AI Assisted Coding (Assignment 1.2)

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Batch: 15

GitHub: https://github.com/MohammedFawazAli/AIAC/blob/main/AIAC%20Lab1.py

Task 1:

```python
#Generate code for the fibonacci sequence up to n terms without functions
n = int(input("Enter the number of terms in the Fibonacci sequence: "))
a, b = 0, 1
count = 0
if n <= 0:
    print("Please enter a positive integer.")
elif n == 1:
    print("Fibonacci sequence up to", n, "term:")
    print(a)
else:
    print("Fibonacci sequence up to", n, "terms:")
    while count < n:
        print(a, end=' ')
        a, b = b, a + b
        count += 1
```

```
PS D:\AIAC Lab> & C:/Users/fawaz/AppData/Local/Programs/Python/Python313/python.exe "d:/AIAC Lab/AIAC
  Lab1.py"
Enter the number of terms in the Fibonacci sequence: 10
Fibonacci sequence up to 10 terms:
0 1 1 2 3 5 8 13 21 34
```

Task 2:

```python
# Simplify the code by removing unnecessary variables and conditions. optimze the code
n = int(input("Enter the number of terms in the Fibonacci sequence: "))
a, b = 0, 1
if n <= 0:
    print("Please enter a positive integer.")
else:
    print("Fibonacci sequence up to", n, "terms:")
    for _ in range(n):
        print(a, end=' ')
        a, b = b, a + b
```

```
PS D:\AIAC Lab> & C:/Users/fawaz/AppData/Local/Programs/Python/Python313/python.exe "d:/AIAC Lab/AIAC
  Lab1.py"
Enter the number of terms in the Fibonacci sequence: 10
Fibonacci sequence up to 10 terms:
0 1 1 2 3 5 8 13 21 34
```

Task 3:

```python
#Generate code for the fibonacci sequence up to n terms with functions
def fibonacci(n):
    a, b = 0, 1
    sequence = []
    for _ in range(n):
        sequence.append(a)
        a, b = b, a + b
    return sequence
n = int(input("Enter the number of terms in the Fibonacci sequence: "))
if n <= 0:
    print("Please enter a positive integer.")
else:
    print("Fibonacci sequence up to", n, "terms:")
    print(' '.join(map(str, fibonacci(n))))
```

```
PS D:\AIAC Lab> & C:/Users/fawaz/AppData/Local/Programs/Python/Python313/python.exe "d:/AIAC Lab/AIAC
  Lab1.py"
Enter the number of terms in the Fibonacci sequence: 10
Fibonacci sequence up to 10 terms:
0 1 1 2 3 5 8 13 21 34
```

Task 4:

The Fibonacci sequence is a series of numbers where each number is the sum of the two preceding ones, usually starting with 0 and 1. The code provided generates the Fibonacci sequence up to 'n' terms in two different ways: without functions and with functions.

Task 5:

```python
#Fibionacci with iterations and recursion
# Iterative approach
n = int(input("Enter the number of terms in the Fibonacci sequence: "))
a, b = 0, 1
if n <= 0:
    print("Please enter a positive integer.")
else:
    print("Fibonacci sequence up to", n, "terms (Iterative):")
    for _ in range(n):
        print(a, end=' ')
        a, b = b, a + b
print() # for newline

# Recursive approach
def fibonacci_recursive(n):
    if n <= 0:
        return []
    elif n == 1:
        return [0]
    elif n == 2:
        return [0, 1]
    else:
        seq = fibonacci_recursive(n - 1)
        seq.append(seq[-1] + seq[-2])
        return seq
n = int(input("Enter the number of terms in the Fibonacci sequence: "))
if n <= 0:
    print("Please enter a positive integer.")
else:
    print("Fibonacci sequence up to", n, "terms (Recursive):")
    print(' '.join(map(str, fibonacci_recursive(n))))
```

```
PS D:\AIAC Lab> & C:/Users/fawaz/AppData/Local/Programs/Python/Python313/python.exe "d:/AIAC Lab/AIA
  Lab1.py"
Enter the number of terms in the Fibonacci sequence: 10
Fibonacci sequence up to 10 terms (Iterative):
0 1 1 2 3 5 8 13 21 34
Enter the number of terms in the Fibonacci sequence: 10
Fibonacci sequence up to 10 terms (Recursive):
0 1 1 2 3 5 8 13 21 34
```