

National Institute of Technology Calicut
Department of Computer Science and Engineering

CS3301 OBJECT ORIENTED PROGRAMMING
Winter Semester 2018-2019 (MCA)
Assignment Question Set 1

1. **Aim:** Implement a menu driven program for implementing the operations on complex numbers.
Requirements: The problem should be implemented through object oriented approach, where a complex number is treated as an object with attributes representing real and complex part. Use setter and getter methods for value assignment and retrieval operations. Besides that there should be public methods for addition, subtraction, multiplication and inversion operations.
2. **Aim:** Implement a coffee machine which can make both black coffee and milk coffee.
Requirements: The machine can store coffee powder, milk and water. The maximum storage capacity of coffee powder is 500gm, milk is 1 litre and water 2 liters. Each coffee is made by taking 10gm coffee and 0.2 liter of water. For milk coffee it uses 0.4 liter of milk. There should be public behaviors (can be termed as interfaces) for making coffee and filling the ingredients. Besides that there should be interfaces for cleaning machine, loading the machine with full capacity of ingredients and displaying the status of machine which shows the number of coffees made and the status of ingredients in machine at that particular point of time.
3. **Aim:** Implement an invoice item management system which stores a list of invoice items and calculates the total amount.
Requirements: Each invoice item stores the inventory item details and the quantity of that particular inventory item purchased. Each inventory item has an id, name, description and unit price. Implement a menu driven program which iteratively reads the invoice details, and up on completion it generates an invoice which lists the invoice details along with the total amount.
4. **Aim:** Utilizing constructors for initializing Day instances
Requirements: Implement a list (dynamically growing) which stores the days of a week. Each Day instances stores the Day name (Eg. MONDAY). The default value for the Day instance is "SUNDAY". It can be initialized by either reading a number or a string. If the user enters a number or a string, then Day instance should be initialized through constructor. Display the list of days on user request.
5. **Aim:** Implement an integer stack which works in last in first out manner.
Requirements: The Stack class should have interfaces (public methods) for insert, delete and show stack details. All other attributes and methods should be private.