

**INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**  
**ROORKEE – 247 667**

(Autumn Semester 2018 – 19)

**Fundamentals of Object Oriented Programming (CSN 103)**

**Assignment 5**

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1. Write a JAVA program to find the volume of the cone by creating a class with appropriate fields and methods like **getdata( )** and **Volumecompute( )**. Your program should take different test input and the corresponding output should be printed.
2. Write a JAVA program to find the addition of two time data using class. Time data is of the form, hour, minutes and seconds. Take one data from user and another using constructor. For example given two time data 08:20:46 and 12:24:34, the resultant time will be 20:45:10. (Hint: Extend the distance program that we had seen in the lecture class)
3. Write a class named **Date** whose data members are **day**, **month** and **year**. Include methods to perform the following tasks using JAVA Program:
  - (a) To create the date
  - (b) To modify the date
  - (c) To display the date (display September 12, 2015 when input date is 12-09-2015).
4. Develop a program in JAVA to create a data base of the personal information system having the following data:
  - Name:
  - Date of birth:
  - Blood group:
  - Basic Pay:
  - Telephone number:
  - Driving licence number:
  - Contact address :Use default constructor and parameterized constructor along with **getdata( )** and **display( )** functions and implement the class with the suitable values for atmost 50 employees.
5. **[Extra Credit]** Rational numbers are numbers that can be represented as a fraction  $p / q$  where  $p$  is an integer number and  $q$  is a positive integer ( $q \neq 0$ ).

Design and implement a Java class **RationalNumber** for representing such numbers. Implement methods to add and multiply rational numbers. Implement a method for return the value of a rational number as a double value. Make sure that the numerator  $p$  and denominator  $q$  do not have common divisors in your implementation. Use the algorithm for calculation the greatest common divisor to ensure this property.

Note that zero has a unique integral representation in your implementation.