CS5710- Machine Learning Assignment-3 Name – Mohamad Suhail Polur

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GitHub Repo Link – https://github.com/MohamadSuhail/assignment-3

Video Demo Link – https://youtu.be/PYwTCqd2Ztw

#Question-1a

```
import numpy as np
random_vector = np.random.randint(1, 20, size=15)
random_vector = random_vector.reshape(3, 5)
print("Array Shape:", random_vector.shape)
print("Before Update:\n",random_vector)
random_vector[np.arange(len(random_vector)), np.argmax(random_vector, axis=1)] = 0
print("Updated Array:\n", random_vector)
array_2d = np.zeros((4, 3), dtype=np.int32)
print("\nArray Shape:", array_2d.shape)
print("Array Type:", type(array_2d))
print("Array Data Type:", array_2d.dtype)
```

#Question-1b

```
import numpy as np
square_arr = np.array([[3, -2], [1, 0]])
eigvals, eigvecs = np.linalg.eig(square_arr)
print("Eigenvalues: ", eigvals)
print("Right Eigenvectors: \n", eigvecs)
```

#Question-1c

```
import numpy as np
my_array = np.array([[0, 1, 2], [3, 4, 5]])
sum_of_diagonal = np.trace(my_array)
print("Array:\n", my_array)
print("Sum of the diagonal elements: ", sum_of_diagonal)
```

#Question-1d

```
import numpy as np
my_array = np.array([[1, 2], [3, 4], [5, 6]])
new_array = np.reshape(my_array, (2, 3))
print("Original array:\n", my_array)
print("Reshaped array:\n", new_array)
```

#Question-2

```
import matplotlib.pyplot as plt
prog_languages = ["Java", "Python", "PHP", "JavaScript", "C#", "C++"]
popularity_scores = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
highest_score_index = popularity_scores.index(max(popularity_scores))
explode_list = [0] * len(prog_languages)
explode_list[highest_score_index] = 0.1
plt.pie(popularity_scores, labels=prog_languages, explode=explode_list, autopct='%1.1f%%', startangle=140)
plt.title("Popularity of Programming Languages")
plt.show()
```