Assignment

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ROLL NO. = 2020/417
DATA AND VISUALIZATION
NUMPY

Q:1 create an empty & full Numpy array?

Ans:-
```
import numpy as np
arr1 = np.empty ((3,4))
print (arr1)

arr2 = np.full ((3,2),2)
print (a)
```

Q:2 create an Numpy array with 0's & 1's?

Ans:-
```
import numpy as np
arr1 = np.ones ((2,3,2))
arr1

arr2 = np.zeroes ((2,3,2))
arr2
```

Q:3 find the most frequent value in Numpy array?

Ans -
```
import numpy as np
x = np.array ( [1,2,3,4,5,1,2,1,1,1])
print ( np.bincount(x).argmax() )
```

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Q:4 Combine a 1-D & 2-D array ?

Ans :-
```
import numpy as np
x = np.arange(4)
print("One dimensional array :")
print(x)
y = np.arange(8).reshape(2,4)
print("Two dimensional array :")
print(y)
for a,b in np.nditer([x,y]):
    print("%d : %d" %(a,b),)
```

Q:5 Compare two Numpy array.

Ans
```
w = np.array([12,2,3,4])
u = np.array([12,2,3,4])
w == u
```

output :- array(['True, True, True, True'])

Q:6 Check wether a given value is present in Numpy array ?

Ans
```
a = np.array([[2,3,0],[4,1,6]])
print(2 in a)
print(10 in a)
```

Op :- True
False

Q:7 Get the maximum & min value in a given matrix.

Ans- arr = np.array([1,2,3],[4,5,16],[7,81,22])

print(np.max(arr))
print(np.min(arr))

Q:8 Get the no. of rows & no. of cols in given matrix.

Ans
```
import numpy as np
a = np.array([[1,2,3],[10,212]])
no_rows = a.shape
no_cols = a.shape
print(no_rows, no_cols)
```

Q:9 Add and subtract two matrices

Ans
```
import numpy as np
A = np.array([[1,2],[3,4]])
B = np.array([[4,5],[6,7]])

# adding two matrix
print(np.add(A,B))
```

Q:10 Replace elements in the array that does not satisfy a given condition

Ans-11
```
A = np.array([6,1,1],[4,-2,5],[2,8,7]])

print(np.linalg.inv(A))
print(np.linalg.det(a)
```

Q:11 Calculate the determinant & inverse of a matrix.

Ans:-
```
import numpy as np
n_arr = np.array([75, 42, 60])
n_arr[n_arr > 50] = 15
print(n_arr)
```

output :- [15, 42, 15]

Q:12 Replace negative value with 0 in Numpy array.

Ans:-
```
import numpy as np
arr1 = np.array([1, 2, -3, -4, 5, 6])
arr1[arr1 < 0] = 0
print(arr1)
```

Ob :- [1, 2, 0, 0, 5, 6]

Q:13 How do you access different rows of multidimensional array.

Ans:-
```
import numpy as np
arr = np.array([[10, 20, 30], [40, 5, 66]
                , [70, 88, 94]])

# Access first & last rows of array

res_arr = arr[[0, 2]]
print(res_arr)
```

Op
```
[[10 20 30]
 [70 88 94]]
```

Q:14 sort the value in the matrix.

Ans
```
import numpy as np
a = np.matrix('[4,1; 12,3]')
a.sort()
print(a)
```

output :-
```
[[1 4]
 [3 12]]
```

Q:15 filter out ~~integers~~ Float from the ~~float~~ array?

Ans :-
```
import numpy as np
arr1 = np.array([1.0, 2.2, 1.2, 2.0, 3.0])
result = arr1[arr1 != arr1.astype(int)]
print(result)
```

op :- [1.2, 2.2]

Q:16 create a numpy array with random values & get a matrix of random value.

Ans
```
import numpy as np
p = np.random.rand(3,2)
print(p)
```

op
```
array([[0.06, 0.5],
       [7, 6],
       [8.9, 9.2]])
```

```
array = np.random.randint(10, size=(2,
print(array)
```

Op :- [[8 6 7]
[2 9 9]]

Q:17 Find the Kth smallest value in numpy array.

Ans
```
import numpy as np
array1 = np.array([1,7,8,2,0.1,3,15,2.5])
print("original array")
Print(array1)
K = 4
result = np.argpartition(array1, K)
print("\nK smallest values:")
print(array1[result[:K]])
```

Q:18 Get Row number of Numpy array having an element larger than x.

Ans :-
```
import numpy as np
arr = np.array([[1,2,3,4,5],
                [10,-3,30,4,5],
                [3,2,5,-4,5],
                [9,7,3,6,5]
                ])

X = 6
Result = np.where(np.any(arr>X, axis=1))
print(Result)
```

Op array([1,3])