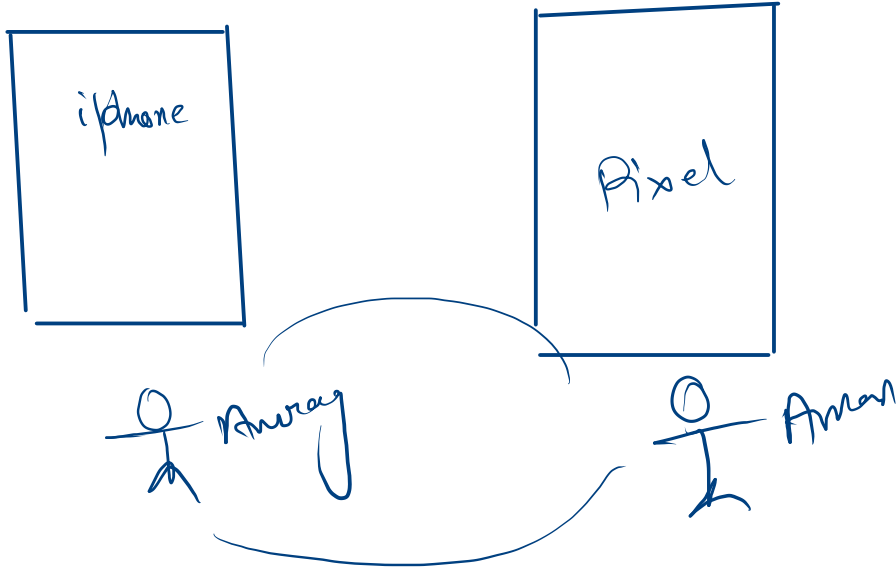


Swap.



$a = 10$     20

$b = 20$     10

swap -

$$x = 10$$

$$y = 20$$

logic

$$\left\{ \begin{array}{l} x = x + y \\ y = x - y \\ x = x - y \end{array} \right.$$

eg

$$x = 30$$

$$y = 30 - 20 = 10$$

$$x = 30 - 10 = 20$$

Swap  
using 3<sup>rd</sup>

$$x = \cancel{10} \\ 20$$

$$y = \cancel{20} \\ 10$$

$$c = 10$$

{  
  int c = x ;  
  x = y ;  
  y = c ;  
}

Sample Input 0

~~10~~  
~~20~~

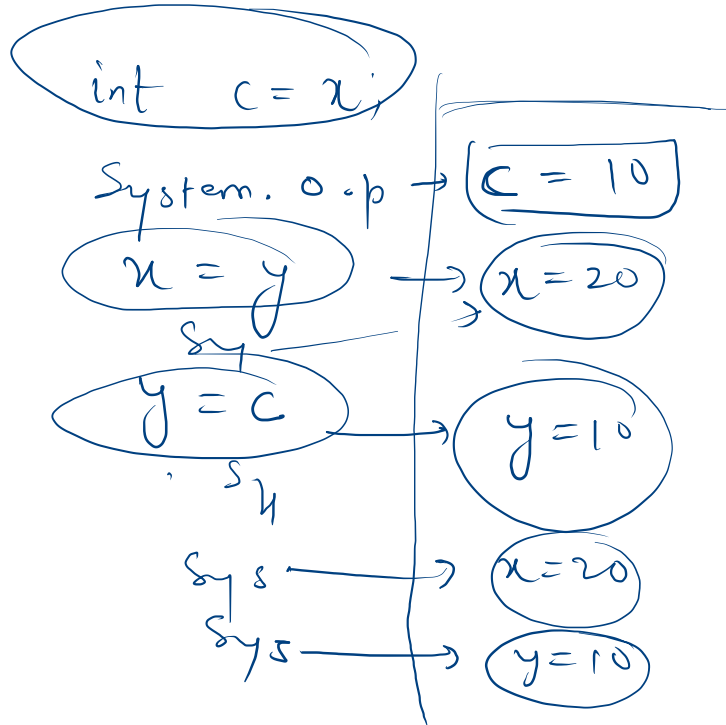
Sample Output 0

c = 10  
x = 20  
y = 10  
x = 20  
y = 10

~~x = 10~~ 20  
y = 20

c = 10

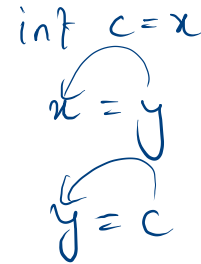
z = x  
x = y  
y = z



$$\underline{c = 5}$$

$$x = \cancel{7}$$

$$y = \cancel{5}$$



```
1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static void main(String[] args) {
7         Scanner scn = new Scanner(System.in);
8         int x = scn.nextInt();
9         int y = scn.nextInt();
10
11         int c = x;
12         x = y;
13         y = c;
14         System.out.println("c = " + c);
15         System.out.println("x = " + x);
16         System.out.println("y = " + y);
17         System.out.println("x = " + x);
18         System.out.println("y = " + y);
19     }
20 }
21 }
```



Swap  $\rightarrow$  3 numbers.

Que?

$x$	$y$	$z$
3	5	7
7	3	5

$$x = \cancel{15} \quad 7$$

$$y = 15 - 5 - 7 = \textcircled{3}$$

$$z = 15 - 3 - 7$$

$$z = 5$$

$$x = 15 - 3 - 5 = 7$$

$$x = x + y + z$$

$$y = x - y - z$$

$$z = x - y - z$$

$$x = x - y - z$$

$$\begin{array}{l}
 x = \cancel{10} \quad \cancel{60} - 30 \\
 y = 20 \quad 10 \\
 z = \cancel{30} \quad 20
 \end{array}$$

$$x =$$

$$y = 60 - 20 - 30$$

$$z = 60 - 10 - 30$$

$$x = 60 - 10 - 20$$

```

1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static void main(String[] args) {
7         Scanner scn = new Scanner(System.in);
8         int x = scn.nextInt();
9         int y = scn.nextInt();
10        int z = scn.nextInt();
11
12        x = x + y + z;
13        y = x - y - z;
14        z = x - y - z;
15        x = x - y - z;
16
17        System.out.println(x);
18        System.out.println(y);
19        System.out.println(z);
20
21    }
22 }
23

```

$$m = x$$

$$x = y$$

$$y = z$$

$$z = m$$

$$x = \cancel{10} 20$$

$$y = 20$$

$$z = 30$$

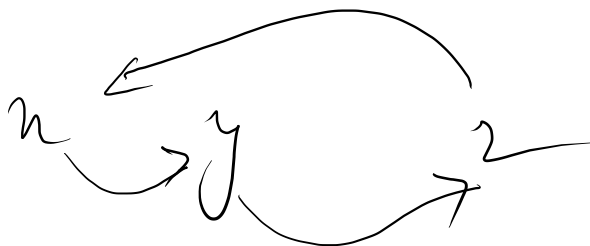
$$m = 10$$

$$m = z$$

$$z = y$$

$$y = x$$

$$x = m$$





$$m = z$$

$$z = y$$

$$y = x$$

$$x = m$$

ex  
→

10

20

30

30

10

20

ac  
→

20

30

10

$$m = x$$

$$x = y$$

$$y = z$$

$$z = m$$

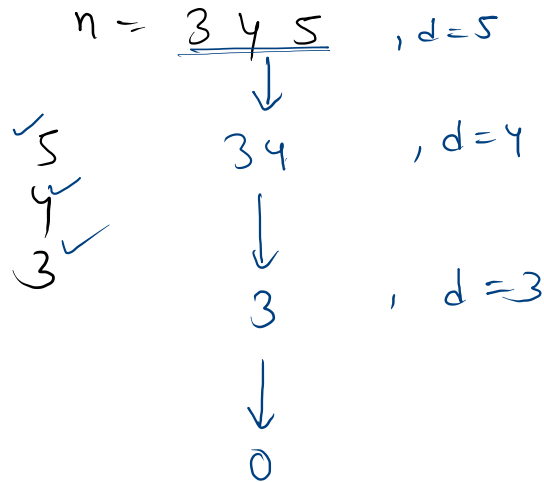
# Print digit by digit of a three digit number

Sample Input 0

345

Sample Output 0

5  
4  
3



$$\begin{array}{l} n > 0 \\ \hline d = n \% 10 \\ n = n / 10 \end{array}$$

```
1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5     public static void printDigits(int n){
6         while(n > 0){
7             int d = n % 10;
8             System.out.println(d);
9             n = n / 10;
10        }
11    }
12
13
14    public static void main(String[] args) {
15        Scanner scn = new Scanner(System.in);
16        int n = scn.nextInt();
17        printDigits(n);
18    }
19 }
```

```
1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static int getLastDigit(int n){
7         return n % 10;
8     }
9
10    public static void printDigits(int n){
11        while(n > 0){
12            int d = getLastDigit(n);
13            System.out.println(d);
14            n = n / 10;
15        }
16    }
17
18
19    public static void main(String[] args) {
20        Scanner scn = new Scanner(System.in);
21        int n = scn.nextInt();
22        printDigits(n);
23    }
24 }
```

$$n = 345$$

$$345 > 0$$

$$34 > 0$$

$$3 > 0$$

$$0 > 0$$

$$d = 3$$

5  
4  
3

```
1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static int getLastDigit(int n){
7         return n % 10;
8     }
9
10    public static void printDigits(int n){
11        while(n > 0){
12            int d = getLastDigit(n);
13            System.out.println(d);
14            n = n / 10;
15        }
16    }
17
18
19    public static void main(String[] args) {
20        Scanner scn = new Scanner(System.in);
21        int n = scn.nextInt();
22        printDigits(n);
23    }
24 }
```

# Reverse a 3 digit number

Sample Input 0

3  
234  
123  
456

$t=3$

— 234      ~~~~~> 432

— 123      ~~~~~> 321

— 456      ~~~~~> 654

Sample Output 0

432  
321  
654

Reverse n digit.

eg.  $n = 234$

↓

23

↓

2

↙

$$x = x * 10 + d$$

$$x \ y \Rightarrow xy$$
$$2 \ 3 \Rightarrow 20 + 3 = 23$$

$$d = n \% 10$$

$$d = 4$$

$$d = n \% 10$$

$$d = 3$$

$$d = n \% 10$$

$$d = 2$$

$$x = \cancel{0} \cancel{4} \cancel{43} 432$$

①

↓

④

$$x = 4 \times 10 \times 10$$

↙

$n = 43$

↙ 432.

$$48 \times 10$$

↓↓  
430

$$n = \frac{n}{10} \quad \text{and} \quad n = \text{last digit}$$

$$n = 6785 \rightarrow 678$$

$$\downarrow$$
  

$$67$$

$$\begin{array}{r} \textcircled{678} \\ 10 \overline{) 6785} \\ \underline{60} \phantom{00} \\ 78 \\ \underline{70} \phantom{00} \\ 85 \\ \underline{80} \phantom{00} \\ \textcircled{5} \end{array}$$

$$n = n / 10$$

$$n = 678$$

```

1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6
7     public static int reverse(int n){
8         int x = 0;
9         while(n > 0){
10             int d = n % 10;
11             x = x*10 + d;
12             n = n / 10;
13         }
14         return x;
15     }
16
17     public static void main(String[] args) {
18         Scanner scn = new Scanner(System.in);
19         int t = scn.nextInt();
20         for(int i = 1; i <= t; i++){
21             int n = scn.nextInt();
22             int ans = reverse(n);
23             System.out.println(ans);
24         }
25     }
26 }

```

# Print the final number xyzw...

Sample Input 0

4

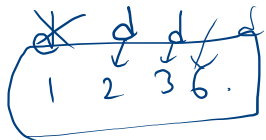
1

2

3

6

4 more digits



One thousand four...

Sample Output 0

1236

$x = 0 \times 10^3 + 1 \times 10^2 + 2 \times 10^1 + 3 \times 10^0$



$x = x \times 10 + d$

$120 + 3$

$$\begin{array}{r} 1230 \\ + 6 \\ \hline 1236 \end{array}$$



```
1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5
6     public static void main(String[] args) {
7         Scanner scn = new Scanner(System.in);
8         int t = scn.nextInt();
9         int x = 0;
10        for(int i = 1 ; i <= t; i++){
11            int d = scn.nextInt();
12            x = x*10 + d;
13        }
14        System.out.println(x);
15    }
16 }
```

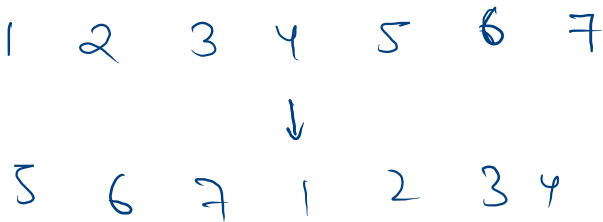
# Rotate 7-digit number to right by three

Sample Input 0

```
3
2345678
1234567
9876543
```

Sample Output 0

```
6782345
5671234
5439876
```



$$\begin{array}{ccccccccc} & & a & & & & b & & \\ 1 & 2 & 3 & 4 & 5 & 6 & 7 & & \\ \hline & & & & & & & & \end{array}$$

5671234

$$a = n / 1000$$

$$b = n \% 1000$$

$$\underline{ans} = b \times 10000 + a$$

```

1 import java.io.*;
2 import java.util.*;
3
4 public class Solution {
5     public static int rotateBy3(int n){
6         int a = n / 1000;
7         int b = n % 1000;
8
9         int ans = b * 10000 + a;
10        return ans;
11    }
12    public static void main(String[] args) {
13        /* Enter your code here. Read input from
14    }
15 }

```