

Computer Science

Practical File

Name: _____

Class & Section: XI _

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3	Write a code that will input a list of numbers and swap elements at the even location with the elements at odd location.		
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9	Write a program to take N (N > 20) as an input from the user. Print numbers from 11 to N. When the number is a multiple of 3, print "Topsy", when it is a multiple of 7, print "Topsy". When it is a multiple of both, print "TopsyTopsy".		
10	Write a program to display all of the integers from 1 up to and including some integer entered by the user followed by a list of each number's prime factors. Numbers greater than 1 that only have a single prime factor will be marked as prime. For example, if the user enters 10 then the output of the program should be : Enter the maximum value to display:10 1=1 2 = 2 (prime) 3 = 3 (prime) 4 = 2x2 5 = 5 (prime) 6 = 2x3 7 = 7 (prime) 8 = 2x2x2 9 = 3x3 10 = 2x5		

#Q11) Write a program to find the largest/smallest number in a list/tuple.

```
a=eval(input('enter a list:'))
```

```
print('the list is:', a)
```

```
b=max(a)
```

```
c=min(a)
```

```
print('Maximum value is:', b)
```

```
print('Minimum value is:', c)
```

#Output:

```
enter a list:1,23,432,23424,24323
```

```
the list is: (1, 23, 432, 23424, 24323)
```

```
Maximum value is: 24323
```

```
Minimum value is: 1
```

#Q12) Write a Python program as per specifications given below :

▷ Repeatedly prompt for a sentence (string) or for 'q' to quit.

▷ Upon input of a sentence s, print the string produced from s by converting each lower case letter to upper case and each upper case letter to lower case.

▷ All other characters are left unchanged.

```
converted_string = ""
```

```
while True:
```

```
    user_input = input("Enter a sentence or 'q' to quit: ")
```

```
    if user_input.lower() == 'q':
```

```
        print("Exiting the program.")
```

```
        break
```

```
    for i in user_input:
```

```
        if i.isupper():
```

```
            converted_string += i.lower()
```

```

elif i.islower():

    converted_string += i.upper()

else:

    converted_string += i

print("Converted string:", converted_string)

converted_string = ""

```

#Output:

Enter a sentence or 'q' to quit: HI THERE its cs PROGRAM

Converted string: hi there ITS CS program

Enter a sentence or 'q' to quit: q

Exiting the program.

#Q13. Write a code that will input a list of numbers and swap elements at the even location with the elements at odd location.

```

a=list(eval(input('enter a list:')))

print('original list is:', a)

s=len(a)

if s%2 !=0:

    s-=1

for i in range(0,s,2):

    print(i,i+1)

    a[i],a[i+1]=a[i+1],a[i]

print('list after swapping is:', a)

```

#Output:

enter a list:1,122,1211,21,113,121,313,1,31

original list is: [1, 122, 1211, 21, 113, 121, 313, 1, 31]

0 1

2 3

4 5

6 7

list after swapping is: [122, 1, 21, 1211, 121, 113, 1, 313, 31]

#Q14) Write a program to input two lists and display the maximum element from the elements of both the lists combined, along with its index in its list.

```
list1 = eval(input("Enter list1 : "))
```

```
list2 = eval(input("Enter list2 : "))
```

```
mx1 = max(list1)
```

```
mx2 = max(list2)
```

```
if mx1 >= mx2:
```

```
    print(mx1, "the maximum value is in list1 at index", list1.index(mx1))
```

```
else:
```

```
    print(mx2, "the maximum value is in list2 at index", list2.index(mx2))
```

#Output:

Enter list1 : 6,8,11,6,12,7,16

Enter list2 : 34,11,23,11

34 the maximum value is in list2 at index 0

#Q15) Write a program to read a sentence and then create a dictionary contains the frequency of letters and digits in the sentence. Ignore other symbols, if any.

```
sen = input("Enter a sentence: ")
```

```
sen = sen.lower()
```

```
alphabet_digits = 'abcdefghijklmnopqrstuvwxyz0123456789'
```

```
char_count = {}
```

```
print("Total characters in the sentence are:", len(sen))
```

```
for char in sen:
```

```
    if char in alphabet_digits:
```

```

    if char in char_count:
        char_count[char] += 1
    else:
        char_count[char] = 1
print(char_count)
#Output:
Enter a sentence: CS PRACTICAL
Total characters in the sentence are: 12
{'c': 3, 's': 1, 'p': 1, 'r': 1, 'a': 2, 't': 1, 'i': 1, 'l': 1}

```

#Q16) Write a program to create a dictionary namely Dct with 10 keys 0..9, each having values as 200. Update the first and last values by adding 200 to each of them.

```

a= dict.fromkeys (range(10), 200)
a[0] +=200
a[9] +=200
print(a)
#Output:
{0: 400, 1: 200, 2: 200, 3: 200, 4: 200, 5: 200, 6: 200, 7: 200, 8: 200, 9: 400}

```

#Q17) Write a Python program to create a dictionary from a string.

Note. Track the count of the letters from the string.

Sample string: 'w3resource'

Expected output: {'3': 1, 's': 1, 'r': 2, 'u': 1, 'w': 1, 'c': 1, 'e': 2, 'o': 1}.

```

string = input("Enter a string: ")
char_count = {}
for char in string:
    if char in char_count:
        char_count[char] += 1
    else:

```

```
char_count[char] = 1
print("Given string:", string)
print("Dictionary created:", char_count)
#Output:
Enter a string: COMPUTER SCIENCE
Given string: COMPUTER SCIENCE
Dictionary created: {'C': 3, 'O': 1, 'M': 1, 'P': 1, 'U': 1, 'T': 1, 'E': 3, 'R': 1, ' ': 1, 'S': 1, 'I': 1, 'N': 1}
```

#Q18) Write a Program to search for an element in a given list of numbers.

```
lst = eval(input("Enter list: "))
length = len(lst)
element = int(input("Enter element to be searched for: "))
for i in range(length):
    if element == lst[i]:
        print(element, "found at index", i)
        break
else:
    print(element, "not found in given list")
```

#Output:

Enter list: 2,8,9,11,-55,-11,22,78,67

Enter element to be searched for: 8

8 found at index 1

#Q19) Write a program to take N (N > 20) as an input from the user. Print numbers from 11 to N. When the number is a multiple of 3, print "Topsy", when it is a multiple of 7, print "Topsy". When it is a multiple of both, print "TopsyTopsy".

```
N = int(input("Enter a number greater than 20: "))
if N <= 20:
    print("Please enter a number greater than 20.")
```

else:

```
for i in range(11, N + 1):
```

```
    if i % 3 == 0 and i % 7 == 0:
```

```
        print("TopsyTopsy")
```

```
    elif i % 3 == 0:
```

```
        print("Topsy")
```

```
    elif i % 7 == 0:
```

```
        print("Topsy")
```

```
    else:
```

```
        print(i)
```

#Output:

Enter a number greater than 20: 24

11

Topsy

13

Topsy

Topsy

16

17

Topsy

19

20

TopsyTopsy

22

23

Topsy

#Q20) Write a program to display all of the integers from 1 up to and including some integer entered by the user followed by a list of each number's prime factors. Numbers greater than 1 that only have a single prime factor will be marked as prime.

For example, if the user enters 10 then the output of the program should be :

Enter the maximum value to display:10

1=1

2 = 2 (prime)

3 = 3 (prime)

4 = 2x2

5 = 5 (prime)

6 = 2x3

7 = 7 (prime)

8 = 2x2x2

9 = 3x3

10 = 2x5.

```
max_value = int(input("Enter the maximum value to display: "))
```

```
print("1 = 1")
```

```
for i in range(2, max_value + 1):
```

```
    n = i
```

```
    factors = []
```

```
    while n % 2 == 0:
```

```
        factors.append(2)
```

```
        n //= 2
```

```
    for j in range(3, int(n**0.5) + 1, 2):
```

```
        while n % j == 0:
```

```
            factors.append(j)
```

```
            n //= j
```

```
    if n > 2:
```

```
        factors.append(n)
```

```
if len(factors) == 1:
    print(str(i) + " = " + str(factors[0]) + " (prime)")
else:
    factors_str = 'x'.join(map(str, factors))
    print(str(i) + " = " + factors_str)
```

#Output:

Enter the maximum value to display: 12

1 = 1

2 = 2 (prime)

3 = 3 (prime)

4 = 2x2

5 = 5 (prime)

6 = 2x3

7 = 7 (prime)

8 = 2x2x2

9 = 3x3

10 = 2x5

11 = 11 (prime)

12 = 2x2x3