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# Department of Software Engineering

**CS 250: Data Structures and Algorithms**

**Class: BESE-7AB**

**Lab 06: Computational time of algorithms**

**CLO4: Investigate and evaluate various algorithms based on accuracy, time complexity, and memory requirements.**

**Date: 20th October, 2017**

**Time: 09:00 am -12:00pm, 2:00pm – 5:00pm**

# Instructor: Dr. Muhammad Shahzad

# Lab 6: Computational Time of Algorithm

**Introduction**

This lab is based on the analysis of the computational time acquired by an algorithm.

**Objectives**

Objective of this lab is to practice of finding the computational time of an algorithm.

**Tools/Software Requirement**

Visual Studio 2012 or gcc or g++

**Description**

Consider two different algorithms; listed in lab tasks. You will implement two different approaches for solving the same problem and will figure out the time difference between their successful executions.

**Lab Task**

You are required to upload the lab tasks on LMS and the name of that tasks must be in this format YourFullName\_reg#\_task#.cpp

Remember to comment your code properly. Inappropriate or no comment will results in deduction of marks.

**Tasks**

**Task 1**

* Calculate the total time for the computation of the Fibonacci series for n

Recursive Iterative

E.g. for N=10000 20ms 2ms

* Run some timing experiments with your program while trying different values of n. Be sure to time only the computation and not the user entering input, etc.
* Draw a graph in Excel showing two functions one for recursive function and other for iterative function.

**Task 2**

* Calculate the factorial of a number “n” given by user both recursively and iteratively. Figure out the difference in computational time by using both the approaches.
* Draw a graph in Excel showing two functions one for recursive function and other for iterative function.

(Hint: input at least 5 different values of “n” and make their entry in excel sheet. “n” can be of any data type. Try to use larger values of “n” for getting the useful data.)

**Deliverable**

You are required to upload the lab tasks on LMS before the deadline