# Department of Computing

**CS 213: Advanced Programming**

**Class: BSCS 5 AB**

# Lab 11: Digital Clock

**Date: December 13th, 2017**

**Time: Thursday (10:00-12:50 & 14:00 – 16:50)**

# Instructor: Fahad Ahmed Satti

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# Lab 10: Digital Clock

## Introduction

In this lab students will utilize the concepts of multi-threaded programming in Java and make a GUI based digital clock, which shows the current time of any timezone in the world and allows the user to create any number of alarms, each being monitored in a separate thread and allowing for snooze timers.

## Objectives

After performing this lab students will be able to understand:

* Multi-Threaded Programming in Java
* Event-Driven Programming

## Tools/Software Requirement

* You can take help from internet but remember **no plagiarism.**

**Description**

Create a GUI based digital clock in Java, which shows the current time for any timezone in the world. The timezone will be selected by the user.

The user can also create any number of alarms in future, which will be monitored in separate threads. Once, the alarm goes off, it will allow the user to either dismiss it, finishing the thread or snoozing for another 5 mins, in which case the same alarm will ring again after this duration.

Create unit tests for checking correct time, after selection of a timezone and the result of 3 alarms going off near to each other which will be snoozed for random number of times.

You can make any other assumption, without invalidating the original problem.

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

**Lab Task**

* Create a GUI based digital clock in Java.
* Allow the user to select a timezone.
* Display running time of the selected timezone.
* Allow the user to create new alarms.
* Allow the user to snooze an alarm for 5 mins, after it goes off.
* Allow the user to dismiss an alarm.
* Implement Unit tests.

## Deliverables

* Each submission is individual with the following composition:
  + Source Code
  + Documentation(Introduction and Analysis)
* 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

The lab will be graded between on the following rubric:

