Functions

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Problem

Suppose we have a, b, c integers. We need to calculate sum of all digits separately. for a, b, c

I/p

10
20
33

O/p

1
2
6

```java
class Main {
    public static void main (......) {
        _____  // take a, b, c
        _____  // as input
        int sumA = 0;
        while (a > 0) {
            sumA += a % 10;
            a = a / 10;
        }
        System.out.println (sumA);

        int sumB = 0;
        while (b > 0) {
            sumB += b % 10;
            b = b / 10;
        }
        System.out.println (sumB);

        int sumC = 0;
        while (c > 0) {
            sumC += c % 10;
            c = c / 10;
        }
```
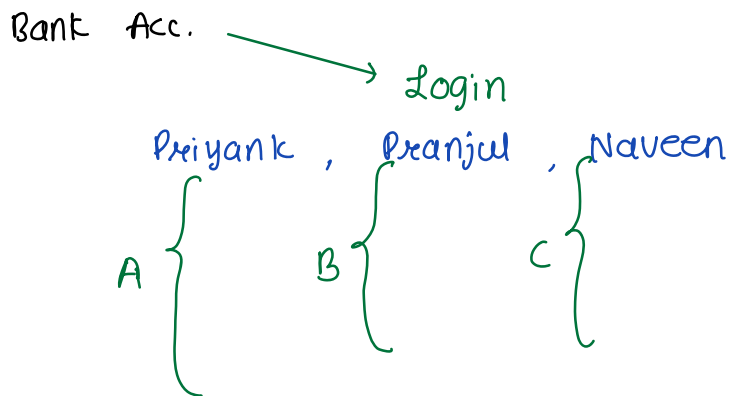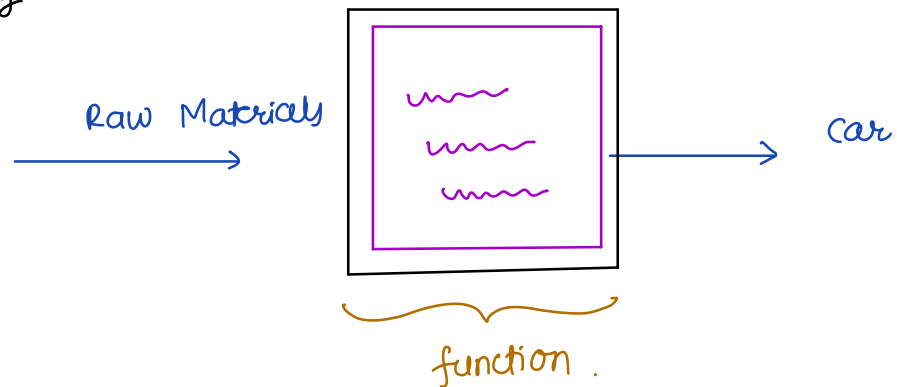
System.out.println(sumC);

Problems with code above
　　　1> Repitition
　　　2> Redundancy
　　　3> Not maintainable
　　　4> Difficult to understand or read.

Bank Acc. → Login

Priyank , Pranjul , Naveen

A { B { C {

Car Assembly

Raw Materials →

→ Car

function.

Syntax of function

```
<anyType>  functionName (<inputType>  variableName) {
    // main logic
    return ans
}
```

⟶ Write a function to add two integers a, b

static   int   addTwoInt (int a, int b) {
    int sum = a + b;
    return sum;
}

static → covered in OOPs

return type   function name

```
public  static  void  main (......) {
    int a = 10;
    int b = 20;
    System.out.println ( addTwoInt (a, b) );
}
```

void means nothing.

```
static  int  sumDigits (int a) {
    int sumA = 0;
    while (a > 0) {
        sumA += a % 10;
        a = a / 10;
    }
    return sumA;
}
```

```
class  Main  {
    public  static  void  main (......) {
                _____    // take  a, b, c
                _____    // as input
        int sum A  =  sum Digits (a) ;
        int sum B  =  sum Digits (b) ;
        int sum C  =  sum Digits (c) ;

        System.out.println (sumA) ;
        System.out.println (sumB) ;
        System.out.println (sumC) ;
    }
}
```

20
33

Op

1
2
6

```
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(a, 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;
    sum(a,b);
  }
}
```

```
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);
  }
}
```

∴ return type of function is int and nothing is returned

```java
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));
  }
}
```

```java
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));
  }
}
```

Break   22:20

Q1> Given integer N, return whether the integer is even or not.

12 $\longrightarrow$ true

5 $\longrightarrow$ false

`static` boolean isEven (int n) {
```
        if ( n % 2 == 0) {
            return true;
        }

        else {
            return false;
        }
```
}

`static` boolean isEven (int n) {
```
        return    n % 2 == 0;
```
}

Q2> Given an integer N, return whether height is small, medium or large

N < 10 $\longrightarrow$ "small"

N $\longrightarrow$ [10, 20] $\longrightarrow$ "medium"

N > 20 $\longrightarrow$ "large"

```
static String checkHeight (int n) {
        if (h < 10) {
              return  "small";
        }
        else if (h <= 20) {
              return "medium";
        }
        else {
              return "large";
        }
}
```

Q3> Given two doubles as argument.
Return the ==area of rectangle== $l * b$

input   1.0 , 2.0 $\longrightarrow$ 2.0
        l   b

```
static double areaOfRectangle (double l, double b){
     return l*b;
}
```

Q4> Given the radius { double } of the circle.
Return the area of circle. $PI * r * r$
NOTE : assume PI = 3.14

Input   7.0 $\longrightarrow$

```
static double areaOfCircle (double r){
     return 3.14 * r * r;
}
```

Q5> Given an int N, print all the prime no. [1 to N]

Input : 10 $\longrightarrow$ ~~1~~ 2 3 ~~4~~ 5 ~~6~~ 7 ~~8~~ ~~9~~ ~~10~~

$\longrightarrow$ Subproblem write a function to check if n is prime or not

Prime no. $\longrightarrow$ positive and exactly 2 factors

```
class Main {
    boolean isPrime (int n) {
        int count = 0;
        // range of factor for n
        for (int f = 1; f <= n; f++) {
            if ( n % f == 0) {
                count ++;
            }
        }

        return count == 2;
    }

    public static void main (......) {
        _____  // take input n


        for (int p = 1; p <= N; p++) {
            // check if p is prime or not
            if ( isPrime (p)) {
```

System.out.print(p + " ");