

The University of the South Pacific

School of Computing, Information & Mathematical Sciences

CS214 Design & Analysis of Algorithms

Lab Week 6

This is a practical lab where you will learn how to create your own data structure and make it cloneable.

Download partially implemented class for Stack data type, MyStack.java given in week6\Lab folder in moodle. Answer the following questions based on the given class.

The clone method creates an object from an existing object of the same type as the original object. It also initializes the new object's member variables to the same values as the original object's corresponding member variables. Read more about clone from Java Learning Materials on Moodle.

Question 1

Create a stack of integers with values 11, 25, 89.

Question 2

Create a stack of strings with values "I", "Love", "Java".

Question 3

To make a copy of an object you need to clone that object. Update your stack class to make it *cloneable*. Test your program and generate the following output.

```
Instantiate a new stack s1
push I and Love to stack s1
clone s1 -> s2
s1: size= 2 [I, Love]
s2: size= 2 [I, Love]
push Java to s2
s1: size= 2 [I, Love]
s2: size= 3 [I, Love, Java]
push CS214 to s1
s1: size= 3 [I, Love, CS214]
s2: size= 3 [I, Love, Java]
push Bye to s2
s1: size= 3 [I, Love, CS214]
s2: size= 4 [I, Love, Java, Bye]
```