# Object-Oriented Programming Lab (CSEN3053)
## Day 4
## Assignment
Stream: CSE (DS)

1. Design a class student with data member roll_no and branch and subject. Inherit two classes InternalMarks( with data member attendance, performance and labCopy) and ExternalMarks (with data member labExam and viva) from Student class to calculate internal marks and external marks .Now inherit a class result from InrenalMarks and ExternalMarks to calculate the total marks obtained in given subject.

2. Write a program to create a class Father with data member name and age, one member function show() to display name and age of father.Inherit Son class from Father class. Son has its own data member name and age and member function show to display Son's name and age. Use constructor to initialize all data members. Use base class pointer to display father as well as son's information. What is the output? Then modify your code by writing virtual function and print the expected result.

3. Define a class shape and then find out surface area and volume of a Rectangle, Square and Cylinder using inheritance. Area() and volume() are pure virtual function in Shape class. Use runtime polymorphism.

4. Write a template class Square that finds the square root of a number. Throw an exception if a negative number, floating point number or a character is entered to find the square root. Use a user-defined exception class to handle the exception.

5. Write a program that has a class Account to store bank's customer(s) name, address, balance and account type. Write a function to print, deposit and withdraw amount. Write a function to take loan and generate loan number. An exception must be thrown if a minimum balance of Rs. 3000 is not maintained. Another exception must be thrown if the customer wants to take a loan but he has no savings account in the bank. Use user-defined exception class to handle the exception.

6. Define a namespace that has a class TIME. Enter the time when a user started an online test and completed the test. Subtract the two time values and display the duration I which the test was completed. Store this namespace in a file. Now, create another file where use the class TIME to tract the examination duration of different candidates. Use friend class.

7. Write a nested namespace where the outer namespace creates a dynamic array and the inner namespace defines a function to split the array into two sorted subarrays. Write a program that uses the namespaces to generate two sets of sorted numbers from a given set of numbers.