (Attendance) Oral & Practical Exam: An Oral & Practical exam will be held based on the above syllabus.