

## Assignment On Array

1. Write a program to implement dutch national flag partition.
2. Write a program which takes as input an array of digits encoding a decimal number  $D$  and update the array to represent the number  $D + 1$ .
3. Write a program that takes two arrays representing integer, and return an integer representing their product.
4. Write a program which takes as input a sorted array and updates it so that all duplicate have been removed and remaining elements shifted left to fill the emptied indices.
5. Write a program that takes an array denoting the daily stock price, and return the maximum profit that could be made by buying and then selling one share of that stock.
6. Write a program that computes the maximum profit that can be made by buying and selling a share at mot twice. The second by must be made on another date after the first sale.
7. Write a program that takes an integer argument and return all the primes between 1 and the integer.
8. Given an array A of n elements and a permutation P, apply P to A.
9. Write a program that takes as input a permutation, and returns the next permutation under dictionary ordering. If the permutation is the last permutation, return the empty array. For example, if the input is  $< 1, 0, 3, 2 >$  your function should return  $< 1, 2, 0, 3 >$ . If the input is  $< 3, 2, 1, 0 >$ , return  $()$ .
10. Implement an algorithm that takes as input an array of distinct elements and a size, and returns a subset of the given size of the array elements. All subsets should be equally likely. Return the result in input array itself.
11. Write a program that takes as input a positive integer  $n$  and a size  $k < n$ , and returns a  $size - k$  subset of  $0, 1, 2, \dots, n - 1$ . The subset should be represented as an array. All subsets should be equally likely and, in addition, all permutations of elements of the array should be equally likely. You may assume you have a function which takes as input a nonnegative integer  $t$  and returns an integer in the set  $0, 1, \dots, t - 1$  with uniform probability.
12. Check whether a  $9 \times 9$  2D array representing a partially completed Sudoku is valid. Specifically, check that no row, column, or  $3 \times 3$  2D subarray contains duplicates. A 0-value in the 2D array indicates that entry is blank; every other entry is in  $[1, 9]$ .
12. Write a program which takes an  $n \times n$  2D array and returns the spiral ordering of the array.

13. Write a function that takes as input an  $n \times n$  2D array, and rotates the array by 90 degrees clockwise.
14. Write a program which takes as input a nonnegative integer  $n$  and returns the first  $n$  rows of Pascal's triangle.