Name: Vinayak Kumar Singh

Register No: 23MCA1030

Subject: Python LAB

Question: Exercise 3 Control Structures

Q1. Code with output

lab3_q1.py

```python
count = 0
total = 0
while True:
    my_input = input("Enter a number or done to exit: ")
    if my_input == 'done':
        break
    try:
        num = float(my_input)
        total += num
        count += 1
    except ValueError:
        print("Please enter a number or done to exit")
if count > 0:
    average = total / count
    print("Register Number = 23MCA1030")
    print("Name = Vinayak Kumar Singh")
    print("Total:", total)
    print("Count:", count)
    print("Average:", average)
else:
    print("No numbers entered.")
```

PROBLEMS OUTPUT TERMINAL

```
Microsoft Windows [Version 10.0.22621.2070]
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D:\MCA\6. Python Programming + LAB\LAB>python -u "d:\MCA\6. Python Programming + LAB\LAB\lab3_q1.py"
Enter a number or done to exit: a
Please enter a number or done to exit
Enter a number or done to exit: 1
Enter a number or done to exit: 2
Enter a number or done to exit: 3
Enter a number or done to exit: 4
Enter a number or done to exit: 5
Enter a number or done to exit: done
Register Number = 23MCA1030
Name = Vinayak Kumar Singh
Total: 15.0
Count: 5
Average: 3.0
```

Q2. Code

lab3_q2.py

```python
def gcd(a, b):
    while b:
        a, b = b, a % b
    return a

def lcm(a, b):
    greater = max(a, b)
    while True:
        if greater % a == 0 and greater % b == 0:
            lcm_result = greater
            break
        greater += 1
    return lcm_result

print("Register Number = 23MCA1030")
print("Name = Vinayak Kumar Singh")
num1 = int(input("Enter the first number: "))
num2 = int(input("Enter the second number: "))

if num1 <= 0 or num2 <= 0:
    print("Please enter numbers")
else:
    gcd_result = gcd(num1, num2)
    lcm_result = lcm(num1, num2)

    print(f"The GCD of {num1} and {num2} is: {gcd_result}")
    print(f"The LCM of {num1} and {num2} is: {lcm_result}")
```

Output

```
D:\MCA\6. Python Programming + LAB>python -u "d:\MCA\6. Python Programming + LAB\LAB\lab3_q2.py"
Register Number = 23MCA1030
Name = Vinayak Kumar Singh
Enter the first number: 10
Enter the second number: 5
The GCD of 10 and 5 is: 5
The LCM of 10 and 5 is: 10
```

Q3. Code

lab3_q3.py

LAB > lab3_q3.py > ...

```python
def count_and_find_digit(k, d):
    num_str = str(k)
    digit_str = str(d)

    if digit_str in num_str:
        print(f"The digit {d} is present in the number {k}.")
    else:
        print(f"The digit {d} is not present in the number {k}.")
        return

    occurrences = num_str.count(digit_str)
    print(f"The digit {d} appears {occurrences} times in the number {k}.")

    positions = [i + 1 for i, digit in enumerate(num_str) if digit == digit_str]
    print(f"The digit {d} is found at position(s): {positions}")

print("Register Number = 23MCA1030")
print("Name = Vinayak Kumar Singh")
number = int(input("Enter a number: "))
digit = int(input("Enter a digit: "))
count_and_find_digit(number, digit)

```

Output

```
D:\MCA\6. Python Programming + LAB>python -u "d:\MCA\6. Python Programming + LAB\LAB\lab3_q3.py"
Register Number = 23MCA1030
Name = Vinayak Kumar Singh
Enter a number: 223
Enter a digit: 2
The digit 2 is present in the number 223.
The digit 2 appears 2 times in the number 223.
The digit 2 is found at position(s): [1, 2]
```

Q4. Code with output

lab3_q4.py

LAB > lab3_q4.py > ...

```python
numbers = [25, 19, 22, 23, 21, 12, 10, 17, 11, 13, 10]

local_maxima = []

for i in range(1, len(numbers) - 1):
    if numbers[i] > numbers[i - 1] and numbers[i] > numbers[i + 1]:
        local_maxima.append(numbers[i])

print("Register Number = 23MCA1030 \nName = Vinayak Kumar Singh")
print("Local Maxima:", local_maxima)

```

PROBLEMS OUTPUT TERMINAL

```
Microsoft Windows [Version 10.0.22621.2134]
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D:\MCA\6. Python Programming + LAB>python -u "d:\MCA\6. Python Programming + LAB\LAB\lab3_q4.py"
Register Number = 23MCA1030
Name = Vinayak Kumar Singh
Local Maxima: [23, 17, 13]
```

Q5. Code with output

lab3_q5.py

LAB > lab3_q5.py > ...

```python
dna_sequence = input ("enter the sequence: ")

list = []
for i in range (0, len (dna_sequence)):
    list.append(dna_sequence[i:i+3])
    if i == len(dna_sequence) - 3:
        break

count = 0

for i in list:
    if i in ["TTA", "TTG", "ACA", "ACG"]:
        count += 1
    elif i in ["TAG", "TAA", "TGA"]:
        break

print("Register Number = 23MCA1030 \nName = Vinayak Kumar Singh")
print ("codon appears here in :", count)

```

Output

```
Microsoft Windows [Version 10.0.22621.2134]
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D:\MCA\6. Python Programming + LAB>python -u "d:\MCA\6. Python Programming + LAB\LAB\lab3_q5.py"
enter the sequence: ATCTCAGTCGTTGTCTACATGCGCCCCTCGATGGGTCGCTAGACGTAGACG CTAGCTAAGA
Register Number = 23MCA1030
Name = Vinayak Kumar Singh
codon appears here in : 2
```

END