



# Task 8

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# PROBLEM 1

The screenshot shows the PyCharm IDE interface. The main editor displays a Python script named `prob1.py` with the following code:

```
1 # Problem 1
2
3 import numpy as np
4
5 a = [10, 11, 12, 13, 14]
6 z = np.zeros(25)
7
8 z[0] = 10
9 z[6] = 11
10 z[12] = 12
11 z[18] = 13
12 z[24] = 14
13
14 print(z)
15
```

The left sidebar shows the Project Files view for the project `Task8`, with the file `prob1.py` selected. The bottom panel shows the Run console output for the script:

```
C:\Users\kaifa\PycharmProjects\Task8\venv\Scripts\python.exe C:/Users/kaifa/PycharmProjects/Task8/prob1.py
[10.  0.  0.  0.  0.  0.  0. 11.  0.  0.  0.  0.  0. 12.  0.  0.  0.  0.  0.
 13.  0.  0.  0.  0.  0. 14.]
Process finished with exit code 0
```

The status bar at the bottom indicates the current file is `prob1.py`, the encoding is UTF-8, and the Python version is 3.10 (Task8).

# PROBLEM 2

The image displays two side-by-side screenshots of the PyCharm IDE, showing the same Python code and its execution results. The code is for "Problem 2" and is located in `prob2.py`.

**Code Snippet:**

```
1 # Problem 2
2
3 import numpy as np
4
5 a = []
6 b = []
7
8 L = int(input("Enter the length of the arrays"))
9
10 print("Enter first array elements")
11 for i in range(0, L):
12     value = int(input())
13     a.append(value)
14
15 print("Enter second array elements")
16 for i in range(0, L):
17     value = int(input())
18     b.append(value)
19
```

**Left Screenshot (Execution 1):**

- Run:** `C:\Users\kaifa\PycharmProjects\Task8\venv\Scripts\python.exe C:/Users/kaifa/PycharmProjects/Task8/prob2.py`
- Input:** Enter the length of the arrays: 3, Enter first array elements: 1, 0, 2, Enter second array elements: 0, 2, 3
- Output:** Array A == [1 0 2 0 3], Array B == [1 0 2 0 3], True
- Process:** Process finished with exit code 0

**Right Screenshot (Execution 2):**

- Run:** `C:\Users\kaifa\PycharmProjects\Task8\venv\Scripts\python.exe C:/Users/kaifa/PycharmProjects/Task8/prob2.py`
- Input:** Enter the length of the arrays: 4, Enter first array elements: 1, 1, 2, 3, Enter second array elements: 4, 5
- Output:** Array A == [1 1 2 3 4], Array B == [1 2 3 4 5], False
- Process:** Process finished with exit code 0

The bottom status bar of the IDE shows the following information:

- Version Control
- Run
- TODO
- Problems
- Python Packages
- Python Console
- Terminal

Additional information at the bottom of the right screenshot: Shared indexes are downloaded for Python packages in 3 sec, 352 ms (4.12 MB) (today 20:19)

# PROBLEM 2 (alternative)

The screenshot shows an IDE with a project named 'Cognizance' containing a folder 'Task8' with a file 'prob2.py'. The code in 'prob2.py' is as follows:

```
26
27
28
29 # Generating Random arrays
30 A = np.random.randint(1,10,size=(1,5))
31 B = np.random.randint(1,10,size=(1,5))
32 print("Array A ==", A, "\nArray B ==", B)
33 # Returns True if arrays are equal, False if arrays are not equal
34 print(np.array_equal(A, B))
35
36
```

The 'Run' panel shows the execution of 'prob2.py' using 'python.exe' at 'D:/Cognizance/Task8/prob2.py'. The output is as follows:

```
Enter the length of the arrays
Enter first array elements
1
2
3
4
5
Enter second array elements
1
2
3
4
5
Array A == [1 2 3 4 5]
Array B == [1 2 3 4 5]
True
Array A == [[3 6 9 6 6]]
Array B == [[3 8 4 4 2]]
False

Process finished with exit code 0
```

The status bar at the bottom indicates the file encoding is UTF-8, the line ending is CRLF, and the Python version is 3.10. The current branch is 'master'.

# PROBLEM 3

The screenshot shows the PyCharm IDE interface. The top menu bar includes File, Edit, View, Navigate, Code, Refactor, Run, Tools, VCS, Window, and Help. The title bar indicates the current file is Task8 - prob3.py. The left sidebar shows the Project Files view for C:\Users\kaifa\PycharmProjects\Task8, with a venv directory expanded. The main editor displays the contents of prob3.py, which includes a comment and several print statements using numpy. The bottom panel shows the Run output for prob3, displaying the results of the print statements and a message indicating the process finished with exit code 0. The status bar at the bottom provides additional context, including the current time, encoding, and the Python interpreter being used.

```
# Problem 3

import numpy as np

print(0 * np.nan)
print(np.nan != np.nan)
print(np.inf > np.nan)
print(np.nan - np.nan)
print(0.3 == 3 * 0.1)
```

Run: prob3

C:\Users\kaifa\PycharmProjects\Task8\venv\Scripts\python.exe C:/Users/kaifa/PycharmProjects/Task8/prob3.py

nan  
True  
False  
nan  
False

Process finished with exit code 0

9:16 CRLF UTF-8 4 spaces Python 3.10 (Task8) 1 Event Log

Shared indexes are downloaded for Python packages in 3 sec, 352 ms (4.12 MB) (today 20:19)

# PROBLEM 4

The screenshot shows the PyCharm IDE interface. The top toolbar includes menus like File, Edit, View, Navigate, Code, Refactor, Run, Tools, VCS, Window, and Help. The project explorer on the left shows the project structure: C:\Users\kaifa\PycharmProjects\Task8, with subfolders .idea and venv, and files main.py, prob1.py, prob2.py, prob3.py, prob4.py, and prob5.py. The editor window displays the code for prob4.py:

```
1 # Problem 4
2
3 import pandas as pd
4 import numpy as np
5
6 series = pd.Series(['amrita', 'school', 'of', 'engineering', 'chennai', 'campus'])
7 newSeries = series.map(lambda x: x[0].upper() + x[1:-1] + x[-1])
8
9 print(series)
10 print(newSeries)
11
12 a = np.array(newSeries)
13 print(*a, sep=' ')
14
```

The Run window at the bottom shows the execution of the script. The command executed is: C:\Users\kaifa\PycharmProjects\Task8\venv\Scripts\python.exe C:/Users/kaifa/PycharmProjects/Task8/prob4.py. The output is as follows:

```
0      amrita
1      school
2          of
3  engineering
4      chennai
5      campus
dtype: object
0      Amrita
1      School
2          Of
3  Engineering
4      Chennai
5      Campus
dtype: object
Amrita School Of Engineering Chennai Campus

Process finished with exit code 0
```

The bottom status bar indicates the current configuration: CRLF, UTF-8, 4 spaces, Python 3.10 (Task8), and an Event Log icon.

# PROBLEM 5

The screenshot shows the PyCharm IDE interface. The top toolbar includes menus like File, Edit, View, Navigate, Code, Refactor, Run, Tools, VCS, Window, and Help. The project explorer on the left shows the file structure for 'Task8', including a 'venv' directory and several Python files (main.py, prob1.py, prob2.py, prob3.py, prob4.py, prob5.py). The editor window displays the code for 'prob5.py'.

```
1 # Problem 5
2
3 import numpy as np
4
5 # Addition of arrays
6 A = np.array([9, 2, 7])
7 B = np.array([2, 5, 4])
8
9 print("1st array : ", A)
10 print("2nd array : ", B)
11
12 result = np.add(A, B)
13 print("Sum of the above arrays is : ", result)
14
```

The Run console at the bottom shows the execution of the script using the Python interpreter in the 'venv' directory. The output displays the arrays and their sum.

```
C:\Users\kaifa\PycharmProjects\Task8\venv\Scripts\python.exe C:/Users/kaifa/PycharmProjects/Task8/prob5.py
1st array : [9 2 7]
2nd array : [2 5 4]
Sum of the above arrays is : [11 7 11]

m1: [[1 4 7]
      [2 5 8]]

m2: [[1 4]
      [2 5]
      [3 6]]

m1*m2 = [[30 66]
         [36 81]]

m1: ([1, 6, 5], [3, 4, 8], [2, 12, 3])

m2: ([3, 4, 6], [5, 6, 7], [6, 56, 7])

m1*m2 = [[ 63 320 83]
         [ 77 484 102]
         [ 84 248 117]]

Process finished with exit code 0
```

The bottom status bar shows the current configuration: Version Control, Run, 25:1, CRLF, UTF-8, 4 spaces, Python 3.10 (Task8), and an Event Log icon.