Python Assignment

Write a Python program and submit the IPython Notebook and corresponding pdf version. Please use modular programming approach.

1. Sum of digits of a number

Python code for the given problem

```python
1 def getDigitSum(n):
2
3     """Objective: Get Sum of digits of the number
4     Returns:sum Type:int
5     """
6     return sum([int(i) for i in n if i.isdigit()])
7 if __name__=="__main__":
8     print(getDigitSum(input("Enter a number: ")))

  Enter a number: -34.72
  16
```

The Above Code Works for all Integers and Floating point numbers (both negative and positive)

2. Print the following patterns

Pattern A

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

```python
1  def patternA(n):
2     for i in range(n,0,-1):
3         for j in range(1,i+1):
4             print(j,end="   ")
5         print('\n')
6 patternA(5) #Example Output
```

```
1    2    3    4    5

1    2    3    4

1    2    3

1    2

1
```

Pattern B

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

```
1 def patternB(n):
2     for i in range(5,0,-1):
3         for j in range(5,i-1,-1):
4             print(j,end="    ")
5         print('\n')
6 patternB(5) #Example Output
```

```
5

5    4

5    4    3

5    4    3    2

5    4    3    2    1
```

Pattern C

```
        1
    2   1   2
3   2   1   2   3
```

```
1 def patternC(n):
2     for i in range(0,n,1):
3         for j in range(1,2*n,1):
4             if j<(n-i) or j>(n+i):
5                 print(" ",end="   ")
6             else:
```

```
7                   print((n-j)%n+1,end="  ") if j<n else print(j%n+1,end="  ")
8           print('\n')
9 patternC(3) #Example Output
```

```
        1

    2  1  2

  3  2  1  2  3
```

▾ Driver Code

```
 1 def main():
 2     n=int(input("Enter number of rows: "))
 3     print("""Select a pattern to print
 4     Pattern A
 5     Pattern B
 6     Pattern C\n""")
 7     op=input("Pattern: ").upper()
 8     print()
 9     #patternA(n) if op=='A' else (patternB if op=='B' else (patternC if op=='C' else
10     eval("pattern"+op+"("+str(n)+")") if op in ['A','B','C'] else print("Invalid Opt
11 if __name__=="__main__":
12     main()
```

```
Enter number of rows: 5
Select a pattern to print
    Pattern A
    Pattern B
    Pattern C

Pattern: C

            1

        2  1  2

      3  2  1  2  3

    4  3  2  1  2  3  4

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