# Department of Computing

**CS213: Advanced Programming**

**Class: BSCS – 6C**

# Lab 2: Development of Student Management Module

**Date: September 14, 2018**

# Time: Friday 2:00 PM – 5:00 PM

# Instructor: Dr. Abdul Ghafoor

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# Lab 2: Development of Student Management Module

## Introduction

In this lab the students have to design, develop, and test a student management module in which student’s information is stored in a file. In order to implement this system, it is strongly recommended to use factory pattern for creating student and singleton pattern for accessing file. These both patterns should be implemented in a single StudentFactory class.

## Objectives

* Develop a library for implementing Factory and singleton pattern.
* Implement its main class and test its behavior.

## Tools/Software Requirement

* Solutions should be made using C++ or Java, only.
* **Do not use any external library for matrix multiplication.**

**Description**

Each student must, individually build the complete application on their own. Students must upload their solutions on LMS to qualify for evaluation.

* Any exceptions or errors leading to non-execution of submitted code.
* Failure to upload the solution on LMS.
* Failure to submit original code.
* Failure to explain the submission, during viva.

**Lab Task**

Develop a library for creating factory pattern for student object factory. The student object has firstName, lastName, DoB, address, and className. These student objects then must be saved in the file in JSON format. In order to convert object into JSON and vice versa, you may use Jackson external library. It can be downloaded from [www.maven.com](http://www.maven.com). As we are using single file to store student’s record therefore we use a singleton pattern for creating File object. After implementing, student has to create main method in which application ask to user for add a student, display complete list of stored students, and delete a student.

## Deliverables

* Each submission is individual with the following composition:
  + Source Code
  + README.txt (Introduction, Approach, How to Run and Analysis)
  + Design.doc (Design document of your application)
* Convert your submission files into a zip folder and name it as given below, finally upload the zip folder to LMS.
  + Name – Registration No. – Section

## Grade Criteria

This lab is graded. Min marks: 0. Max marks: 10.

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| **Activity** | **Minimum** | **Maximum** |
| Documentation with clearly defined understanding of the lab task and approach | 0 | 2 |
| Code clarity with clean, formatted and commented code. | 0 | 1 |
| Functionality | 0 | 4 |
| Viva | 0 | 3 |
| **Total** | **0** | **10** |