ML ASSIGNMENT 1

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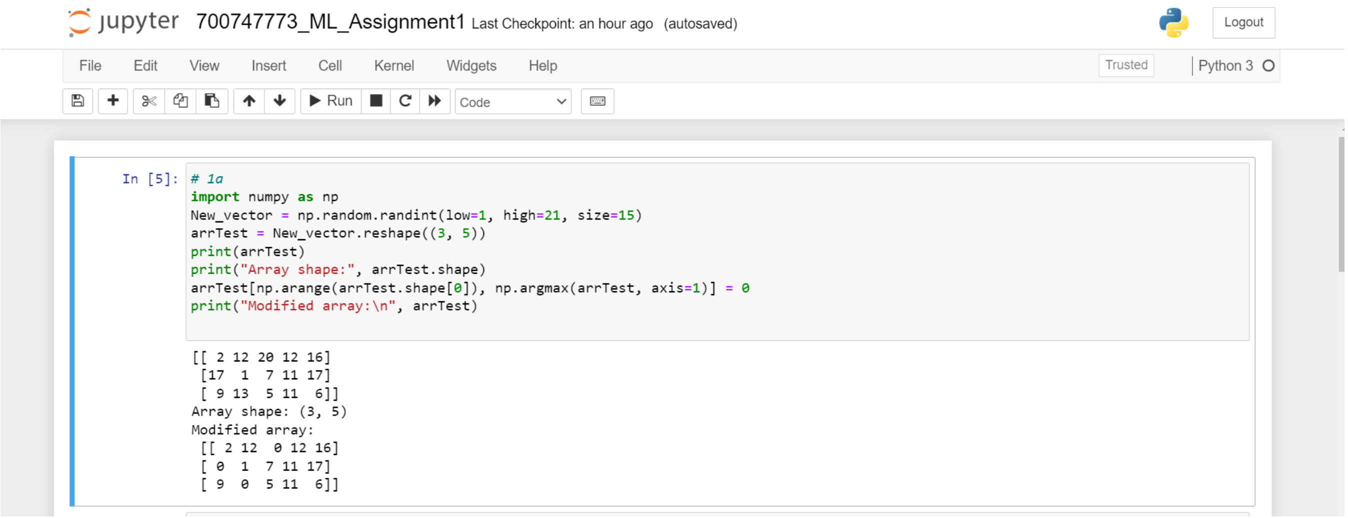
GitHub Link- https://github.com/AdityaVardhanNadupalli/ML_Assignment1-700747773-

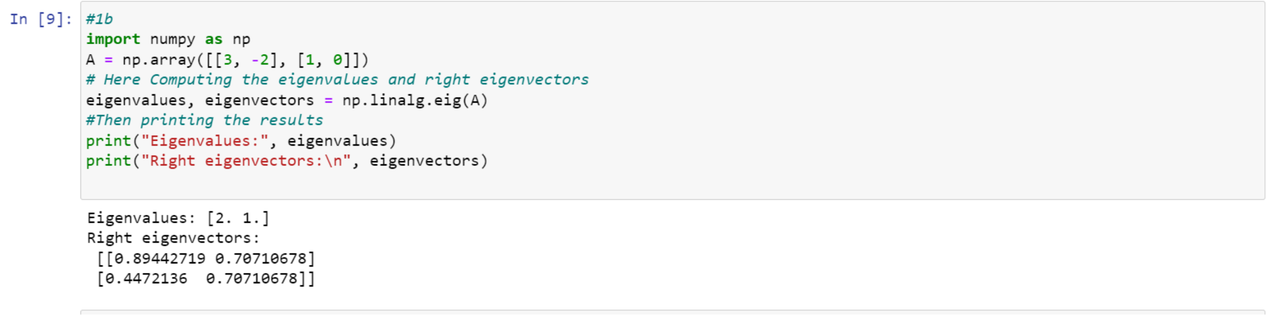
Video Link - https://drive.google.com/file/d/1Fgtehh_meCm2slM2EdVKYs3cRYbyhDvL/view?usp=drive_link



In [5]:

```
# 1a
import numpy as np
New_vector = np.random.randint(low=1, high=21, size=15)
arrTest = New_vector.reshape((3, 5))
print(arrTest)
print("Array shape:", arrTest.shape)
arrTest[np.arange(arrTest.shape[0]), np.argmax(arrTest, axis=1)] = 0
print("Modified array:\n", arrTest)
```

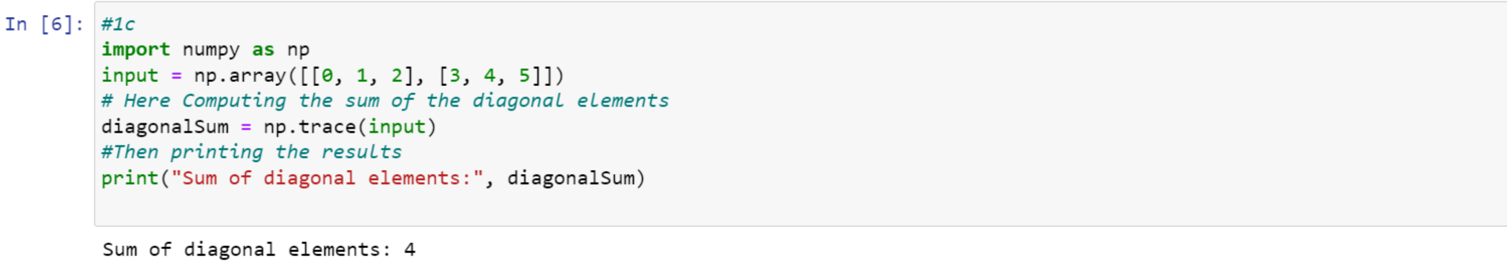
```
[[ 2 12 20 12 16]
 [17  1  7 11 17]
 [ 9 13  5 11  6]]
Array shape: (3, 5)
Modified array:
 [[ 2 12  0 12 16]
 [ 0  1  7 11 17]
 [ 9  0  5 11  6]]
```



In [9]:

```
#1b
import numpy as np
A = np.array([[3, -2], [1, 0]])
# Here Computing the eigenvalues and right eigenvectors
eigenvalues, eigenvectors = np.linalg.eig(A)
#Then printing the results
print("Eigenvalues:", eigenvalues)
print("Right eigenvectors:\n", eigenvectors)
```

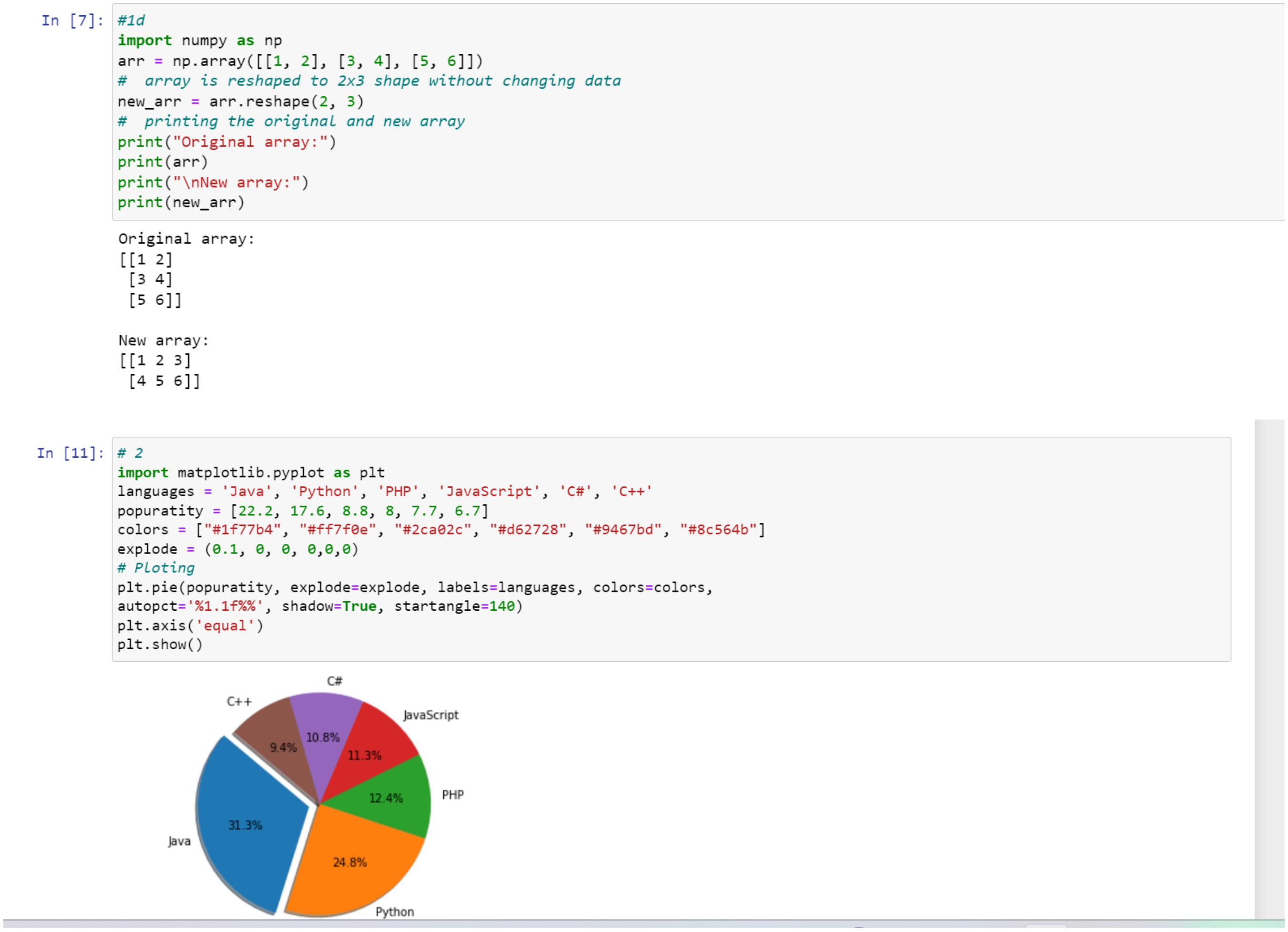
```
Eigenvalues: [2. 1.]
Right eigenvectors:
 [[0.89442719 0.70710678]
 [0.4472136  0.70710678]]
```



In [6]:

```
#1c
import numpy as np
input = np.array([[0, 1, 2], [3, 4, 5]])
# Here Computing the sum of the diagonal elements
diagonalSum = np.trace(input)
#Then printing the results
print("Sum of diagonal elements:", diagonalSum)
```

```
Sum of diagonal elements: 4
```



In [7]:
```
#1d
import numpy as np
arr = np.array([[1, 2], [3, 4], [5, 6]])
#  array is reshaped to 2x3 shape without changing data
new_arr = arr.reshape(2, 3)
#  printing the original and new array
print("Original array:")
print(arr)
print("\nNew array:")
print(new_arr)
```

```
Original array:
[[1 2]
 [3 4]
 [5 6]]

New array:
[[1 2 3]
 [4 5 6]]
```

In [11]:
```
# 2
import matplotlib.pyplot as plt
languages = 'Java', 'Python', 'PHP', 'JavaScript', 'C#', 'C++'
popuratity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
colors = ["#1f77b4", "#ff7f0e", "#2ca02c", "#d62728", "#9467bd", "#8c564b"]
explode = (0.1, 0, 0, 0,0,0)
# Ploting
plt.pie(popuratity, explode=explode, labels=languages, colors=colors,
autopct='%1.1f%%', shadow=True, startangle=140)
plt.axis('equal')
plt.show()
```