Hands-on exercises for if statements and loop (Hands on Practise-02)

1. Write a Python code to display the following pattern using nested loop and if statements.

******1**
*****22**
****333**
***4444**
55555

Solution: Here's the Python code to display the pattern:

```
for i in range(1, 6):
    # Print leading spaces
    for j in range(5 - i):
        print(" ", end="")
    # Print stars and numbers
    for k in range(i):
        if i == 1:
            print("*", end="")
        else:
            print("*", end="")
    # Print the numbers
    for l in range(i):
        print(i, end="")
    print()
```

2. Write a Python code to Generate 100 random values between 0 and 9, save them in a one-dimensional numpy array, and calculate the cumulative frequency distribution of each number from 0 to 9 using if statements.

Solution: Here's the Python code to generate 100 random values, save them in a numpy array, and calculate the cumulative frequency distribution:

```
import numpy as np
# Generate 100 random values between 0 and 9
random_values = np.random.randint(0, 10, 100)
# Initialize frequency distribution array
frequency = np.zeros(10, dtype=int)
# Calculate the cumulative frequency
for value in random_values:
    frequency[value] += 1
# Print the frequency of each number
for i in range(10):
    print(f'Number {i}: {frequency[i]}')
```

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