

Netaji Subhash Engineering College
Department of Computer Science & Engineering
B. Tech CSE 2nd Year 3rd Semester
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Name of the Course: IT Workshop (Python)

Course Code: PCC-CS393

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Assignment No.: A5_01

Problem Statement:

Write a program to find the maximum and minimum of a list of numbers without using built-in functions.

Python Code:

```
l=list(input("Enter the Numbers(with space): ").split())
min_num=l[0]
max_num=l[0]
for num in l:
    if num>max_num:
        max_num=num
    if num<min_num:
        min_num=num
print(f"Max. Number={max_num}\nMin. Number={min_num}")
```

Sample Output(s):

```
Enter the Numbers(with space): 10 30 90 -50 75
Max. Number=90
Min. Number=-50Count of u = 0
```

Assignment No.: A5_02

Problem Statement:

Write a program to multiply two matrices as nested lists.

Python Code:

```
rows_a=int(input("Enter the Number of Rows for Matrix A: "))
cols_a=int(input("Enter the Number of Columns for Matrix A: "))
rows_b=int(input("Enter the Number of Rows for Matrix B: "))
cols_b=int(input("Enter the Number of Columns for Matrix B: "))
if cols_a!=rows_b:
    print("Multiplication of Matrices is not possible!")
else:
    matrix_a=[]
    print("Enter the elements for Matrix A:")
    for i in range(rows_a):
        row=[]
        for j in range(cols_a):
            element = int(input(f"Enter the Value for Row-{i+1} Column-{j+1}: "))
            row.append(element)
        matrix_a.append(row)

    matrix_b=[]
    print("Enter the elements for Matrix B:")
    for i in range(rows_b):
        row=[]
        for j in range(cols_b):
            element = int(input(f"Enter the Value for Row-{i+1} Column-{j+1}: "))
            row.append(element)
        matrix_b.append(row)

    result=[[0 for j in range(cols_b)]for i in range(rows_a)]

    for i in range(rows_a):
        for j in range(cols_b):
            for k in range(cols_a):
                result[i][j]+=matrix_a[i][k]*matrix_b[k][j]

    print("Resultant Matrix:")
    for row in result:
        print(str(row).replace(","," "))
```

Sample Output(s):

Enter the Number of Rows for Matrix A: 2

Enter the Number of Columns for Matrix A: 3
Enter the Number of Rows for Matrix B: 3
Enter the Number of Columns for Matrix B: 2
Enter the elements for Matrix A:
Enter the Value for Row-1 Column-1: 1
Enter the Value for Row-1 Column-2: 2
Enter the Value for Row-1 Column-3: 3
Enter the Value for Row-2 Column-1: 4
Enter the Value for Row-2 Column-2: 5
Enter the Value for Row-2 Column-3: 6
Enter the elements for Matrix B:
Enter the Value for Row-1 Column-1: 10
Enter the Value for Row-1 Column-2: 11
Enter the Value for Row-2 Column-1: 20
Enter the Value for Row-2 Column-2: 21
Enter the Value for Row-3 Column-1: 30
Enter the Value for Row-3 Column-2: 31
Resultant Matrix:
[140 146]
[320 335]

Assignment No.: A5_03

Problem Statement:

Write a program to find the union of two lists.

Python Code:

```
l1=list(input("Enter the Numbers for List-1(comma separated):  
").split(","))  
l2=list(input("Enter the Numbers for List-2(comma separated):  
").split(","))  
result=l1  
for i in l2:  
    if i not in result:  
        result.append(i)  
print(f"Resultant List={result}")
```

Sample Output(s):

Enter the Numbers for List-1(comma separated): 1,2,3,4,5,6

Enter the Numbers for List-2(comma separated): 2,5,6,7,8,9

Resultant List=['1', '2', '3', '4', '5', '6', '7', '8', '9']

Assignment No.: A5_04

Problem Statement:

Write a program to concatenate two lists using list comprehension.

Python Code:

```
l1=list(input("Enter the Numbers for List-1(comma separated): ").split(","))
l2=list(input("Enter the Numbers for List-2(comma separated): ").split(","))
result=[num for num in l1]+[num for num in l2]
print(f"Resultant List={result}")
```

Sample Output(s):

Enter the Numbers for List-1(comma separated): 1,2,3,4,5

Enter the Numbers for List-2(comma separated): 6,7,8,9,10

Resultant List=['1', '2', '3', '4', '5', '6', '7', '8', '9', '10']

Assignment No.: A5_05

Problem Statement:

Write a program to create a list from two given lists 'list1' and 'list2' of numbers such that it contains numbers that are present in 'list2' but not in 'list1'.

Python Code:

```
l1=list(input("Enter the Numbers for List-1(comma separated): ").split(","))
l2=list(input("Enter the Numbers for List-2(comma separated): ").split(","))
result=[]
for i in l2:
    if i not in l1:
        result.append(i)
print(f"Resultant List={result}")
```

Sample Output(s):

Enter the Numbers for List-1(comma separated): 1,2,3,4,5

Enter the Numbers for List-2(comma separated): 1,3,6,7,8

Resultant List=['6', '7', '8']

Assignment No.: A5_06

Problem Statement:

Write a program to find the distinct pair of numbers whose product is odd from a list of integers.

Python Code:

```
l=list(input("Enter the Numbers (comma separated): ").split(","))
result=[]
for i in l:
    for j in l:
        if int(i)%2!=0 and int(j)%2!=0:
            pair=(int(i),int(j))
            if pair in result:
                continue
            if (int(j),int(i)) not in result:
                result.append(pair)
print(f"Resultant List={result}")
```

Sample Output(s):

```
Enter the Numbers (comma separated): 1,2,3,4,5
Resultant List=[(1, 1), (1, 3), (1, 5), (3, 3), (3, 5), (5, 5)]
```

Assignment No.: A5_07

Problem Statement:

Write a program to accept a sequence of comma-separated numbers from the user and generate a tuple with those numbers.

Python Code:

```
print("Tuple=",tuple(int(num) for num in input("Enter the Numbers (comma separated): ").split(",")))
```

Sample Output(s):

```
Enter the Numbers (comma separated): 1,2,3,4,5
Tuple= (1, 2, 3, 4, 5)
```

Assignment No.: A5_08

Problem Statement:

Write a program to add elements in a tuple without using built-in functions.

Python Code:

```
t1=tuple(int(num) for num in input("Enter the Numbers for  
Tuple(comma separated): ").split(","))  
t2=tuple(int(num) for num in input("Enter Numbers to  
Append(comma separated): ").split(","))  
print("New Tuple=",t1+t2)
```

Sample Output(s):

```
Enter the Numbers for Tuple(comma separated): 1,2,3,4,5  
Enter Numbers to Append(comma separated): 6,7,8,9,10  
New Tuple= (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
```

Assignment No.: A5_09

Problem Statement:

Write a program to calculate the mean of elements in a tuple of integers.

Python Code:

```
t=tuple(int(num) for num in input("Enter the Numbers for  
Tuple(comma separated): ").split(","))  
sum=0  
for i in t:  
    sum+=i  
print("Mean=",sum/len(t))
```

Sample Output(s):

```
Enter the Numbers for Tuple(comma separated): 1,2,3,4,5  
Mean= 3.0
```

Assignment No.: A5_10

Problem Statement:

Write a program to display unique and duplicate elements of a tuple.

Python Code:

```
t=tuple(int(num) for num in input("Enter the Numbers for
Tuple(comma separated): ").split(","))
un=[]
dp=[]
for i in t:
    if i not in un:
        un.append(i)
    else:
        dp.append(i)
for i in dp:
    if i in un:
        un.remove(i)
print("Unique Values=",tuple(un),"\\nDuplicate Values=",tuple(dp))
```

Sample Output(s):

Enter the Numbers for Tuple(comma separated): 1,2,3,4,5,1,2

Unique Values= (3, 4, 5)

Duplicate Values= (1, 2)

Assignment No.: A5_11

Problem Statement:

Write a program to count the frequency of all the elements in a tuple.

Python Code:

```
t=tuple(int(num) for num in input("Enter the Numbers for  
Tuple(comma separated): ").split(","))  
l=[]  
c=()  
for i in range(len(t)):  
    l.append(0)  
    if t[i] in c:  
        continue  
    else:  
        c=c+t[i:i+1]  
        for j in range(len(t)):  
            if t[i]==t[j]:  
                l[i]+=1  
print(f"Frequency of '{t[i]}' = {l[i]}")
```

Sample Output(s):

```
Enter the Numbers for Tuple(comma separated): 1,2,3,4,5,2,4,7,8,9  
Frequency of '1' = 1  
Frequency of '2' = 2  
Frequency of '3' = 1  
Frequency of '4' = 2  
Frequency of '5' = 1  
Frequency of '7' = 1  
Frequency of '8' = 1  
Frequency of '9' = 1
```


Assignment No.: A5_12

Problem Statement:

Write a program to find the distinct pair of numbers whose product is even from a tuple of integers.

Python Code:

```
t=tuple(int(num) for num in input("Enter the Numbers for  
Tuple(comma separated): ").split(","))  
result=[]  
for i in t:  
    for j in t:  
        if (int(i) * int(j))%2==0:  
            pair=(int(i),int(j))  
            if pair in result:  
                continue  
            if (int(j),int(i)) not in result:  
                result.append(pair)  
print(f"Resultant Tuple={tuple(result)}")
```

Sample Output(s):

```
Enter the Numbers for Tuple(comma separated): 1,2,3,4,5  
Resultant Tuple=((1, 2), (1, 4), (2, 2), (2, 3), (2, 4), (2, 5), (3, 4), (4, 4),  
(4, 5))
```

