Assignment-3

1. Take as input a 2-D array. Print it as a vertical wave(Column-wise).
   Input: 4 4
   11 12 13 14
   21 22 23 24
   31 32 33 34
   41 42 43 44
   Output: 11, 21, 31, 41, 42, 32, 22, 12, 13, 23, 33, 43, 44, 34, 24, 14

2. Take as input a 2-D array. Print it as a horizontal wave(Row-wise).
   Input: 4 4
   11 12 13 14
   21 22 23 24
   31 32 33 34
   41 42 43 44
   Output: 11, 12, 13, 14, 24, 23, 22, 21, 31, 32, 33, 34, 44, 43, 42, 41

3. Take as input N, an odd number (>=5) . Print the following pattern as given below for N = 7.

```
*     * * * *
*     *
*     *
* * * * * * *
      *     *
      *     *
* * * *     *
```

4. Take as input a 2-D array. Print it in spiral form anti-clockwise.
   Input: 4 4
   11 12 13 14
   21 22 23 24
   31 32 33 34
   41 42 43 44
   Output: 11, 21, 31, 41, 42, 43, 44, 34, 24, 14, 13, 12, 22, 32, 33, 23

5. Take as input a 2-D array. Print it in spiral form clockwise.
   Input: 4 4
   11 12 13 14
   21 22 23 24
   31 32 33 34
   41 42 43 44
   Output: 11, 12, 13, 14, 24, 34, 44, 43, 42, 41, 31, 21, 22, 23, 33, 32

6. Take input ‘n’ and then take ‘n’ more integer as input values of 1st array, then take ‘m’ as input followed by ‘m’ more integer as input values of 2nd array. Write a function that returns the sum of two arrays as an array.
   Input: 4
   3 5 0 7
   5
   9 0 2 8
   Output: 1 2 5 3 5

7. There is a group of MMA fighters standing together in a line. Given the value of their strengths, find the strength of the strongest fighter in continuous sub-groups of size k.

   Input: 5 3

   1 3 1 4 5

   Output: 3 4 5

8. Take 2 arrays as input and find the intersection of the two arrays(elements in common).

   Input: 7
   1 2 3 1 2 4 1
   2 1 3 1 5 2 2
   Output: {1, 1, 2, 2, 3}

9. Take an array as input (can have both positive and negative integers), the task is to compute the sum of minimum and maximum elements of all sub-array of size ‘k’.

   Input: 7 4

   2 5 -1 7 -3 -1 -2

   Output: 18

   Hint: `Subarrays of size 4 are :`

   `{2, 5, -1, 7}, min + max = -1 + 7 = 6`

   `{5, -1, 7, -3}, min + max = -3 + 7 = 4`

   `{-1, 7, -3, -1}, min + max = -3 + 7 = 4`

   `{7, -3, -1, -2}, min + max = -3 + 7 = 4`

   `Sum of all min & max = 6 + 4 + 4 + 4 = 18`

10. Take as input S, a string. Write a function that replaces every odd character with the character having just higher ascii code and every even character with the character having just lower ascii code. Print the value returned.

    Input: abcg

    Output: badf

11. Take as input S, a string. Write a function that toggles the case of all characters in the string. Print the value returned.

    Input: abcDEasW

    Output: ABCdeASw

12. Take as input S, a string. Write a program that inserts between each pair of characters the difference between their ascii codes and print the ans.

    Input: acb

    Output: a2c-1b

13. You are provided with a string consisting of only 'a' and 'b' as the characters. You have to make it a perfect string. The perfectness of a string is defined as the maximum length substring of the same characters. You are given a number ‘k’ which denotes the maximum number of characters you can change. Find the maximum perfectness he can generate by changing not more than ‘k’ characters.

    Input: 2 abba

    Output: 4

14. Leetcode problems:
    a. https://leetcode.com/problems/richest-customer-wealth/
    b. https://leetcode.com/problems/flipping-an-image/
    c. https://leetcode.com/problems/create-target-array-in-the-given-order/
    d. https://leetcode.com/problems/cells-with-odd-values-in-a-matrix/
    e. https://leetcode.com/problems/shift-2d-grid/
    f. https://leetcode.com/problems/special-positions-in-a-binary-matrix/
    g. https://leetcode.com/problems/count-negative-numbers-in-a-sorted-matrix/
    h. https://leetcode.com/problems/design-an-ordered-stream/
    i. https://leetcode.com/problems/split-a-string-in-balanced-strings/
    j. https://leetcode.com/problems/reverse-string/
    k. https://leetcode.com/problems/consecutive-characters/
    l. https://leetcode.com/problems/reverse-only-letters/