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

1. Sum of digits of a number

```
def digitsum(num):
  sum=0
  while (num>0):
    sum+=num%10
    num//=10
  print(sum)

digitsum(78)
```

```
15
```

2. Print the following patterns

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

```
def pattern(num):
  x=''
  for i in range(num,0,-1):
   for j in range(1,i+1):
     x+=str(j)
```

```
      x+=' '
    print(x)
    x=''

pattern(5)
```

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

5

5 4

5 4 3

5 4 3 2

5 4 3 2 1

```
def pattern(num):
  x=''
  for i in range(5,0,-1):
   x+=str(i)
   x+=' '
   print(x)
pattern(5)
```

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

```
         1
     2   1   2
```

```
  3   2   1   2   3
```

```
def pattern(num):
  x=''
  for i in range(1,num+1):
    if i==1:
      x+=str(i)
    else:
      x=str(i)+' '+x+' '+str(i)
    y=' '*(2*(num-i))+x
    print(y)

pattern(3)
```

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