

## Assignment- 01

### Explaining the Pros and Cons of Linear Array [CO 2]

| Deadline:

*Instructions:*

*For every task you need to show **tracing/simulation**, codes and final output. If tracing/simulation is missing, half of the marks will be deducted. Try to maintain sequence. Write name, student id, assignment number and date of submission clearly.*

#### Task 1:

Given array is -

X-18	X+4	X	X+14	X-5	X+4	X-2	X+9
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X= Last 4 digit of your BRACU ID % 33 + Last 4 digit of your BRACU ID % 34

**Write a java code** for linear array which has below 10 functionalities and **trace your code**. **Include the tester file** and **write the output array after each operation**.

[Hint1: In one java class you have to implement all the methods]

[Hint2: All tasks should be implemented on the same instance of the array]

- Print the elements
- Copying an array
- Resizing an array
- Reversing an array
- Shifting an array left
- Shifting an array right
- Inserting an element at any position
- Removing an element from any position
- Rotating an array left
- Rotating an array right

## Task 2:

Given array is -

X	A	B	C	D	E	F
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Where,

$X = \text{Last 4 digit of your id \% 33} + \text{Last 4 digit of your id \% 34}$

$Y = \text{Last 3 digit of your id \% 33} + \text{Last 3 digit of your id \% 34}$

$A = (X+1)\_\text{John}\_(Y+10)$

$B = (X+2)\_\text{John}\_(Y+20)$

$C = (X+3)\_\text{John}\_(Y+30)$

$D = (X+4)\_\text{John}\_(Y+40)$

$E = (X+5)\_\text{John}\_(Y+50)$

$F = (X+6)\_\text{John}\_(Y+60)$

// john will be replaced with your name initials. Example: Mofiz Uddin Khan -> initial MUK

**Perform** the following operations and **show simulation (i.e write the resulting array)**. **Write the final output after each operation**. No need to write the code.

[Hint: All tasks should be implemented on the same instance of the array]

- Print the elements
- Resizing the array [new length = Last 4 digit of your id %5 + Last 3 digit of your id %3 + 8] and fill the elements according to the given order .. (X+...)\_John\_(Y+...)
- Reverse the array
- Shifting array left by one position
- Shifting array right by one position
- Inserting an element [in position = Last 3 digit of your id %7]
- Removing an element [in position = Last 3 digit of your id %5]
- Rotating array left by X position [X = Last 3 digit of your id %5]
- Rotating array right X position [X = Last 3 digit of your id %5]
- Inserting an element [in position = Last 3 digit of your id %10]
- Removing an element [in position = Last 3 digit of your id %9]