Array Rotation

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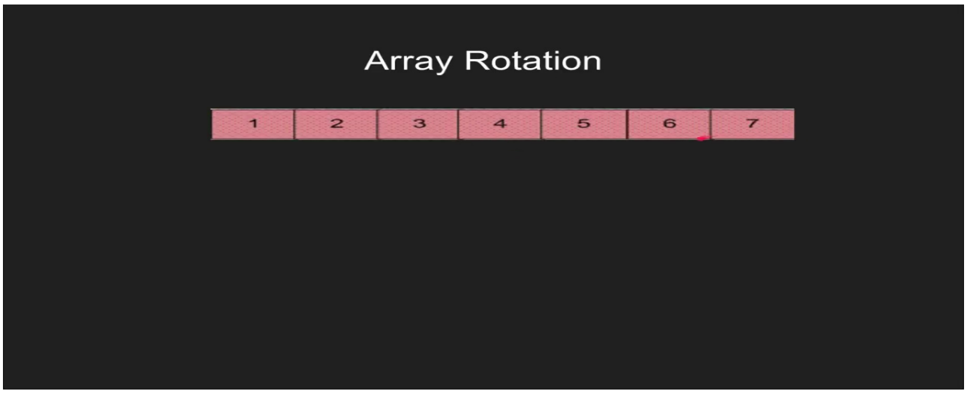
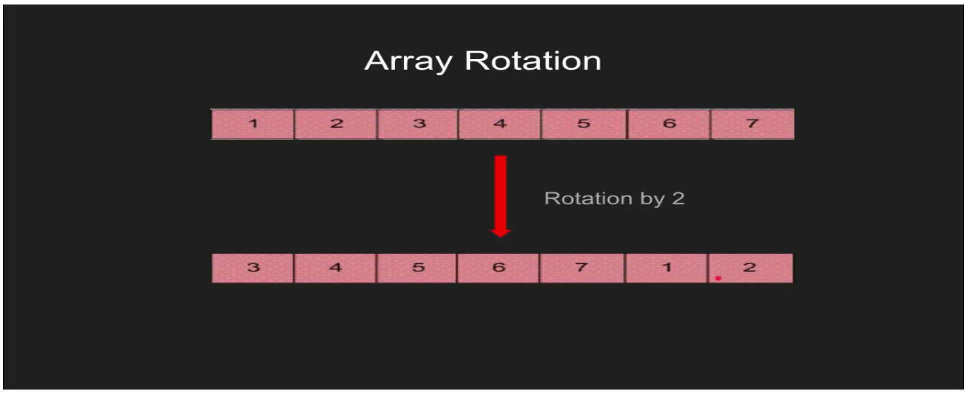
Today we will discuss how to write a function, rotate that rotates an array of size north by D elements. We have this array with elements 123456 and seven.



Array Rotation

1	2	3	4	5	6	7

That is by two places.Will become 345671 and two.Each and every element has been shifted by two places to the left.



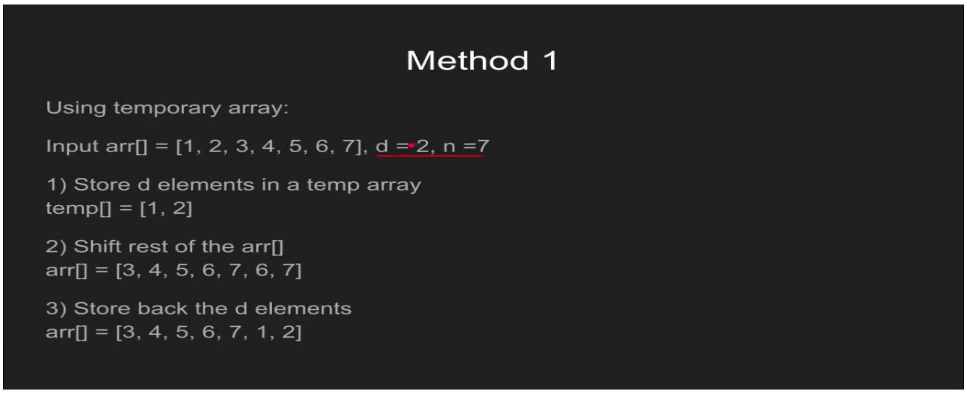
Array Rotation

1	2	3	4	5	6	7

Rotation by 2

3	4	5	6	7	1	2

We will discuss this method using an example.



Method 1

Using temporary array:

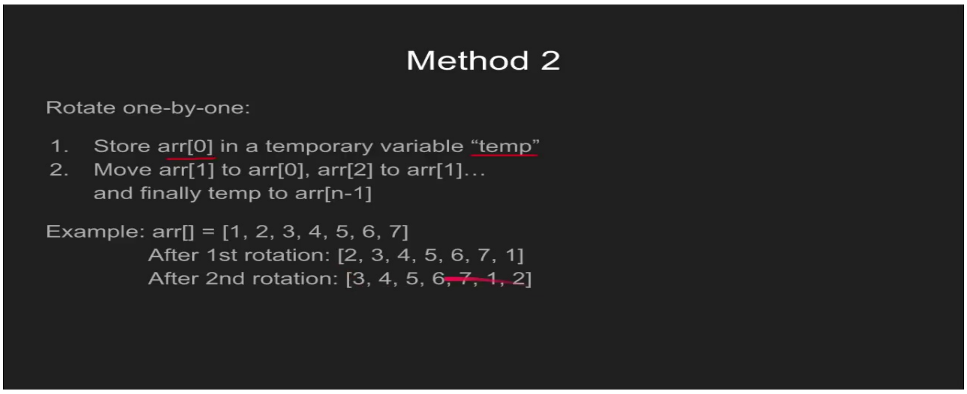
Input arr[] = [1, 2, 3, 4, 5, 6, 7], d =2, n =7

1) Store d elements in a temp array
temp[] = [1, 2]

2) Shift rest of the arr[]
arr[] = [3, 4, 5, 6, 7, 6, 7]

3) Store back the d elements
arr[] = [3, 4, 5, 6, 7, 1, 2]

Clearly the output array has been rotated to the left by a factor of 2.Then we move the element at index one to index zero, index two to index one, and so on until we finally move temp to index N 1. That is, one moves to the end and in second rotation it becomes this which is the final output.



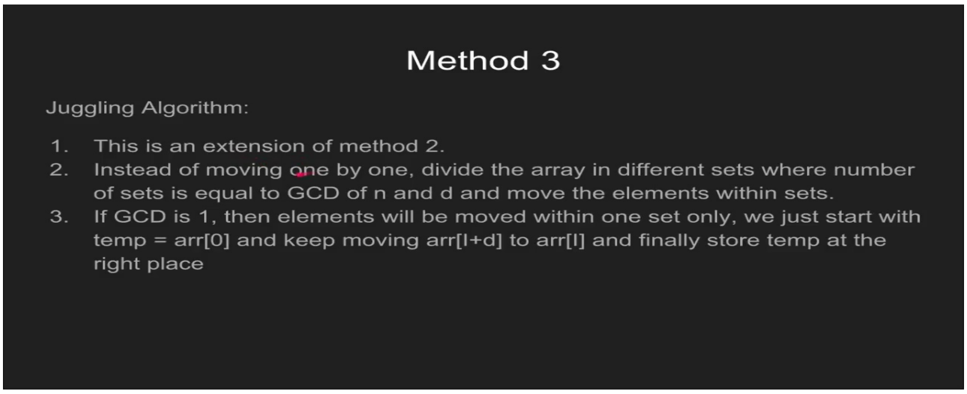
Method 2

Rotate one-by-one:

1. Store arr[0] in a temporary variable "temp"
2. Move arr[1] to arr[0], arr[2] to arr[1]...
   and finally temp to arr[n-1]

Example: arr[] = [1, 2, 3, 4, 5, 6, 7]
After 1st rotation: [2, 3, 4, 5, 6, 7, 1]
After 2nd rotation: [3, 4, 5, 6, 7, 1, 2]

Which is an extension of method 2.

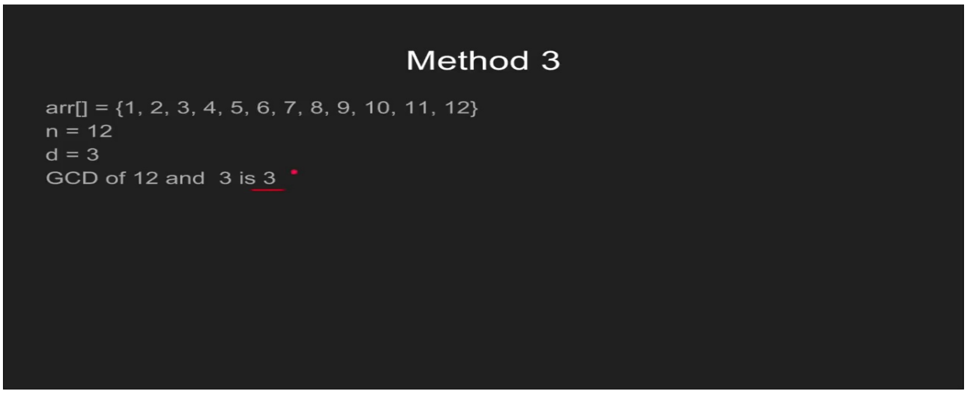


Method 3

Juggling Algorithm:

1. This is an extension of method 2.
2. Instead of moving one by one, divide the array in different sets where number of sets is equal to GCD of n and d and move the elements within sets.
3. If GCD is 1, then elements will be moved within one set only, we just start with temp = arr[0] and keep moving arr[I+d] to arr[I] and finally store temp at the right place

If the dog is 1, then elements will be moved within one set only.Let us try to understand this by using an example.And let D be three.So N is 12 and D is 3.



Method 3

arr[] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}
n = 12
d = 3
GCD of 12 and 3 is 3

We just start with temp equal to the ith element and keep moving. This brings us to the end of this video tutorial. Please leave us your likes.Now the array has to be divided in three sets.So our three sets become one 4/7/10.And three six 912 we can see that all the elements in the three sets differ by three.After this trip we get this.And then in the third set we finally get this array.Here is the simple implementation of the juggling algorithm.