PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

1 Write a program to find maximum element from 1- Dimensional array.

INPUT:

```
"""
 1. Write a program to find maximum element from 1-Dimensional
array.

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
"""
import array as arr

num1 = arr.array('i',[])

size = int(input("Enter the size of Array: "))

for i in range(size):
    item = int(input("Enter the item: "))
    num1.append(item)

print("Array Entered by you are: ", end="")

maximum = num1[i]

for i in range(size):
    print(num1[i], end=" ")
    if num1[i] > maximum:
         maximum = num1[i]

print("\nThe maximum of the array is: ", maximum)
```

OUTPUT:

```
Enter the size of Array: 4

Enter the item: 10

Enter the item: 55

Enter the item: 75
```

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Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
Enter the item: 95
Array Entered by you are: 10 55 75 95
The maximum of the array is:  95
```

2 Write a program to sort given array in ascending order.

INPUT:

```
"""
 2. Write a program to sort given array in ascending order.

Name  : Akshit Trivedi           Roll No.: 40
Class : MCA sem-1                Year    : 2021-22     Practical
Assignment-3
"""
import array as arr

def array_sort(a, size):
    for i in range(size):
        print(num1[i], end=" ")

num1 = arr.array('i',[])

size = int(input("Enter the size of array: "))

for i in range(size):
    item = int(input("Enter the item: "))
    num1.append(item)

print("Numbers Entered by you: ", end="")
array_sort(num1, size)

for i in range(size):
    min_index = i
    for j in range(i+1, size):
        if num1[min_index] > num1[j]:
            min_index = j

    num1[i], num1[min_index] = num1[min_index], num1[i]
```

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Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
print("\nThe sorted array is: ", end="")
array_sort(num1, size)
```

OUTPUT:

```
Enter the size of array: 4

Enter the item: 9

Enter the item: 1

Enter the item: 40

Enter the item: 5
Numbers Entered by you: 9 1 40 5
The sorted array is: 1 5 9 40
```

3 Given the two 1-D arrays A and B, which are sorted in ascending order. Write a program to merge them into a single sorted array C that contains every item from arrays A and B, in ascending order.

INPUT:

```
"""
3.  Given the two 1-D arrays A and B, which are sorted in ascending
order. Write a program to merge
    them into a single sorted array C that contains every item from
arrays A and B, in ascending order.

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
"""
import array as arr

def print_array(sort_arr):
    size = len(sort_arr)
    for i in range(size):
        print(sort_arr[i], end=" ")

num1 = arr.array('i', [1, 2 , 3, 4, 5])
```

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Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
num2 = arr.array('i', [100, 200, 300 ,400 , 500])

merge = arr.array('i', [])

print("\nSorted Array 1: ", end="")
print_array(num1)
print("\nSorted Array 2: ", end="")
print_array(num2)

a=b=c=0

while b != len(num1) and c != len(num2):
    if num1[b] < num2[c]:
        merge.append(num1[b])
        b += 1
    else:
        merge.append(num2[c])
        c +=1
    a +=1

while b != len(num1):
    merge.append(num1[b])
    b += 1
    a += 1

while c != len(num2):
    merge.append(num2[c])
    c += 1
    a += 1

print("\nMerged Array: ", end="")
print_array(merge)
```

OUTPUT:

```
Sorted Array 1: 1 2 3 4 5
Sorted Array 2: 100 200 300 400 500
Merged Array: 1 2 3 4 5 100 200 300 400 500
The sorted array is: 1 5 9 40
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

4 Write a program to add two matrices.

INPUT:

```
"""
 4. Write a program to add two matrices.

Name  : Akshit Trivedi           Roll No.: 40
Class : MCA sem-1                Year    : 2021-22     Practical
Assignment-3
"""
import numpy as np

rw = int(input("Enter the number of rows: "))
cl = int(input("Enter the number of column: "))
lst1 = []
lst2 = []

for i in range(0, rw*cl):
    item = int(input("Enter the item : "))
    lst1.append(item)

for i in range(0, rw*cl):
    item = int(input("Enter the item : "))
    lst2.append(item)

mat1 = np.array(lst1).reshape(rw,cl)
mat2 = np.array(lst2).reshape(rw,cl)
addition = np.empty([rw, cl], dtype=int)

for i in range(0, rw):
    for j in range(0, cl):
        addition[i][j] = mat1[i][j] + mat2[i][j]

print("\nMatrix Addition is: ")
for i in range(0, rw):
    for j in range(0, cl):
        print(mat1[i][j], end=" ")

    print("   ", end="")
    if i==0:
        print("+  ", end="")
    else:
     print("   ", end="")

    for j in range(0, cl):
        print(mat2[i][j], end=" ")
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
    print("   ", end="")

    if i==0:
        print("=  ", end="")
    else:
        print("   ", end="")

    for j in range(0, cl):
        print(addition[i][j], end=" ")

    print()
```

OUTPUT:

```
Enter the number of rows: 2

Enter the number of column: 2

Enter the item : 2

Enter the item : 2

Enter the item : 2

Enter the item : 2

Enter the item : 2

Enter the item : 2

Enter the item : 2

Enter the item : 2

Matrix Addition is:
2 2    +  2 2    =  4 4
2 2       2 2       4 4
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

5 Write a program that reads in two matrices and multiply them. Display the resultant matrix.

INPUT:

```
"""
5. Write a program that reads in two matrices and multiply them.
Display the resultant matrix.

Name  : Akshit Trivedi           Roll No.: 40
Class : MCA sem-1                Year    : 2021-22     Practical
Assignment-3
"""
import numpy as np

def matrix_mult(mat, rw):
    for i in range(rw):
        for j in range(rw):
            print(mat[i][j], end=" ")
        print()

cl = rw = int(input("Enter the number of rows and column: "))

lst1 = []
lst2 = []

for i in range(0, rw*cl):
    item = int(input("Enter Elements: "))
    lst1.append(item)

for i in range(0, rw*cl):
    item = int(input("Enter Elements: "))
    lst2.append(item)

mat1 = np.array(lst1).reshape(rw,cl)
mat2 = np.array(lst2).reshape(rw,cl)
mult = np.zeros([rw, cl], dtype=int)

for i in range(rw):
    for j in range(cl):
        for k in range(rw):
            mult[i][j] = mult[i][j] + (mat1[i][k] * mat2[k][j])

print("\nMatrix 1 is:")
matrix_mult(mat1, rw)
print("Matrix 2 is:")
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
matrix_mult(mat2, rw)
print("\nMatrix 1 * matrix 2:")
matrix_mult(mult, rw)
```

OUTPUT:

```
Enter the number of rows and column: 2

Enter Elements: 1

Enter Elements: 2

Enter Elements: 3

Enter Elements: 4

Enter Elements: 5

Enter Elements: 6

Enter Elements: 7

Enter Elements: 8

Matrix 1 is:
1 2
3 4
Matrix 2 is:
5 6
7 8

Matrix 1 * matrix 2:
19 22
43 50
```

6 Write a program to sort given string array in ascending order.

INPUT:

```
"""
6. Write a program to sort given string array in ascending order.

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
"""
import numpy as np

length = int(input("Enter the length of array: "))
lst = []

for i in range(length):
    item = input("Enter the string: ")
    lst.append(item)

names = np.array(lst)

print("\nBefore sorting: ", end=" ")

for i in range(length):
    print(names[i], end=" ")

for i in range(length-1):
    small_index = i
    for j in range(i, length):
        if names[small_index].lower() > names[j].lower():
            small_index = j
    names[i], names[small_index] = names[small_index], names[i]

print("\nAfter sorting: ", end=" ")

for i in range(length):
    print(names[i], end=" ")
```

OUTPUT:

```
Enter the length of array: 4

Enter the string: Yash

Enter the string: Sijo

Enter the string: Akshit

Enter the string: Sagar


Before sorting:  Yash Sijo Akshit Sagar

After sorting:  Akshit Sagar Sijo Yash
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

7 Write a program that will read a text and count all occurrences of a particular word.

INPUT:

```
"""
7. Write a program that will read a text and cnt all occurrences of
a particular word.

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
"""
sentence = input("Enter the String: ")
find_word = input("Enter the Word to find: ")

split_str = sentence.split(" ")
cnt = 0

for i in range(len(split_str)):
    if find_word == split_str[i].lower():
        cnt += 1

print("\nWord",find_word,"repeated:",cnt,"Times.")
```

OUTPUT:

```
Enter the String: Welcome to the World of Python and in this World
we will first write Hello World Program.

Enter the Word to find: world

Word world repeated: 3 Times.
```

8 Write a program that will read a string and rewrite it in the alphabetical order.

INPUT:

```
"""
 8. Write a program that will read a string and rewrite it in the
alphabetical order.

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
"""

sentence = input("Enter the string: ")

lst = list(sentence)

for i in range(len(lst)-1):
    small_index = i
    for j in range(i+1, len(lst)):
        if lst[small_index].lower() > lst[j].lower():
            small_index = j
    lst[i], lst[small_index] = lst[small_index], lst[i]

alpha_str = "".join(lst)

print("\nString in Alphabetical Order: ",alpha_str)
```

OUTPUT:

```
Enter the string: my name is akshit trivedi

String in Alphabetical Order: aadeehiiiikmmnrssttvy
```

9 Write a program that appends the one string to another string.

INPUT:

```
"""
 9. Write a program that appends the one string to another string.

Name  : Akshit Trivedi           Roll No.: 40
Class : MCA sem-1                Year    : 2021-22     Practical
Assignment-3
"""
str1 = input("Enter String1: ")
str2 = input("Enter String2: ")

str3 = str1 + " " + str2

print("\nCombined String:",str3)
```

OUTPUT:

```
Enter String1: Akshit
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
Enter String2: Trivedi

Combined String: Akshit Trivedi
```

10 Write a program that finds a given word in a string.

INPUT:

```
"""
10. Write a program that finds a given word in a string.

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
"""
sentence = input("Enter the string: ")
find_word = input("Enter the word to find: ")

print("Index of word is: ",sentence.find(find_word))
```

OUTPUT:

```
Enter the string: My name is Akshit

Enter the word to find: is
Index of word is:  8
```

11 Write a program that search an item from array of string.

INPUT:

```
"""
11. Write a program that search an item from array of string.

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
"""
import numpy as np

sentence = input("Enter the string: ")
find_str = input("Enter the item to find: ")
lst1 = sentence.split()

str_arr = np.array(lst1)
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
status = False
for i in range(len(str_arr)):
    if str_arr[i] == find_str:
        print("Word", find_str, "Found and it's Position is:",i+1)
        status = True
        break

if status==False:
    print("Word", find_str, "Not Found!!!")
```

OUTPUT:

```
Enter the string: my name is akshit

Enter the item to find: akshit
Word akshit Found and it's Position is: 4
```

12 Write a program to read a matrix and determine the following :

(1) wheather the given matrix is upper triangular or not

(2) wheather the given matrix is lower triangular or not

(3) wheather the given matrix is digonal matrix or not

INPUT:

```
"""
 12. Write a program to read a matrix and determine the following :
    (1) wheather the given matrix is upper triangular or not
    (2) wheather the given matrix is lower triangular or not
    (3) wheather the given matrix is digonal matrix or not

Name  : Akshit Trivedi          Roll No.: 40
Class : MCA sem-1               Year    : 2021-22     Practical
Assignment-3
"""
import numpy as np
def matrix_print(mat, rc):
    for i in range(rc):
        for j in range(rc):
            print(mat[i][j], end=" ")
        print()
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
def check_upper(mat, rc):
    for i in range(1, rc):
        for j in range(0, i):
            if mat[i][j] != 0:
                print("The Given matrix is not a upper triangular
matrix")
                return
    print("The given matrix is upper triangular matrix")

def check_lower(mat, rc):
    for i in range(0, rc):
        for j in range(i+1, rc):
            if mat[i][j] != 0:
                print("The given matrix is not a lower triangular
matrix")
                return
    print("The given matrix is lower triangular matrix")

def check_diagonal(mat, rc):
    for i in range(rc):
        for j in range(rc):
            if i!=j and mat[i][j] != 0:
                print("The given matrix is not a diagonal matrix")
                return
    print("The given matrix is diagonal matrix")

rc = int(input("Enter the number of rows and cols: "))
lst = []

for i in range(rc*rc):
    item = int(input("Enter Elements: "))
    lst.append(item)

mat1 = np.array(lst).reshape(rc, rc)

print("\nThe given matrix is: ")
matrix_print(mat1, rc)
check_upper(mat1, rc)
check_lower(mat1, rc)
check_diagonal(mat1, rc)
```

OUTPUT:

```
Enter the number of rows and cols: 3
```

PYTHON ASSIGNMENT-3

Roll No: 40 **Name: Akshit Trivedi**

Class: MCA-1 **Year: 2021-22**

```
Enter Elements: 10

Enter Elements: 0

Enter Elements: 0

Enter Elements: 0

Enter Elements: 10

Enter Elements: 0

Enter Elements: 0

Enter Elements: 0

Enter Elements: 10

The given matrix is:
10 0 0
0 10 0
0 0 10
The given matrix is upper triangular matrix
The given matrix is lower triangular matrix
The given matrix is diagonal matrix
```