Winter 2025 CS 2262 Assignment Set #1:
Due Date Tuesday May 12th, 2025
Quiz Date Wednesday May 14th, 2025

This course started with a review of the CS 1083 Exam and so we begin with a Java task which will become relevant later in the course.

1. Program a JAVA class to represent a generic typed Stack (pop, peek, push, isEmpty). Throw exceptions as necessary when functions could receive invalid input parameters or requests.

   In a separate Driver program, create an array of 10 integers and reverse it by first pushing all the numbers onto the Stack and then popping them back out again into the array. Print your array both before and after the process. Catch any exceptions as necessary.

2. Program a JAVA class to represent a generic typed Queue (enqueue, dequeue, isEmpty). Throw exceptions as necessary when functions could receive invalid input parameters or requests.

   A companies customer service line processes customers arriving at a the desk. Each customer(make a class for this) has a name and arrival time (make a class for this). Write a Driver program which performs the following:

   - Enqueues a customer at 9:00am.
   - Starting at 9:00am, and every 15 minutes from 9:00am to 4:59pm the program should either ENQUEUE or DEQUEUE (60% chance of ENQUEUE, 40% chance of DEQUEUE) a customer (without crashing)
   - Determine the average wait time for customers today
   - Determine how many customers did not get served by the close of day. Assume any customer in Queue when the clock strikes 5:00 is not served.

3. C as a language pre-dates JAVA and Python by about 25 years. This means it does not have the "simplicity" of Java or Python but technically gives the programmer more power than each of these new languages. The information in from Dr. McNallys week 1 notes and Lab 1 is to be understood for the Quiz.