⇒ Digit Traversal (/10 , %10)

Given x and y, print xy

```
int x = 3
int y = 4
```

ans = 34

} (not allowed to convert int to string)

Logic

```
  30
+  4
----
  34
```

ans = x * 10 + y

observation

← useful

Note

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int T = scn.nextInt();
    for (int i = 0; i < T; i++) {
        int x = scn.nextInt();
        int y = scn.nextInt();
        int ans = concatenateXY(x, y);
        System.out.println(ans);
    }
}

public static int concatenateXY(int x, int y) {
    int ans = x * 10 + y;
    return ans;
}
```

Print digit by digit of a three digit number

ans 3 2 1

$n = 123$

code

rem = n % 10 , n = n / 10 , n > 0

---

rem = 123 % 10 = 3 | n = 123 / 10 = 12 | 12 > 0 ✓

rem = 12 % 10 = 2 | n = 12 / 10 = 1 | 1 > 0 ✓

rem = 1 % 10 = 1 | n = 1 / 10 = 0 | 0 > 0 ✗

Code

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();
    printDigitByDigit(n);
}
public static void printDigitByDigit(int num) {
    while ( num > 0 ) {
        int rem = num % 10;
        System.out.println(rem);
        num /= 10;
    }
}
```

Note:-

%10 , /10

n = 1234567

rem = n % 1000 = 567 , ans = n / 1000

(n = same)

ans = n/100

= 12345

n = 1234567

n = 1234567/10000

n = 123

rem = 123 % 100

rem = 23

Reverse a 3 digit number

n = 123

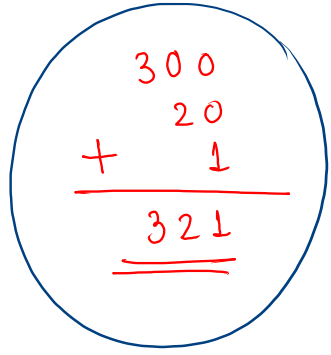
ans = 321

task1

n = 123

```
int a = n % 10 ;   // 3
int b = n / 10     // 12
int c = b % 10     // 2
int d =   b / 10   // 1
```

task2




```
ans = (a*100)+(c*10)+d;
```

Code

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int t = scn.nextInt();
    for (int i = 0; i < t; i++) {
        int num = scn.nextInt();
        int ans = reverse3DigitNum(num);
        System.out.println(ans);
    }
}
public static int reverse3DigitNum(int n) { // 123
    int a = n % 10; // 3
    int b = n / 10; // 12
    int c = b % 10; // 2
    int d = b / 10; // 1

    int reverse = (a * 100) + (c * 10) + d;
    return reverse;
}
```

Print the final number xyzw...

$n = 7$ $\quad ans = 0$ $\quad [\ ans = (ans * 10) + num\ ]$

- num = 2, $ans = (0 * 10) + 2 = 2$
- num = 5, $ans = (2 * 10) + 5 = 25$
- num = 3, $ans = (25 * 10) + 3 = 253$
- num = 0, $ans = (253 * 10) + 0 = 2530$
- num = 1, $ans = (2530 * 10) + 1 = 25301$
- num = 1, $ans = (25301 * 10) + 1 = 253011$
- num = 7, $ans = (253011 * 10) + 7 = 2530117$

Code

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();
    int ans = 0;
    for (int i = 0; i < n; i++) {
        int num = scn.nextInt();
        ans = (ans * 10) + num;
    }
    System.out.println(ans);
}
```

Reverse n-digit number (Imp)

n = 5 ans = 0 [ans = (ans * 10) + num]

- num = 3, ans = (0 * 10) + 3 = 3
- num = 2, ans = (3 * 10) + 2 = 32
- num = 0, ans = (32 * 10) + 0 = 320
- num = 1, ans = (320 * 10) + 1 = 3201
- num = 5, ans = (3201 * 10) + 5 = 32015

ans = 32015 , rev = 0

rem = ans % 10 , rev = (rev * 10) + rem , ans = ans / 10 , ans > 0

---

rem = 5 , rev = 5 , ans = 3201 , (true)

rem = 1 , rev = 51 , ans = 320 , (true)

rem = 0 , rev = 510 , ans = 32 , (true)

rem = 2 , rev = 5102 , ans = 3 , (true)

rem = 3 , rev = 51023 , ans = 0 , false

✗

code

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();
    int ans = 0;
    for (int i = 0; i < n; i++) {
        int num = scn.nextInt();
        ans = (ans * 10) + num;
    }
    System.out.println(ans);
    int result = reverseNumber(ans);
    System.out.println(result);
}
public static int reverseNumber(int n) {
    int rev = 0;
    while ( n > 0 ) {
        int rem = n % 10;
        rev = (rev * 10) + rem;
        n /= 10;
    }
    return rev;
}
```

Rotate 7-digit number to right by three

rotation

1 2 3 4 5 6 7

7 1 2 3 4 5 6

6 7 1 2 3 4 5

que

n = 1234567

ans = 5671234

logic

n = 1234567

int rem = n % 1000; //567

n = n / 1000; //1234

ans = (rem * 10000) + n

Code

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int t = scn.nextInt();
    for (int i = 0; i < t; i++) {
        int num = scn.nextInt();
        int ans = rotateBy3(num);
        System.out.println(ans);
    }
}
public static int rotateBy3(int num) {
    int rem = num % 1000;
    num = num / 1000;
    int ans = rem * 10000 + num;
    return ans;
}
```