

Test Cases -

1) Input - 8,7,6,2,1,0,5,9,3,4

Output - DDDDDMDDDDDDDDDDDDDDDDDDDDDDMMDDDDDDDDDDMM

Time taken: 0.001422286

2) Input - 1, 8, 6, 9, 0, 3, 2, 7, 5, 4

Output - DDDDDMDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDMM

Time taken: 0.001370959

Analysis -

How does the average number of steps required scale with the size of the pile, and how is it related to the depth used to scan the pile.

The average number of the steps scales exponentially through data implementation, where the average number of steps required with the size of the pile relate to the depth used through scanning the pile itself. The greater the depth the less number of sorting steps is required. There is a dramatic change in the number of sorting steps in required to sort a depth of 1 and a depth of 10.

Suppose there are n papers in the pile.

The first M require averagely: $(1 + 2 + 3 + \dots + n/m) * (n/m)$ steps.

The steps need as the number of papers in pile increases from 25 to 200 , Difference color represent the depth ranged from 1 to 10.

