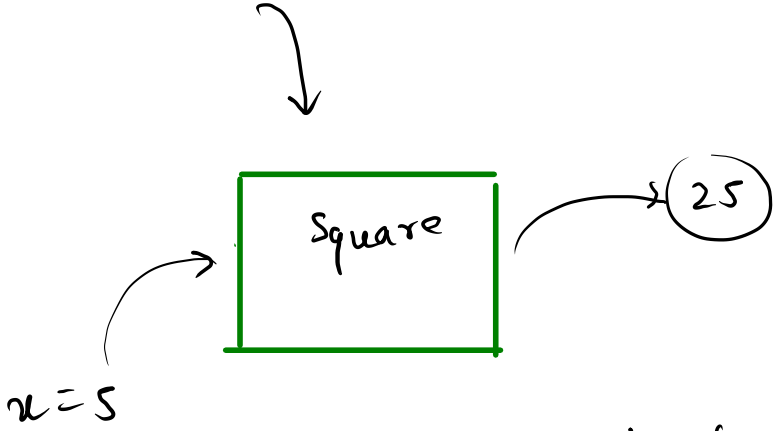
functions.

$$f(x) = x^2$$

↑ o/p

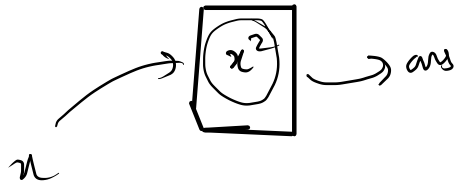
$x = 5 \longrightarrow 25$



any particular task

inbuilt

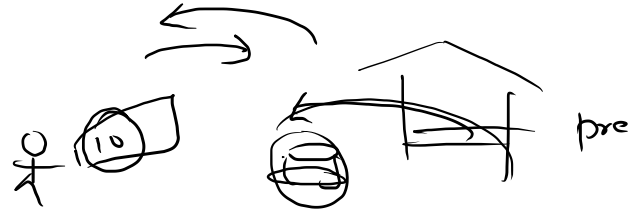
user-defined



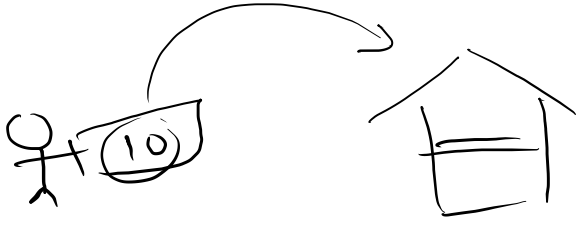
Return type

!void

McD.



food / burger



return type

```
public static int findSquare(int x){
    return x*x;
}
```

name of func^n

parameter (i/p)

```
public static int findSquare(int x){
    int ans = x*x;
    return ans;
}
```

$\Rightarrow f(x) = x^2$

int

x^2

$^{n}C_{r} = ?$ $\quad \frac{n!}{r!(n-r)!}$ (?)

$$\frac{n!}{r!\,(n-r)!}$$

$n = 5!$ $= \frac{5 \times 4 \times 3 \times 2 \times 1}{1\,2\,3\,4\,5}$ for (n times)

Parameter & Agrument

```java
public static int factorial(int x){
    int factorial = 1;

    for(int i = 1; i <= x; i++){
        factorial *= i;
    }
    return factorial;
}
```

function

```java
int factorialN = factorial(5);
int factorialR = factorial(3);
```

Calling function

Find sum using a function

The process goes like:

You have to first take input of two numbers **x** and **y** as an integer input.

Then make a function **findSum(int x, int y)**, which takes in these two integers as parameters and prints the final **sum**.

Input Format

T will be given as input represents the number of test cases.

For each test case,

x will be given as input in the first line,

y will be given as input in the second line.

Sample Input 0

```
2
10
20
30
40
```

Sample Output 0

```
30
70
```

2 testcase

x y

10 20

30 40

30

70

2

10

20

30

40

t = 2

i = 1 ✓ 1 ≤ 2

x = 10

y = 20

2 2 ≤ 2 ✓

x = 30

y = 40

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static int findSum(int x, int y){
        int ans = x + y;
        return ans;
    }

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int t = scn.nextInt();

        for(int i = 1; i <= t; i++){
            int x = scn.nextInt();
            int y = scn.nextInt();

            System.out.println(findSum(x,y));
        }

    }
}
```

Factorial of N

n=5

1×2×3×4×5

n=4 → 24

```java
public class Solution {
    public static int factorial(int n){
        int prod = 1;
        for(int i = 1; i <= n; i++){
            prod *= i;
        }
        return prod;
    }
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();//4
        int ans = factorial(n);//24
        System.out.println(ans);
    }
}
```

n=4

prod = 1 1 2 6 24

i = 1 1≤4 ✓
2 2≤4 ✓
3 3≤4 ✓
4 4≤4 ✓
5 5≤4 ✗

24

```java
import java.io.*;
import java.util.*;

public class Solution {
    public static long factorial(int n){
        long prod = 1;
        for(int i = 1; i <= n; i++){
            prod *= i;
        }
        return prod;
    }
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int n = scn.nextInt();
        long ans = factorial(n);
        System.out.println(ans);
    }
}
```

Find product of the two numbers using function.

x	y	ans
2	3	6
5	5	25
4	6	24

Sample Input 0

```
3
2
3
5
5
4
6
```

Sample Output 0

```
6
25
24
```

```java
import java.io.*;
import java.util.*;

public class Solution {
    public static int findProd(int x, int y){
        return x*y;
    }
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int t = scn.nextInt();
        for(int i = 1; i <= t; i++){
            int x = scn.nextInt();
            int y = scn.nextInt();

            int ans = findProd(x, y);
            System.out.println(ans);
        }
    }
}
```

Swap x and y

Problem | Submissions | Leaderboard | Discussions

Take two integers **x** and **y** as an integer input.

Then take an integer data-type variable **c**, and with the help of **c** variable swap **x** and **y**.

Process:

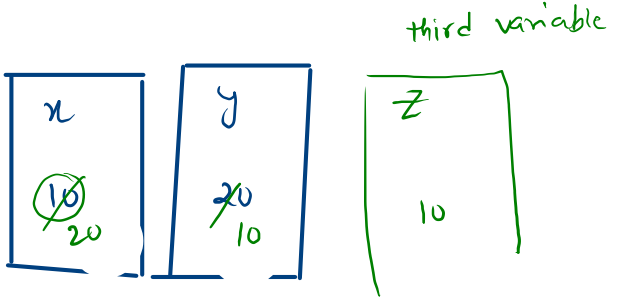
First assign value of **x** to **c** and print the string with the help of **System.out.println("c = " + c)**,

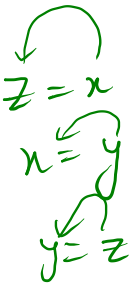
Then, assign value of **y** to **x** and print the string with the help of **System.out.println("x = " + x)**,

Then, assign value of **c** to **y** and print the string with the help of **System.out.println("y = " + y)**.

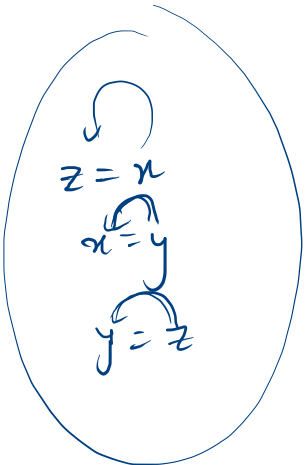
In the next line print the string with the help of **System.out.println("x = " + x)**,

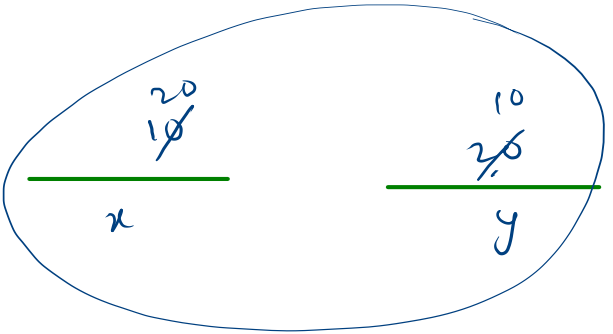
In the next line print the string with the help of **System.out.println("y = " + y)**.

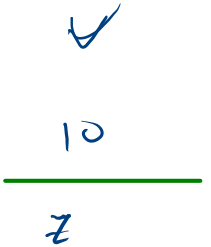




z = x







Swap x and y

Problem | Submissions | Leaderboard | Discussions

Take two integers x and y as an integer input.

Then take an integer data-type variable **c**, and with the help of **c** variable swap **x** and **y**.

Process:

First assign value of **x** to **c** and print the string with the help of **System.out.println("c = " + c)**,

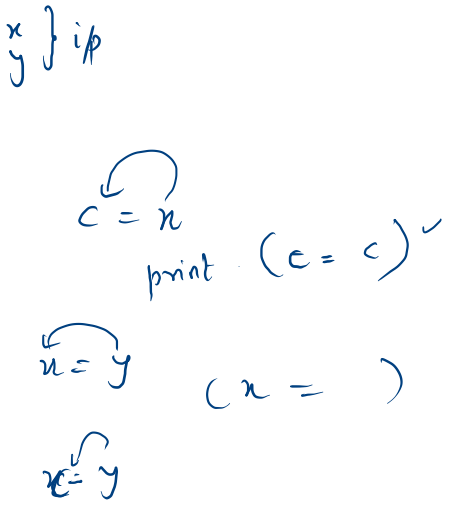
Then, assign value of **y** to **x** and print the string with the help of **System.out.println("x = " + x)**,

Then, assign value of **c** to **y** and print the string with the help of **System.out.println("y = " + y)**.

In the next line print the string with the help of **System.out.println("x = " + x)**,

In the next line print the string with the help of **System.out.println("y = " + y)**.

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int x = scn.nextInt();
        int y = scn.nextInt();

        int c = x;
        System.out.println("c = " + c);

        x = y;
        System.out.println("x = " + x);

        y = c;
        System.out.println("y = " + y);

        System.out.println("x = " + x);
        System.out.println("y = " + y);

        
    }
}
```



Swap 2 numbers without third variable.

$x =$ Sum $- x$

$y =$ Sum $- y$

1. $x = x + y$
2. $y = x - y$
3. $x = x - y$

$x = 5$

$y = 10$

$15 - 5 = 10$

$15 - 10 = 5$

2nd max

sum – max -

Swap x y z

Problem | Submissions | Leaderboard | Discussions

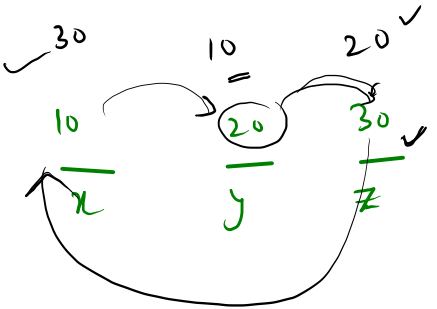
Take in three integer inputs **x**, **y** and **z**. Assign the value of **x** to **y**, **y** to **z**, **z** to **x**. Then print the value of **x**, **y**, **z** in separate lines.

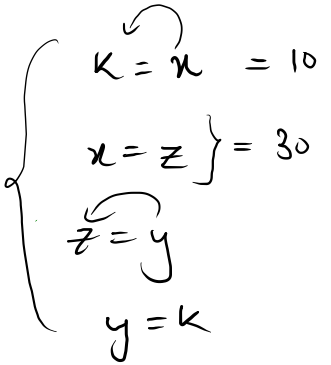
Sample Input 0

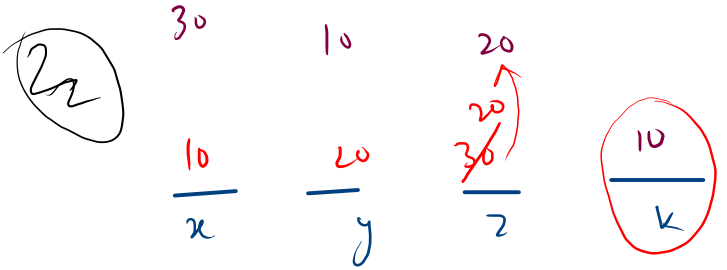
```
10
20
30
```

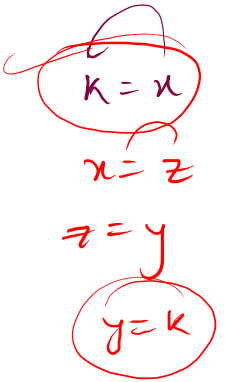
Sample Output 0

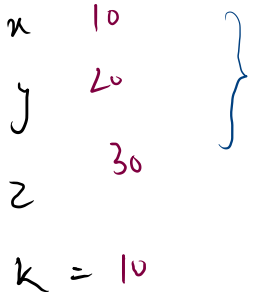
```
30
10
20
```











Sum = 10 + 20 + 30 = 60

x = ~~10~~ 30	30
y = ~~20~~ 10	10
z = 30	(20)

(- + Sum + +)

```java
import java.io.*;
import java.util.*;

public class Solution {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int x = scn.nextInt();
        int y = scn.nextInt();
        int z = scn.nextInt();

        int k = x;
        x = z;
        z = y;
        y = k;

        System.out.println(x);
        System.out.println(y);
        System.out.println(z);

    }
}
```

dry run