

## Lab1: Basic concepts of OOP

1. Write a Java program to generate prime numbers between n and m.(Hint: A prime number is a natural number greater than 1 that has no positive divisors other than 1 and itself. Eg: 2, 3, 5,7,11 etc.)
2. Write a program to print all combinations of four-digit number. A four-digit number is generated using only four digits {1, 2, 3, 4}.
  - Case 1: Duplication of digit is allowed.
  - Case 2: Duplication of digit is not allowed.
3. Design a base class called Student with the following 2 fields:- (i) Name (ii) Id. Derive 2 classes called Sports and Exam from the Student base class. Class Sports has a field called s\_grade and class Exam has a field called e\_grade which are integer fields. Derive a class called Results which inherit from Sports and Exam. This class has a character array or string field to represent the final result. Also it has a method called display which can be used to display the result. Illustrate the usage of these classes in main().
4. Design an interface called Series with the following methods
  - i) getNext (returns the next number in series)
  - ii) reset(to restart the series)
  - iii) setStart (to set the value from which the series should start)

Design a class named **ByTwos** that will implement the methods of the interface Series such that it generates a series of numbers, each two greater than the previous one. Also design a class which will include the main method for referencing the interface.
5. Define a class CurrentDate with data members day, month and year. Define a method createDate() to create date object by reading values from keyboard. Throw a user defined exception by name InvalidDayException if the day is invalid and InvalidMonthException if month is found invalid and display current date if the date is valid. Write a test program to illustrate the functionality.