

Lab 1-NumPy

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E21CSEU0054

```
In [1]: #Q1
import numpy as np
print(np.__version__)

1.19.5
```

```
In [2]: #Q2
arr = np.arange(10) # start stop step values
arr
```

```
Out[2]: array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

```
In [3]: #q3
np.full((3,3),True,dtype = bool)
```

```
Out[3]: array([[ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True]])
```

```
In [4]: #Q3 ALTERNATIVE
np.ones((3,3),dtype = bool)
```

```
Out[4]: array([[ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True]])
```

```
In [5]: #Q4
arr = np.array([0,1,2,3,4,5,6,7,8,9,])
```

```
In [6]: arr[arr%2 ==1]
```

```
Out[6]: array([1, 3, 5, 7, 9])
```

```
In [7]: #Q5
arr[arr%2==1] = -1
arr
```

```
Out[7]: array([ 0, -1,  2, -1,  4, -1,  6, -1,  8, -1])
```

In []:

In [8]: #Q6

```
arr = np.arange(10)
arr.reshape(2,-1)
```

Out[8]: array([[0, 1, 2, 3, 4],
[5, 6, 7, 8, 9]])

In [9]: #Q7

```
a = np.arange(10).reshape(2,-1)
b = np.repeat(1,10).reshape(2,-1)
```

In [10]: np.concatenate([a,b],axis = 0)

Out[10]: array([[0, 1, 2, 3, 4],
[5, 6, 7, 8, 9],
[1, 1, 1, 1, 1],
[1, 1, 1, 1, 1]])

In [11]: np.vstack([a,b])

Out[11]: array([[0, 1, 2, 3, 4],
[5, 6, 7, 8, 9],
[1, 1, 1, 1, 1],
[1, 1, 1, 1, 1]])

In [12]: #Q9

```
a = np.array([1,2,3,4,5])
b = np.array([5,6,7,8,9])
```

In [13]: np.setdiff1d(a,b) *##from a remove all b*

Out[13]: array([1, 2, 3, 4])

In [14]:

```
#Q10
a = np.array([1,2,3,2,3,4,3,4,5,6])
b = np.array([7,2,10,2,7,4,9,4,9,8])
```

In [15]: `np.where(a==b)`Out[15]: `(array([1, 3, 5, 7]),)`

In []:

```
In [16]: # url = " "
# ds = np.genfromtxt(url, delimiter = ',', dtype = 'object')
#names = ('sepalength', 'sepalwidth','petallength','petalwidth', 's
```

```
In [20]: #Q11
url = '/Users/vashuagarwal/Downloads/iris.data'
iris = np.genfromtxt(url, delimiter = ',', dtype = 'object')
names = ('sepalength', 'sepalwidth','petallength','petalwidth', 's

iris[:3]
```

```
Out[20]: array([[b'5.1', b'3.5', b'1.4', b'0.2', b'Iris-setosa'],
                [b'4.9', b'3.0', b'1.4', b'0.2', b'Iris-setosa'],
                [b'4.7', b'3.2', b'1.3', b'0.2', b'Iris-setosa']], dtype=ob
ject)
```

In [21]: #Q12

```
url = '/Users/vashuagarwal/Downloads/iris.data'
sepallength = np.genfromtxt(url, delimiter = ',', dtype = float, use
Smax ,Smin = sepallength.max(),sepallength.min()
S = (sepallength-Smin)/(Smax-Smin)
print(S)
```

```
[0.22222222 0.16666667 0.11111111 0.08333333 0.19444444 0.30555556
0.08333333 0.19444444 0.02777778 0.16666667 0.30555556 0.13888889
0.13888889 0.         0.41666667 0.38888889 0.30555556 0.22222222
0.38888889 0.22222222 0.30555556 0.22222222 0.08333333 0.22222222
0.13888889 0.19444444 0.19444444 0.25         0.25         0.11111111
0.13888889 0.30555556 0.25         0.33333333 0.16666667 0.19444444
0.33333333 0.16666667 0.02777778 0.22222222 0.19444444 0.05555556
0.02777778 0.19444444 0.22222222 0.13888889 0.22222222 0.08333333
0.27777778 0.19444444 0.75         0.58333333 0.72222222 0.33333333
0.61111111 0.38888889 0.55555556 0.16666667 0.63888889 0.25
0.19444444 0.44444444 0.47222222 0.5         0.36111111 0.66666667
0.36111111 0.41666667 0.52777778 0.36111111 0.44444444 0.5
0.55555556 0.5         0.58333333 0.63888889 0.69444444 0.66666667
0.47222222 0.38888889 0.33333333 0.33333333 0.41666667 0.47222222
0.30555556 0.47222222 0.66666667 0.55555556 0.36111111 0.33333333
0.33333333 0.5         0.41666667 0.19444444 0.36111111 0.38888889
0.38888889 0.52777778 0.22222222 0.38888889 0.55555556 0.41666667
0.77777778 0.55555556 0.61111111 0.91666667 0.16666667 0.83333333
0.66666667 0.80555556 0.61111111 0.58333333 0.69444444 0.38888889
0.41666667 0.58333333 0.61111111 0.94444444 0.94444444 0.47222222
0.72222222 0.36111111 0.94444444 0.55555556 0.66666667 0.80555556
0.52777778 0.5         0.58333333 0.80555556 0.86111111 1.
0.58333333 0.55555556 0.5         0.94444444 0.55555556 0.58333333
0.47222222 0.72222222 0.66666667 0.72222222 0.41666667 0.69444444
0.66666667 0.66666667 0.55555556 0.61111111 0.52777778 0.44444444
]
```

In []:

In []:

In []: