# Department of Computing

# Fundamental of Computer Programming

# Class: SE-7B

# Lab 11: Queues & Stacks

# Date: 28th December, 2016

# Time: 2pm-5pm

# Instructor: Muhammad Muddasir Malik

# Lab 11: Queue and Stack Implementation

# Introduction

In this lab, students will be able to implement Queue and Stack. Queue is First-In First-Out whereas Stack is First-In Last-out

**Tools/Software Requirement**

Python IDLE

**Description**  
A queue is a data structure in which elements are removed in the same order they were entered. This is often referred to as FIFO (first in, first out).

A real-world example of queue can be a single-lane one-way road, where the vehicle enters first, exits first. More real-world examples can be seen as queues at the ticket windows and bus-stops.

In contrast, a stack is a data structure in which elements are removed in the reverse order from which they were entered. This is referred to as LIFO (last in, first out).

A jar of Jam is an example of Stack.

**Tasks:**

1. Take 10 inputs from user using loop and search Minimum, Maximum, Second Minimum and Second Maximum from the list using one loop for each.
2. You have to implement a system that automates work between the McDonalds counter and their kitchen.  
   The order taken in the form of a string, is pushed into a queue at the counter. Then the order will be popped in the kitchen and prepared. If the number of pending orders reaches 15, the counter stops taking further orders.  
   (Note: Use list of size 15).
3. Implement a cash register with currency notes of 100, 50, 10. User adds these notes on a stack using push. He can pop and the top most out of the three stacks comes off. A counter keeps track of the total amount in register.