Machine Learning Assignment 1

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1. Numpy: a. Using NumPy create random vector of size 15 having only Integers in the range 1-20. 1. Reshape the array to 3 by 5 2. Print array shape. 3. Replace the max in each row by 0 Create a 2-dimensional array of size 4 x 3 (composed of 4-byte integer elements), also print the shape, type and data type of the array.

1. Numpy:

In [1]:
```
import numpy as np
a = np.matrix("3 -2;1 0")
print("matrix")
print("\n", a)
from numpy import linalg as la
w,v = la.eig(np.array(a))
print("\neigen values","\n",w)
print("Righteigen vector values:","\n",v)
```

```
matrix

 [[ 3 -2]
 [ 1  0]]

eigen values
 [2. 1.]
Righteigen vector values:
 [[0.89442719 0.70710678]
 [0.4472136  0.70710678]]
```

b. Write a program to compute the eigenvalues and right eigenvectors of a given square array given below: [[3 -2] [1 0]]

c. Compute the sum of the diagonal element of a given array. [[0 1 2] [3 4 5]]

d.3x2: [[1 2] [3 4] [5 6]] Reshape 2x3: [[1 2 3] [4 5 6]]

In [4]:
```
b = np.mat("0 1 2;3 4 5")
print(b)
```

```
[[0 1 2]
 [3 4 5]]
```

In [5]:
```
trace = np.trace(b)
print(trace)
```

```
4
```

In [6]:
```
new_mat = np.mat("1 2 3 4 5 6")
print(new_mat)
```

```
[[1 2 3 4 5 6]]
```

In [108]:
```
a1 = new_mat.reshape(3,2)
print(a1)
```

```
[[1 2]
 [3 4]
 [5 6]]
```

In [7]:
```
a2 = new_mat.reshape(2,3)
print(a2)
```

```
[[1 2 3]
 [4 5 6]]
```

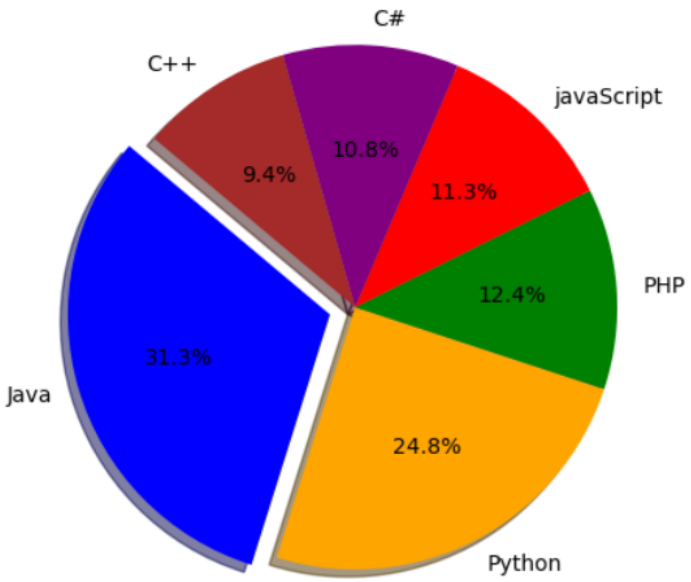
2. Matplotlib 1. Write a Python programming to create a below chart of the popularity of programming Languages. 2. Sample data: Programming languages: Java, Python, PHP, JavaScript, C#, C++ Popularity: 22.2, 17.6, 8.8, 8, 7.7, 6.7

2. Matplotlib

In [8]:

```
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 = ["blue", "orange", "green", "red", "purple", "brown"]
explode = (0.1, 0, 0, 0,0,0)
plt.pie(popuratity, explode=explode, labels=languages, colors=colors,
autopct='%1.1f%%', shadow=True, startangle=140)

plt.axis('equal')
plt.show()
```



GIT HUB LINK: https://github.com/Keerthireddy860/Machine-Learning-Assignment

ML VIDEO PRESENTATION:

https://drive.google.com/file/d/1_zePsBkgxzXR77sKcOg7C3X5mX-W_IGZ/view?usp=sharing