**Department of Computer Science and Engineering**

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| **Course Code:CSE220** | **Credits: 1.5** |
| **Course Name: Data Structure** | **Semester: Fall’18** |

**Lab 06  
STACK IMPLEMENTATION**

1. **Topic Overview:**

Students will be able to create STACK practically. They will have hands-on practice over the

basic operations on stack both by array and linked lists.They will be able to implement different

operation like push, pop, peek etc in this lab

1. **Lesson Fit:**

The lab itself should be followed by the previous lab and theory knowledge on the array data structure and the basic knowledge of programming. Moreover, students need to be familiar with basic programming in Java and IDE (Dr. Java)

1. **Learning Outcome:**

After this lecture, the students will be able to:

* 1. Implement stack by array
  2. Implement stack on linked list
  3. Practice real life example by stack

1. **Anticipated Challenges and Possible Solutions**
   1. Student may face **array index out of bound exception** during implementation of stack in array.

**solution:** have to keep trace that the number of element in the array does not exceeds the array capacity.

b. may face **nullpointerexception** during implementation of stack by linked list

**Solution:** Special care is to be taken so that the node are properly declared and initialized.

1. **Acceptance and Evaluation**

Students will be evaluated according to their progress in the lab as they complete each problem.

Maybe some of the students will not be able to finish all the 14 tasks; they will submit them later

and give an oral justification to get their performance mark.

1. **Activity Detail**
   1. **Hour: 1  
      Discussion:**1. A short quiz on the previous lab topic.  
      2. Evaluating and discussing the quiz question. **Problem Task:**
      1. Quiz question will be prepared by the lab faculty members
   2. **Hour: 2**

**Discussion:**A quick review of the previous lab and recap the theory and basic structure of stack which is already demonstrated in the classroom. **Problem Task:**

* + 1. Task 1 to 7 (Page 4)
  1. **Hour: 3**

**Discussion:**

Check task 1 to 7 and implementation of stack with linked list while the students continue with the rest.

**Problem Task:**

* + 1. Task 8 and 9(Page 4)

1. **Home tasks**
   1. Unfinished tasks

**Lab 6 Activity List**

**Task 1**

build a stack with array.

**Task 2**

Implement a method which will show the size of the stack

**Task 3**

Implement a method which will show whether the array is empty or not

**Task 4**

implement push operation on stack

**Task 5**

Implement pop operation on stack

**Task 6**

Implement peek operation on stack.

**Task 7**

Implement tostring and search operation on stack.

**Task 8**

Implement stack by linkedlist.

**Task 9** to task **12**

Repeat task 2 to 7 with linkedlist.