



Artificial Intelligence

Lab 06 Tasks

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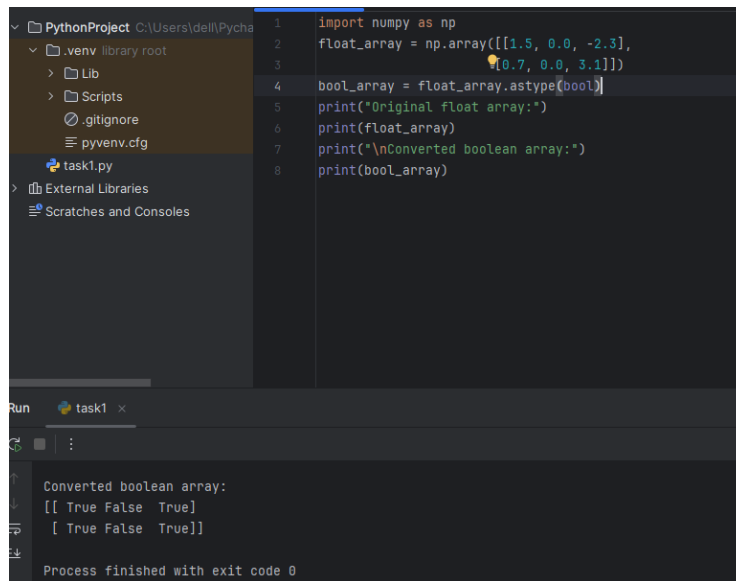
Lab Instructor:

Ayesha Akram

Tasks

Task 1:

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



```
1 import numpy as np
2 float_array = np.array([[1.5, 0.0, -2.3],
3                          [0.7, 0.0, 3.1]])
4 bool_array = float_array.astype(bool)
5 print("Original float array:")
6 print(float_array)
7 print("\nConverted boolean array:")
8 print(bool_array)
```

Run task1 x

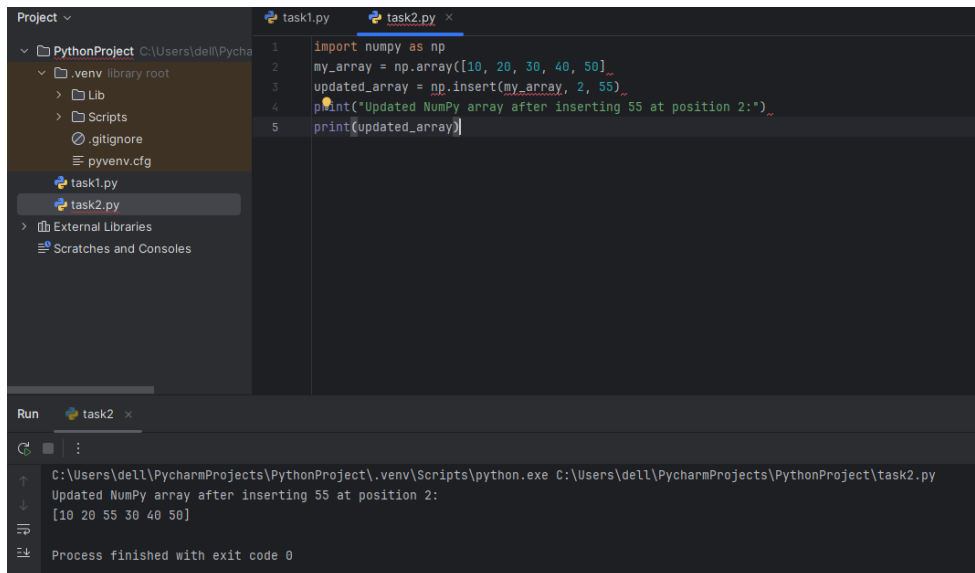
Converted boolean array:
[[True False True]
 [True False True]]

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.**



The screenshot shows the PyCharm IDE with a project named 'PythonProject'. The file explorer on the left shows the project structure, including a virtual environment (venv) and a Scripts folder. The main editor window displays 'task2.py' with the following code:

```
1 import numpy as np
2 my_array = np.array([10, 20, 30, 40, 50])
3 updated_array = np.insert(my_array, 2, 55)
4 print("Updated NumPy array after inserting 55 at position 2:")
5 print(updated_array)
```

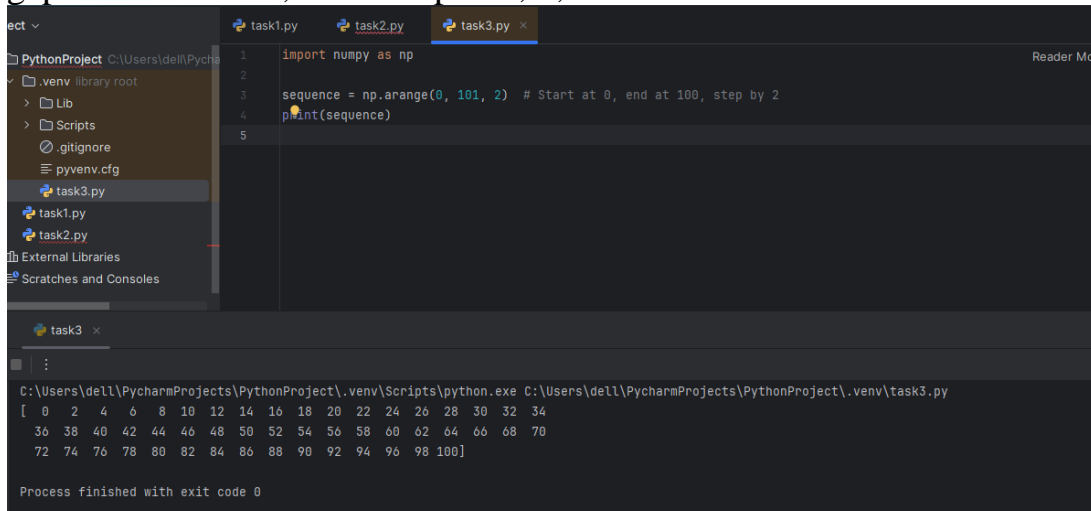
The Run window at the bottom shows the execution of 'task2.py' using the Python interpreter from the venv. The output is:

```
Updated NumPy array after inserting 55 at position 2:
[10 20 55 30 40 50]
```

The 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



The screenshot shows the PyCharm IDE with a project named 'PythonProject'. The file explorer on the left shows the project structure, including a virtual environment (venv) and a Scripts folder. The main editor window displays 'task3.py' with the following code:

```
1 import numpy as np
2
3 sequence = np.arange(0, 101, 2) # Start at 0, end at 100, step by 2
4 print(sequence)
5
```

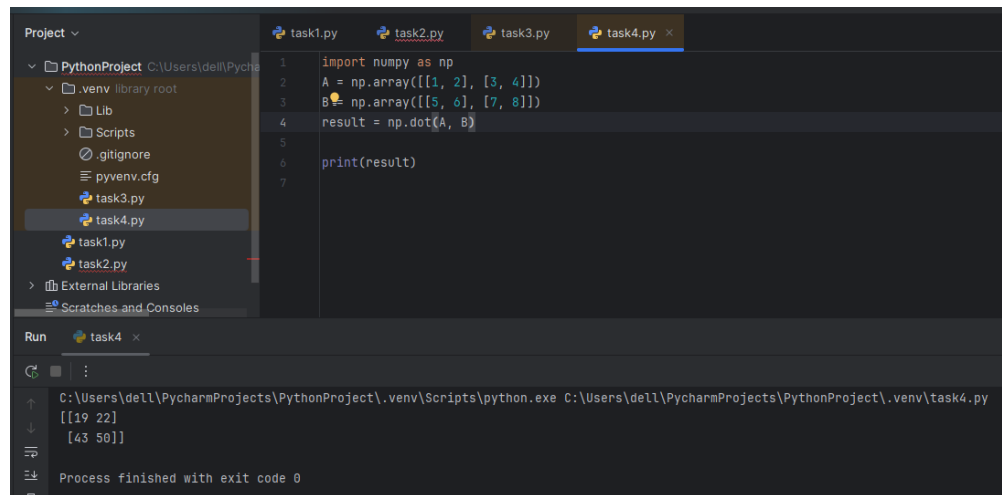
The Run window at the bottom shows the execution of 'task3.py' using the Python interpreter from the venv. The output is:

```
[ 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]
```

The 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



The screenshot shows the PyCharm IDE with a project named 'PythonProject'. The file explorer on the left shows the project structure, including a '.venv' directory and a 'Scripts' directory. The main editor window displays the code for 'task4.py':

```
1 import numpy as np
2 A = np.array([[1, 2], [3, 4]])
3 B = np.array([[5, 6], [7, 8]])
4 result = np.dot(A, B)
5
6 print(result)
7
```

The Run window at the bottom shows the execution of 'task4.py' using the Python interpreter located at 'C:\Users\dell\PycharmProjects\PythonProject\.venv\Scripts\python.exe'. The output is:

```
[[19 22]
 [43 50]]
```

The process finished with exit code 0.

Task5:

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



The screenshot shows the PyCharm IDE with a project named 'PythonProject'. The file explorer on the left shows the project structure, including a '.venv' directory and a 'Scripts' directory. The main editor window displays the code for 'task5.py':

```
1 import numpy as np
2
3 arr = np.array([10, 20, 30, 40, 50])
4 num = 30
5
6 print(num in arr) # Returns True if num is in arr, otherwise False
7
```

The Run window at the bottom shows the execution of 'task5.py' using the Python interpreter located at 'C:\Users\dell\PycharmProjects\PythonProject\.venv\Scripts\python.exe'. The output is:

```
True
```

The process finished with exit code 0.