CS-594: Python Laboratory

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Assignment - 02

- 1. Write a python program to do the following:
 - a) Read in a sequence of numbers into a list
 - b) Remove the element at index x from the list.
 - c) Insert a number n at an index k in a list
 - d) Display the number at index k
- 2. Write a function to get unique values from a tuple (Usage of in-built function is not allowed)

Eg:

Input: (5, 8, 9, 75, 8, 22, 9, 5) **Output:** (75, 22)

3. Write a function to check whether a string is palindrome

Eg:

Input: "madam"
Output: True

- 4. Implement Insertion sort.
- 5. Write a function to sort a list of 0s, 1s and 2s (usage of in-built function is not allowed). You have to do it in constant extra space.
- 6. Write a function to Reverse every alternate word in a given string.

Eg:

Input: IIT Guwahati has the most beautiful campus in India. Output: IIT itahawuG has eht most lufituaeb campus ni India.

7. Write a function to check whether two given strings are rotation of each other.

Eg:

Input: string1 = "ABCD", string2 = "CDAB"

Output: True

Input: string1 = "ABCD", string2 = "CBAD"

Output: False

8. Count the number of peaks in a given 2-D list. An element is a peak at index [i][j] if A[i][j] > A[i-1] [j-1], A[i-1] [j+1], A[i+1] [j-1], A[i+1] [j+1]. Consider 1<=i,j<=M-2 for an M*M matrix [Do not consider the elements at the boundary of matrix, having row or column as 0 or M-1]. Return -1 if no peak exists

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Input:
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 $\begin{bmatrix} 1 & 2 & 4 & 3 & 7 \\ [& 1 & 2 & 4 & 3 & 7] \\ [& 6 & 3 & 1 & 9 & 2] \\ [& 4 & 8 & 2 & 7 & 9] \\ [& 5 & 7 & 9 & 4 & 1] \\ [& 1 & 2 & 3 & 4 & 2] \\]$

Output: 3

- 9. Rock, Paper, Scissors Game Write a program that lets the user play the game of Rock, Paper, Scissors against the computer. The program should work as follows:
 - 1. When the program begins, a random number in the range of 1 through 3 is generated. If the number is 1, then the computer has chosen rock. If the number is 2, then the computer has chosen paper. If the number is 3, then the computer has chosen scissors. (Don't display the computer's choice vet.)
 - 2. The user enters his or her choice of "rock," "paper," or "scissors" at the keyboard.

- 3. The computer's choice is displayed.
- 4. A winner is selected according to the following rules:
- \bullet If one player chooses rock and the other player chooses scissors, then rock wins. (Rock smashes scissors.)
- If one player chooses scissors and the other player chooses paper, then scissors wins. (Scissors cuts paper.)
- If one player chooses paper and the other player chooses rock, then paper wins. (Paper wraps rock.)
- If both players make the same choice, the game must be played again to determine the winner
- 10. Write a function to print Calendar* of any year ($2001 \leqslant year \leqslant 2050$) Take the first day 01/01/2001 as Monday **Eg:**

	2022	
January	February	March
Su Mo Tu We Th Fr Sa	Su Mo Tu We Th Fr Sa	Su Mo Tu We Th Fr S
1	1 2 3 4 5	1 2 3 4
2 3 4 5 6 7 8	6 7 8 9 10 11 12	6 7 8 9 10 11 1
9 10 11 12 13 14 15	13 14 15 16 17 18 19	13 14 15 16 17 18 1
16 17 18 19 20 21 22	20 21 22 23 24 25 26	20 21 22 23 24 25 2
23 24 25 26 27 28 29	27 28	27 28 29 30 31
30 31		
April	May	June
Su Mo Tu We Th Fr Sa	Su Mo Tu We Th Fr Sa	Su Mo Tu We Th Fr S
1 2	1 2 3 4 5 6 7	1 2 3
3 4 5 6 7 8 9	8 9 10 11 12 13 14	5 6 7 8 9 10 1
10 11 12 13 14 15 16	15 16 17 18 19 20 21	12 13 14 15 16 17 1
17 18 19 20 21 22 23	22 23 24 25 26 27 28	19 20 21 22 23 24 2
24 25 26 27 28 29 30	29 30 31	26 27 28 29 30
	August	September
July		
Su Mo Tu We Th Fr Sa	Su Mo Tu We Th Fr Sa	
Su Mo Tu We Th Fr Sa 1 2	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6	1 2
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13	1 2 4 5 6 7 8 9 1
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 2 4 5 6 7 8 9 1 11 12 13 14 15 16 1
Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	Su Mo Tu We Th Fr Sa 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	4 5 6 7 8 9 1 11 12 13 14 15 16 1 18 19 20 21 22 23 2
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* You can start new month from a new line