

Assignment- 06  
Applying Stack & Queue Data Structure [CO 4]

| Deadline:

*Instructions:*

*For every task you need to show tracing/simulation, codes and final output as specified. If tracing/simulation is missing in a question where you were asked to trace/simulate, majority of the marks will be deducted. Try to maintain sequence. Write name, student id, assignment number and date of submission clearly.*

**Task 1: Stack Implementation [Task 1.1 to task 1.12 are java code]**

**Task 1.1**

**Write** java code to build a stack with array.

**Task 1.2**

**Implement** a method which will show the size of the stack

**Task 1.3**

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

**Task 1.4**

**Implement** push operation on stack

**Task 1.5**

**Implement** pop operation on stack

**Task 1.6**

**Implement** peek operation on stack.

**Task 1.7**

**Implement** toString and search operation on stack.

**Task 1.8**

**Implement** stack by linkedlist.

**Task 1.9 to task 1.14**

**Repeat** task 1.2 to 1.7 with linkedlist.

## Task 2: Queue Implementation [Task 2.1 to task 2.12 are java code]

### Task 2.1

**Write** a java code to build a queue using circular array.

### Task 2.2

**Implement** a method which will show the size of the queue

### Task 2.3

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

### Task 2.4

**Implement** enqueue operation on queue

### Task 2.5

**Implement** dequeue operation on queue

### Task 2.6

**Implement** peek operation on queue.

### Task 2.7

**Implement** toString and search operation on queue.

### Task 2.8

**Implement** queue by linkedlist.

### Task 2.9 to task 2.14

**Repeat** task 2.2 to 2.7 with linkedlist.

## Task 3: Queue Simulation

**Draw** the queue structure in each case when the following operations are performed on an empty queue. **Show** every step.

1. **Add** A,B,C,D,E,F
2. **Delete** X letters. [X=Last 4 digit of your ID%3]
3. **Add** G,H
4. **Delete** Y letters. [Y=Last 4 digit of your ID%4]