

Odd-Even Sort / Brick Sort

Program Name- Odd-Even Sort/ Brick Sort

Project Category- Sorting

Pre-requisites- Bubble Sorting [<http://quiz.geeksforgeeks.org/bubble-sort/>]

Explanation-

This is basically a variation of bubble-sort.

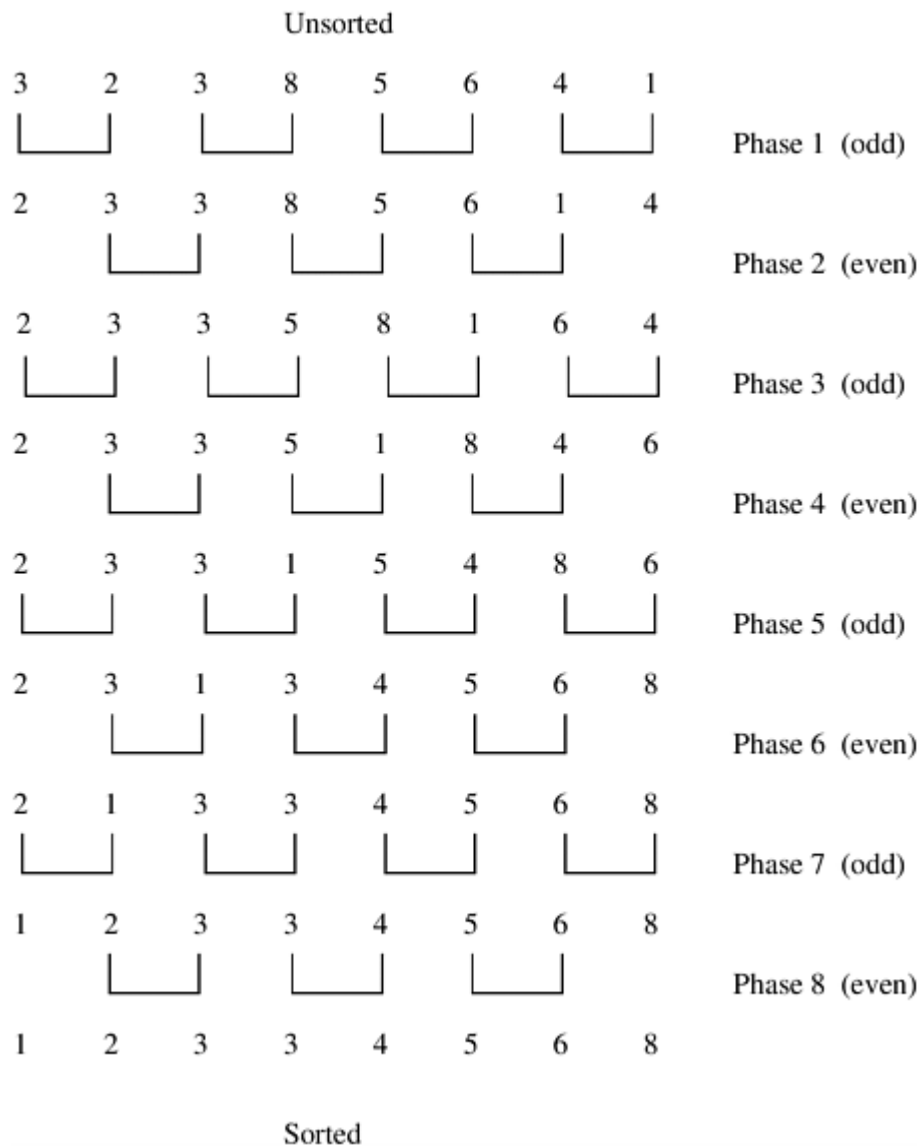
This algorithm is divided into two phases- Odd and Even Phase. The algorithm runs until the array elements are sorted and in each iteration two phases occurs- Odd and Even Phases.

In the odd phase, we perform a bubble sort on odd indexed elements and in the even phase, we perform a bubble sort on even indexed elements.

For more on bubble sort see - <http://quiz.geeksforgeeks.org/bubble-sort/>

Example-

We demonstrate the above algorithm using the below illustration on the array = {3, 2, 3, 8, 5, 6, 4, 1}



Proof of Correctness -

See - https://en.wikipedia.org/wiki/Odd%E2%80%93even_sort#Proof_of_Correctness

Time Complexity-

$O(N^2)$ where, N = Number of elements in the input array

Auxiliary Space-

O(1). Just like bubble sort this is also an in-place algorithm.

Exercise to the Readers-

In our program in each iteration we first do bubble sort on odd indexed elements and then a bubble sort on the even indexed elements.

Will we get a sorted result if we first perform a bubble sort on even indexed element first and then on the odd indexed element ?

References-

https://en.wikipedia.org/wiki/Odd%E2%80%93even_sort