College of Engineering Trivandrum
Department of Computer Applications

RLMCA132 Object Oriented Programming Lab
Lab Cycle II

1. Write a program to create a package called "stringeasy" which has a class called "stringfunctions". It has the functions -replicate(char c, int times) , upper(char c), lower (char c), substr(String s, int start, int length). Create another class outside this package which uses these functions.

2. Write a program to create a package called "squareandcube" that contains two classes Sqaure and Cube. Square class contains a method to find square of a number and Cube class contains a method to find cube of a number. Create another class outside this package which uses the methods of both classes.

3. Design java application to model Employee of an "ABC" organization. Consider types of employees as Manager and Sales Person. Perform the following
   a) Implement simple inheritance where Employee (employee ID, First Name, Last Name, Current salary) is super class, consider Manager (number of stock options) and SalesPerson (number of sales, commission rate) as subclasses.
   b) Define parameterized constructors in class hierarchy.
   c) Define methods to display status of employee (override toString()) and increase current payment (salary) as giving bonus by a small amount.
   d) Identify the different options of giving bonus (to increase current pay by small amount) and consider type of employee while giving bonus. Apply polymorphism for methods using inheritance in class hierarchy.
   e) Create an array of super class variables and populate array with sub class objects. Call methods using array of objects.

4. Define a interface EMPInterface (void displayEMP(), void giveBonus (double amount)). Define an abstract class Employee(empID, fName, lName, salary). Define a concrete class Manager (noOfOtockOptions), subclass of Employee and define interface methods. Perform the following
   a) Define appropriate constructors in a class hierarchy.
   b) Ensure the bonus amount should not be negative and zero using exception handling mechanism (use throws and throw clauses of exception handling).
   c) Create array of interface reference variables and populate with manager objects.
   d) Write a test program to implement the above said requirements of interface implementation and exception handling.

5. Write a program that does the following – trapping NumberFormatException, ArrayIndexOutOfBoundsException. Initialize the array and read an array index from the user. If the user has not entered a number, NumberFormatException should handle it. If the user's input is beyond the size of the array, it should also be handled. Display the number at the index value given by the user. Display error messages accordingly

6. Let's say you are in business selling bikes and need to validate a customers order. Your program should throw an userdefined exception TooManyBikesException if the quantity specified by the user is more than 150. The catch block should allow user to reenter the value and get his order confirmed. Override the toString() method to display appropriate messages for the customer.

7. User-defined exceptions. Write a java program to create a class named account that contains the account ID and the balance, and let the user deposit to or withdraw from the account. For each transaction, a message is displayed to indicate the status of the transaction: successful or failed. In case of failure, the failure reason is reported. The possible failure are negative-amount-exception (in both deposit and withdraw transaction) and insufficient-amount-exception (need to completed by you in withdraw transaction). Complete the code to add insufficient-amount-exception.

8. Write a java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea( ) that prints the area of the given shape.

9. Write a java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

10. Write a program using Applet to display a message.

11. Develop an Applet that receives an integer in one text field & compute its factorial value & display it in another text filed when the button “Compute” is clicked

12. Write a program for configuring Applets by passing parameters.

13. Draw a House using basic graphics primitives in an applet.

14. Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with “stop” or “ready” or “go” should appear above the buttons in a selected color. Initially there is no message shown.

15. Write a Java program 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. Handle any possible exceptions like divide by zero.

16. Suppose that a table named Table.txt is stored in a text file. The first line in the file header and the remaining lines correspond to row in the table. The elements are separated by commas. Write a Java program to display the table using labels in grid layout.

17. Write a Java program that displays the number of characters, lines and words in a text file.

Note: Complete Cycle II and submit your rough records on or before ……..