Artificial Intelligence

Lab 06

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Tasks

Task 1:

Consider 2-d array and Convert all the elements of a numpy array from float to Bool datatype.

```python
import numpy as np

# Creating a 2D numpy array with float values
arr = np.array( object: [[0.0, 1.5, -3.2], [4.8, 0.0, 2.1]], dtype=float)

# Converting to boolean
bool_arr = arr.astype(bool)

print(bool_arr)

```

```
Run  task 04 ×

C:\Users\lenovo\PycharmProjects\PythonProject3\.venv\Scripts\python.exe "C:\Users\lenovo\PycharmProjects\PythonProject3\task
[[False  True  True]
 [ True False  True]]

Process finished with exit code 0
```

Task2:

Write a Python program that uses insert function to add an element to a specific position in a array.

- add the element 55 at position 2.
- Print the updated array after the insertion.

```python
import array

# Creating an integer array
arr = array.array( typecode: 'i',  initializer: [10, 20, 30, 40, 50])

arr.insert( i: 2,  v: 55)
print("Updated array after insertion:", arr.tolist())
```

```
Run    task 2.2

C:\Users\lenovo\PycharmProjects\PythonProject3\.venv\Scripts\python.exe "C:\Users\lenovo\PycharmProjects\PythonProject3\task 2.2.py"
Updated array after insertion: [10, 20, 55, 30, 40, 50]

Process finished with exit code 0
```

Task3:

Generate a sequence of numbers in the form of a numpy array from 0 to 100 with gaps of 2 numbers, for example: 0, 2, 4

```python
import numpy as np

# Generating a sequence from 0 to 100 with step size 2
arr = np.arange(0, 101, 2)

# Printing the array
print(arr)
```

```
Run  task 3.3

C:\Users\lenovo\PycharmProjects\PythonProject3\.venv\Scripts\python.exe "C:\Users\lenovo\PycharmProjects\PythonProject3\task 3.3.py"
[  0   2   4   6   8  10  12  14  16  18  20  22  24  26  28  30  32  34
  36  38  40  42  44  46  48  50  52  54  56  58  60  62  64  66  68  70
  72  74  76  78  80  82  84  86  88  90  92  94  96  98 100]

Process finished with exit code 0
```

Task 4:

Given 2 numpy arrays as matrices, output the result of multiplying the 2 matrices as a numpy array

```python
import numpy as np

A = np.array([[1, 2],
              [3, 4]])

B = np.array([[5, 6],
              [7, 8]])

result = np.dot(A, B)

# Print the result
print("Matrix multiplication result:\n", result)
```

```
Run  4.4

C:\Users\lenovo\PycharmProjects\PythonProject3\.venv\Scripts\python.exe C:\Users\lenovo\PycharmProjects\PythonProject3\4.4.py
Matrix multiplication result:
 [[19 22]
 [43 50]]

Process finished with exit code 0
```

Task5:

Consider a 1-d array and check whether the specific number is present or not?

```python
import numpy as np

# Creating a 1D NumPy array
arr = np.array([10, 20, 30, 40, 50])

# Number to check
num = 30

# Method 1: Using 'in' keyword
if num in arr:
    print(f"{num} is present in the array.")
else:
    print(f"{num} is not present in the array.")

# Method 2: Using numpy.isin()
result = np.isin(num, arr)
print("Using numpy.isin():", result)  # Returns True or False
```

Run 5.5

```
C:\Users\lenovo\PycharmProjects\PythonProject3\.venv\Scripts\python.exe C:\Users\lenovo\PycharmProjects\PythonProject3\5.5.py
30 is present in the array.
Using numpy.isin(): True

Process finished with exit code 0
```