# Functions / Methods

Suppose we're given 3 integers a,b,c
We're to calculate sum of digits
for all these nos. separately and
print the sum.

$a = 140$ $\downarrow$ $5$    $b = 7861$ $\downarrow$ $22$    $c = 52$ $\downarrow$ $7$

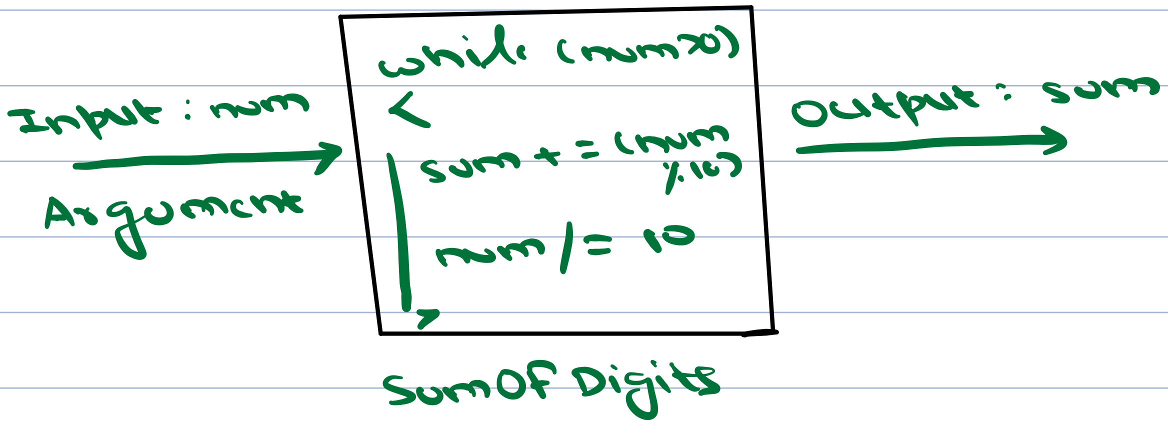
a
```
// a,b,c
int sum1 =0
while (a>0) {
        int lastdig = a%10
         sum1 = sum1 + lastdig
         a = a/10
}

System.out.println(sum1)
```

b
```
int sum2=0
while (b>0) {
        int lastdig = b%10
         sum2 = sum2 + lastdig
         b = b/10
}
```

```
System.out.println (sum2)
```

C
```
int sum3=0
while (c>0) {
    int lastdig = c % 10
    sum3 = sum3 + lastdig
    c = c / 10
}
System.out.println (sum3)
```

1. Redundancy
2. Readability
3. Maintability



```
while (num>0)
{
    sum + = (num % 10)
    num /= 10
}
```

return type of output

```
anstype functionname(inputType input_var) {
    ___________
    ___________      // Main logic
    ___________

    return ans;
}
```

Write a fn which takes 2 input a and b and return their sum ?

```
int sumOfTwoNumbers(int a, int b){
    int sum = a+b;
    return sum;
}
```

If anstype is void, no need of return statement.

15 10

```
class Test {
  public static int sum(int a, int b){
    return a + b;
  }
```

15+10

15

```
  public static void main(String[] args){
    int a = 15, b = 5;
    System.out.println(sum(a, 10));
  }
}
```

→ 25

15 , 5

```
class Test {
  public static int sum(int a, int b){
    return a + b;
  }
```

// return 20

15+5

```
  public static void main(String[] args){
    int a = 15, b = 5;
    sum(a,b);
  }
}
```

15,5

Nothing will be printed
↓
code will run successfully

① int x= sum (a,b)
System. out. print (x)

② System . out. print ( sum (a,b))

15 5

```
class Test {
  public static int sum(int a, int b){
    System.out.print(a + b);
  }

  public static void main(String[] args){
    int a = 15, b = 5;
    sum(a,b);
  }
}
```

15,5

// no return statement

↓

fn throws error

20 5

```
class Test {
  public static int sum(int a, int b){
    return a + b;
  }

  public static void main(String[] args){
    int a = 15, b = 5;
    System.out.println(sum(20, b));
  }
}
```

20 + 5

5

→ o/p $\boxed{25}$

6 10

```
class Test {
  public static int sum(int a, int b){
    return a + b;
  }

  public static void main(String[] args){
    int a = 15, b = 5;
    System.out.println(sum(6, 10));
  }
}
```

6 + 10

→ o/p $\boxed{16}$

**Doubts** : Additional / HW Q3 [Patterns]

N=2

```
0 2 0
1 2 3
```

N = 3

```
0 0 3 0 0
0 2 4 6 0
1 2 3 4 5
```

① N rows

② 2N-1 items

0s nums 0s

N-1 N-1

③ zeros = N-1

↓

zeros --

N = 5

| ln |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 4 | 8 | 12 | 0 | 0 | 0 |
| 3 | 0 | 0 | 3 | 6 | 9 | 12 | 15 | 0 | 0 |
| 2 | 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 0 |
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

zeros + nos + zeros = 2N-1

nos = 2N-1 - 2 zeros