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Assignment No: 01

Problem Statement: Write a program non-recursive and recursive program to calculate Fibonacci numbers and analyse their time and space complexity.

Code (For Non-Recursive):

```
n1 = int(input('Enter first number: '))
n2 = int(input('Enter second number: '))
n = int(input('Enter no. of terms: '))
```

```
print(n1,n2, end = ' ')
```

```
while(n-2):
```

```
    c = n1+n2
```

```
    n1 = n2
```

```
    n2 = c
```

```
    print(c, end = ' ')
```

```
    n = n-1
```

Input:

Enter first number: 0

Enter second number: 1

Enter no. of terms: 10

Output:

```
Enter first number: 0
Enter second number: 1
Enter no. of terms: 10
0 1 1 2 3 5 8 13 21 34

...Program finished with exit code 0
Press ENTER to exit console.
```

Code (For-Recursive):

```
def fibonacci(n):
    if n<=1:
        return 1
    else:
        return (fibonacci(n-1)+fibonacci(n-2))
n = int(input('Enter the no. of terms: '))
for i in range(n):
    print(fibonacci(i), end = ' ')
```

Input:

Enter the no. of terms:10

Output:

```
Enter the no. of terms: 10
1 1 2 3 5 8 13 21 34 55

...Program finished with exit code 0
Press ENTER to exit console.
```