DSA Week 8 activities (solutions)

This week, you are required to complete two questionnaires and two labs.

a. In your DSA textbook 1 page 141, answer questions 2 and 5.
b. In this print out, answer all Week 8 questions.
c. Also, in this print out, complete Week 8 lab 1 & 2 using the lab computers.

Note: You can complete the activities in any order, however, make afford to complete and understand everything which prepares you for well for test 2 & Final Exam.

DSA Textbook 1 page 141

2. LAST-IN-FIRST OUT and FIRST-IN-FIRST-OUT

5. 45 is left

DSA Week 8 Questions

1. What is a Stack?

A stack is a collection of objects that are inserted and removed according to the last -in, first -out (LIFO) principle.

A stack is a linear data structure that follows the Last-in, First-Out principle.

A stack is a data structure that can hold many elements.

A stack is a data structure usually used to simplify certain programming operations.

2. Discuss the five methods used with stacks.

Basic operations we can do on a stack are:

- Push: Adds a new element on the stack.
- Pop: Removes and returns the top element from the stack.
- Peek: Returns the top element on the stack.
- isEmpty: Checks if the stack is empty.
- Size: Finds the number of elements in the stack.

3. A stack has the elements (10, 28, 31).

a. What happens to the stack when you push (30)? Slack (10, 28, 31, 30)
b. What happens to the stack when you pop(30), pop(31) and pop(28)? Slack (10)
c. After performing the methods above, which elements are still in the stack? yes
d. After the three step above, if you run the method isEmpty() will it return true or false? Explain why it would return true or false. False, because the stack is not empty is still holds the element 10.

4. Complete the sentence, Stacks LIFO are implemented through Arrays and Linked List data structures.

5. Referring to programming, explain the concept of generics.

Generics in Java enable allows programmer to create classes, interfaces and method where the datatype is specified as a parameter. Therefore, allows for the creation of reusable code.

In the course, we consider generics to be like a template where using generics <E> and <T> appears that mean we can use any datatype (Integer, Double, Float, String or Char). A non-generic coded program only specifies one datatype.

6. What is the main reason for using generic code or syntax compared to a non-generic code?

Allows the creation of reusable code that can work with different data types while providing less compiling time and less coding with better readability.

7. What is the LIFO principle?

LIFO, Last-In-First-Out principle is the method and management of a stack data structure. The most recent element (last element) is added in last in the stack while the first element is removed first.