Assignment 02: Algorithm Design and Analysis in Action

Problem 01: In merge sort we need to divide the input integer array into equal parts recursively till we reach to the base case (only one item left in splitted arrays). You need to implement the same behaviour but **without recursive calls**. Your program should get size of array as an input from the user (assume the array size will always be power of 2). Then the program should fill the array with random values and split the array till you reach the base case. There is no language and data type restrictions. Your program should print an output as follows:

```
Array:2,3,4,5,6,0,3,1
Left:2,3,4,5
Right:6,0,3,1
------------------
Array:2,3,4,5
Left:2,3
Right:4,5
------------------
Array:6,0,3,1
Left:6,0
Right:3,1
------------------
Array:2, 3
Left:2
Right:4
------------------
Array:4,5
Left:4
Right:5
------------------
Array:6,0
Left:6
Right:0
------------------
Array:3,1
Left:3
Right:1
------------------
```

Report:Prepare two page document explaining your algorithms and running time ($T(n)$) also identify Big-Oh. You also need to identify the memory required by your algorithms. Assume an integer takes 4 bytes.

Submission Guidelines

:Submit the report and your source code through email to `bitf13a043@pucit.edu.pk` before **23 November, Wednesday 09:00 AM**. You need to attach a zip file (**firstname_ID_assign1_algo.zip**) containing report and source codes for both problems. The subject of the email should be "DSA Submission: YourFirstName: ID: Assign02".