Indian Institute of Information Technology Sonepat

Python Programming Lab

Assignment-3

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Program-1

Write a Python function that accepts a string and counts the number of upper and lower case letters.

Code:

```
def count(input_string):
    upper_count = 0
    lower_count = 0

    for char in input_string:
        if char.isupper():
            upper_count += 1
        elif char.islower():
            lower_count += 1
    return upper_count, lower_count

input_str = input("Enter String: ")
upper, lower = count(input_str)
print("Uppercase letters:", upper)
print("Lowercase letters:", lower)
```

Output:

```
Enter String: RUtyhgfiuy
Uppercase letters: 2
Lowercase letters: 8
```

Program-2

Write a Python function that checks whether a passed string is a palindrome or not.

Code:

```python
def is_palindrome(string):
    return string == string[::-1]

print(is_palindrome("hello"))
print(is_palindrome("abccba"))
```

Output:

```
False
True
```

Program-3

Write a Python function that prints out the first n rows of Pascal's triangle.

Code:

```
def generatetriangle(n):
    if n <= 0:
        return []
    triangle = []
    for i in range(n):
        row = [1]
        for j in range(1, i):
            prev_row = triangle[i - 1]
            new_element = prev_row[j - 1] + prev_row[j]
            row.append(new_element)
        if i > 0:
            row.append(1)
        triangle.append(row)
    return triangle

def printtriangle(n):
    triangle = generatetriangle(n)
    max_width = len(" ".join(map(str, triangle[-1])))
    for row in triangle:
        row_str = " ".join(map(str, row))
        print(row_str.center(max_width))

n = int(input())
printtriangle(n)
```

Output:

```
5
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
```