Lab 01 | Working with Objects

CS202 Object Oriented Design and Programing Lab, Autumn'2018; pm_jat

In this lab, you learn about following objects using appropriate documentation pages, and write programs using services of these objects -

- java.util.Scanner [c++: cin]
- Java Strings [c++: string]
- Java Arrays [c++: array]
- java.util.ArrayList [c++: vector]

Write following programs;
In Java:

- you create a class, put all functionality of each question in main method of the class. Also learn to specify package for a class and place all classes that you create here in package lab01.
- You create separate class [C++: separate source file] for each question. Each class should have name as per advised in the question. While implementing following java naming and coding conventions [refer Appendix E in book Big Java /6e]

In C++:

- Put all functionality in main function.

For each question, list down Object classes and their services that you use; as following -

- Name of the class
- List of services (with their specification/signatures)

(q01) Write a program **PrimeNumberChecker** which takes a number from the user using Scanner class object and checks whether the number is prime or not.

(q02) Suppose you have string object that contains comma separate double values; for example of "3.5, 12.9, 18.7, 121.54, …". Create a program **CSVExtractor** that extract values from given string object and stores them in array object of double values. You can use split service of String object for this.

(q03) Create a program **DataReverser**, and provide necessary code that reverses data of an given array and outputs; your code should be doing reverse in place; that means in the same array; should not use another array object.

(q04) Create a program **FrequencyCalculator**, and provide necessary code that computes and output frequency of each value in data set of 100 values. Assuming that data are integer in the range of 0 to 10 inclusive of both.

(q05) Write a class **BubbleSorterString** that performs bubble sort on array of String objects. Store names of your 10 friends in an array object of strings and sort them lexicographically ignoring cases.

Continued on page 2 ….

(q06) Write a program that reads data file “cpi.csv”; the file has comma separated values of ID, Name, and CPI of students of a class – one student data per line. Your program should be able to report following information by processing data from the cpi file -

a. ID, Name and CPI of the student having highest cpi.
b. Average CPI of the class
c. Provide formatted list (ID, Name, CPI) of students having cpi higher than average.

For testing your program you are given **`cpi.csv`** file containing data of 28 students. For storing and processing data in memory use ArrayList object(s).

Java note: you use PrintStream object with File object.