Rollwala Computer Center

Introduction to Python Programing

Assignment 3

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Roll No : 21

Course : Master of Computer Application

Semester : 1st

30 Jan, 2022

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

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

Name  : Mer Sagar       Roll No.: 21
Class : MCA sem-1       Year    : 2021-22
"""
from array import*

max = 0

arr=array('i',[])
no = int(input("Enter Number Of elements : "))

for i in range(no):
    s= int(input("Enter element : "))
    arr.append(s)

    if(s>max):
        max=s

print("Max number among this elements : ", max)
```

Output:

```
Enter Number Of elements : 5
Enter element : 10
Enter element : 40
Enter element : 20
Enter element : 30
Enter element : 5

Max number among this elements :  40
```

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

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

```
Name  : Mer Sagar       Roll No.: 21
Class   : MCA sem-1       Year    : 2021-22
'''
from array import *


def sorted_func(arr):

    for i in range(0, len(arr)):
        for j in range(i+1, len(arr)):

            if arr[i]>=arr[j]:
                arr[i],arr[j] = arr[j], arr[i]

    return arr


arr = array('i',[])

no = int(input("Enter Number of element : "))

for i in range(no):
    ele = int(input("Enter Element : "))
    arr.append(ele)


c= sorted_func(arr)

print("----------")
for i in range(no):
    print(c[i],end=" ")
```

Output:

```
Enter Number of element : 5

Enter Element : 90

Enter Element : 578

Enter Element : 38
```

```
Enter Element : 23

Enter Element : 55

------------

23 38 55 90 578
```

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.

```
'''
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  : Mer Sagar       Roll No.: 21
Class : MCA sem-1       Year    : 2021-22
'''

from array import *


def sorted_func(arr):

    for i in range(0, len(arr)):
        for j in range(i+1, len(arr)):

            if arr[i]>=arr[j]:
                arr[i],arr[j] = arr[j], arr[i]

    return arr

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

```
a1 = array('i',[])
b1 = array('i',[])
c = array('i',[])

no = int(input("Enter Number of element for both array : "))

for i in range(no):
    ele = int(input("Enter Element of A: "))
    a1.append(ele)

for i in range(no):
    ele = int(input("Enter Element of B : "))
    b1.append(ele)

a = sorted_func(a1)
b = sorted_func(b1)

print("Array A : ", end="")
print_array(a)

print("\nArray B : ", end="")
print_array(b)


size = len(a1) + len(b1)

i=0
j=0

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

while i != len(a):
    c.append(a[i])
```

```
    i += 1


while j != len(b):
    c.append(b[j])
    j += 1


print("\nResult Array C : ", end="")
print_array(c)
```

Output:

```
 Enter Number of element for both array : 3

Enter Element of A: 1

Enter Element of A: 2

Enter Element of A: 6


Enter Element of B : 8

Enter Element of B : 5

Enter Element of B : 3


Array A : 1 2 6

Array B : 3 5 8

Result Array C : 1 2 3 5 6 8
```

4. Write a program to add two matrices.

```
''' Write a program to add two matrices.


Name  : Mer Sagar       Roll No.: 21
Class   : MCA sem-1       Year    : 2021-22
```

```
'''

import numpy as np

row = int(input("Enter Number of Rows : "))
col = int(input("Enter Number of Columns : "))
lst1 = []
lst2 = []

for i in range(0, row*col):
    item = int(input("Enter the element of Matrix 1 : "))
    lst1.append(item)

for i in range(0, row*col):
    item = int(input("Enter the element of Matrix 2 : "))
    lst2.append(item)

matrix1 = np.array(lst1).reshape(row,col)
matrix2 = np.array(lst2).reshape(row,col)

result = np.empty([row, col], dtype=int)

for i in range(0, row):
    for j in range(0, col):
        result[i][j] = matrix1[i][j] + matrix2[i][j]

for i in range(0, row):
    for j in range(0, col):
        print(result[i][j], end=" ")
    print()
```

Output:

```
Enter Number of Rows : 2

Enter Number of Columns : 2

Enter the element of Matrix 1 : 1

Enter the element of Matrix 1 : 4

Enter the element of Matrix 1 : 5
```

```
Enter the element of Matrix 1 : 6

Enter the element of Matrix 2 : 7

Enter the element of Matrix 2 : 2

Enter the element of Matrix 2 : 3

Enter the element of Matrix 2 : 4

8 6

8 10
```

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

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

Name  : Mer Sagar       Roll No.: 21
Class    : MCA sem-1       Year    : 2021-22
'''

import numpy as np

def matrix_print(mat, r,c):
    for i in range(r):
        for j in range(c):
            print(mat[i][j], end=" ")
        print()

r = int(input("Enter the number of rows : "))
c = int(input("Enter the number of column : "))

lst1 = []
lst2 = []

for i in range(0, r*c):
    item = int(input("Enter the element of matrix 1 : "))
    lst1.append(item)
```

```
for i in range(0, r*c):
    item = int(input("Enter the element of matrix 2 : "))
    lst2.append(item)

matrix1 = np.array(lst1).reshape(r,c)
matrix2 = np.array(lst2).reshape(r,c)
result = np.zeros([r, c], dtype=int)

for i in range(r):
    for j in range(c):
        for k in range(r):
            result[i][j] += matrix1[i][k] * matrix2[k][j]


print("Matrix 1:")
matrix_print(matrix1, r, c)
print("Matrix 2:")
matrix_print(matrix2, r, c)
print("Matrix 1 * matrix 2:")
matrix_print(result, r, c)
```

Output:

```
Enter a string: test

testing
```

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

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

Name  : Mer Sagar       Roll No.: 21
Class    : MCA sem-1       Year    : 2021-22
'''

import numpy as np

size = int(input("Enter the size of array : "))
lst1 = []
```

```
for i in range(size):
    item = input("Enter the string : ")
    lst1.append(item)

arr = np.array(lst1)

print("Before sorting : ", end=" ")

for i in range(size):
    print(arr[i], end=" ")

for i in range(size-1):
    min_index = i
    for j in range(i, size):
        if arr[min_index].lower() > arr[j].lower():
            min_index = j
    arr[i], arr[min_index] = arr[min_index], arr[i]

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

for i in range(size):
    print(arr[i], end=" ")
```

Output:

```
Enter the size of array : 5


Enter the string : sagar


Enter the string : jay


Enter the string : ronak
```

Enter the string : raj

Enter the string : hardik

Before sorting : sagar jay ronak raj hardik

After sorting : hardik jay raj ronak sagar

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

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

Name  : Mer Sagar       Roll No.: 21
Class   : MCA sem-1       Year    : 2021-22
'''

str1 = input("Enter the string : ")
word1 = input("Enter the word : ")

split_str = str1.split(" ")
count = 0

for i in range(len(split_str)):
    if word1 == split_str[i]:
        count += 1

print("Count : ", count)
```

Output:

Enter the string : my name is sagar

Enter the word : is

Count : 1

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

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

Name  : Mer Sagar       Roll No.: 21
Class   : MCA sem-1       Year    : 2021-22
'''
str = input("Enter the string : ")
# print(sortString(str))

lst1 = list(str)          # convert string into list


for i in range(len(lst1)-1):
    min_index = i
    for j in range(i+1, len(lst1)):
        if lst1[min_index].lower() > lst1[j].lower():
            min_index = j
    lst1[i], lst1[min_index] = lst1[min_index], lst1[i]

str1 = "".join(lst1)

print(str1)
```

Output:

```
Enter the string : my name is mer sagar

aaaeegimmmnrrssy
```

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

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

Name  : Mer Sagar       Roll No.: 21
```

```
Class   : MCA sem-1        Year    : 2021-22
'''

str1 = input("Enter String1 : ")
str2 = input("Enter String2 : ")

str3 = str1 + str2
print("New String : ", str3)
```

Output:

```
Enter String1 : mer


Enter String2 : sagar

New String :  mersagar
```

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

```
'''
Write a program to remove all the duplicate elements from list.

Name  : Mer Sagar       Roll No.: 21
Class   : MCA sem-1       Year    : 2021-22
'''
str1 = input("Enter the string : ")
word1 = input("Enter the word : ")

if(str1.find(word1)==-1):
    print("No this word is not found in string!")
else:
    print("Yes this word is in the string!")
```

Output:

```
Enter the string : hi my name is sagar


Enter the word : sagar
```

Yes this word is in the string!

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

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

Name  : Mer Sagar       Roll No.: 21
Class    : MCA sem-1       Year    : 2021-22
'''


import numpy as np

str1 = input("Enter the string : ")
find_str = input("Enter the item to find : ")
lst1 = str1.split()

str_arr = np.array(lst1)

flag = False
for i in range(len(str_arr)):
    if str_arr[i] == find_str:
        print("Item at index : ", i+1)
        flag = True
        break

if not flag:
    print("Item", find_str, "not found")
```

Output:

Enter the string : my name is sagar

Enter the item to find : sagar

Item at index : 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

'''

Name : Mer Sagar Roll No.: 21
Class : MCA sem-1 Year : 2021-22
'''

```
import numpy as np
def matrix_print(mat, r):
    for i in range(r):
        for j in range(r):
            print(mat[i][j], end=" ")
        print()

def check_upper(mat, r):
    for i in range(1, r):
        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, r):
    for i in range(0, r):
        for j in range(i+1, r):
            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, r):
    for i in range(r):
        for j in range(r):
            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")


r = int(input("Enter the number of rows and cols : "))
lst1 = []

for i in range(r*r):
    item = int(input("Enter the item : "))
    lst1.append(item)

mat1 = np.array(lst1).reshape(r, r)

print("The given matrix is: ")
matrix_print(mat1, r)
check_upper(mat1, r)
check_lower(mat1, r)
check_diagonal(mat1, r)
```

Output:

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

Enter the item : 1

Enter the item : 2

Enter the item : 3

Enter the item : 0

Enter the item : 1
```

Enter the item : 4

Enter the item : 0

Enter the item : 0

Enter the item : 1

The given matrix is:

1 2 3

0 1 4

0 0 1

The given matrix is upper triangular matrix

The given matrix is not a lower triangular matrix

The given matrix is not a diagonal matrix