CS-594: Python Laboratory
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Assignment - 02

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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
   Input:
   [
   [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 yet.)
   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:

• 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

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	28	29
30	31					

February

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	28					

March

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	28	29	30	31		

April

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	28	29	30

May

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	28
29	30	31				

June

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	28	29	30		

July

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	28	29	30
31						

August

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
28	29	30	31			

September

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	28	29	30	

October

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	28	29
30	31					

November

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	28	29	30			

December

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	28	29	30	31

∗ You can start new month from a new line