

ASSIGNMENT-1.3

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Lab 1: Environment Setup – GitHub Copilot and VS Code Integration + Understanding AI-assisted Coding Workflow

Task 1: AI-Generated Logic Without Modularization (Fibonacci Sequence)

```
1 #Q1. Write a Python program to print Fibonacci series up to n terms
2 # Take user input
3 # Do not use functions
4 n = int(input("Enter number of terms: "))
5
6 a = 0
7 b = 1
8
9 if n <= 0:
10    print("Please enter a positive number")
11 elif n == 1:
12    print(a)
13 else:
14    print("Fibonacci sequence:")
15    print(a, b, end=" ")
16    for i in range(2, n):
17        c = a + b
18        print(c, end=" ")
19        a = b
20        b = c
```

```
Enter number of terms: 7
Fibonacci sequence:
0 1 1 2 3 5 8
```

Task 2: AI Code Optimization & Cleanup (Improving Efficiency)

```
1 # Q2.Optimize this Fibonacci code
2 # Simplify logic and variable usage
3 n = int(input("Enter number of terms: "))
4
5 a, b = 0, 1
6
7 if n <= 0:
8    print("Please enter a positive number")
9 else:
10    print("Fibonacci sequence:")
11    for _ in range(n):
12        print(a, end=" ")
13        a, b = b, a + b
```

```
Enter number of terms: 5
Fibonacci sequence:
0 1 1 2 3
```

Task 3: Modular Design Using AI Assistance (Fibonacci Using Functions)

```
1 # Q3.Create a function to generate Fibonacci series up to n
2 # Use meaningful comments
3 def fibonacci(n):
4     """
5     Generates Fibonacci sequence up to n terms
6     """
7     a, b = 0, 1
8     sequence = []
9
10    for _ in range(n):
11        sequence.append(a)
12        a, b = b, a + b
13
14    return sequence
15
16
17 n = int(input("Enter number of terms: "))
18 result = fibonacci(n)
19 print("Fibonacci sequence:", result)
```

```
Enter number of terms: 6
Fibonacci sequence: [0, 1, 1, 2, 3, 5]
```

Task 4: Comparative Analysis – Procedural vs Modular Fibonacci Code

```
1 #Q4 : Comparative Analysis - Procedural vs Modular Fibonacci Code
2 n = int(input("Enter number of terms: "))
3 a, b = 0, 1
4 if n <= 0:
5     print("Please enter a positive number")
6 elif n == 1:
7     print(a)
8 else:
9     print("Fibonacci series:")
10    print(a, end=" ")
11    print(b, end=" ")
12    for i in range(2, n):
13        c = a + b
14        print(c, end=" ")
15        a = b
16        b = c
```

```
Enter number of terms: 6
Fibonacci series:
0 1 1 2 3 5
```

Task 5: AI-Generated Iterative vs Recursive Fibonacci Approaches (Different Algorithmic Approaches for Fibonacci Series)

```
1  #Q5.AI-Generated Iterative vs Recursive Fibonacci Approaches (Different
2  |  Algorithmic Approaches for Fibonacci Series)
3  |> def fibonacci_iterative(n):
4  |  |  a, b = 0, 1
5  |  |> for _ in range(n):
6  |  |  |  print(a, end=" ")
7  |  |  |  a, b = b, a + b
8
9  n = int(input("Enter number of terms: "))
10 | fibonacci_iterative(n)
11 > def fibonacci_recursive(n):
12 |  if n <= 1:
13 |  |  return n
14 |  return fibonacci_recursive(n - 1) + fibonacci_recursive(n - 2)
15
16
17 n = int(input("Enter number of terms: "))
18 > for i in range(n):
19 |  |  print(fibonacci_recursive(i), end=" ")
```

```
Enter number of terms: 6
0 1 1 2 3 5 Enter number of terms: 3
0 1 1
```