Q: Loop to print all odd numbers less than 10

```
int i = 1
while ( i <= 10 ) {
    SOP( i );
    i = i + 2
}
```

i : 1, 3, 5, 7, 9

Q: Loop for balling all balls of an over

```
int count = 1;
while ( count <= 6 ) {
    // Bowl the ball
    count = count + 1;
}
```

balls : 1, 2, 3, 4, 5, 6

```
int count = 0;
while ( count <= 6 ) {
    // Bowl the ball
    count = count + 1;
}
```

balls : 0, 1, 2, 3, 4, 5, 6

Go from : 1-6   OR   0-5

Q :   Given a no N. Print the
      last digit

      N = 4358   .Sop (N % 10)
                          ↳ 8

Q :   Given a no N. Print all digits in
      new line.

      N = 6341
      Output
      ⌐ 1   N/10 ⌐ 6341 % 10 ⇒ 1
      | 4   N/10 ⌐ 634 % 10 ⇒ 4
      | 3   N/10 ⌐ 63 % 10 ⇒ 3
      | 6   N/10 ⌐ 6 % 10 ⇒ 6
                        ↳ 0 ⟶ Break the loop

         int N = Scn.nextInt();
         while (N > 0) {
              SOP(N % 10);
              N = N/10;
         }

N	N%10	N= N/10
6341	1	6341/10 = 634
634	4	634/10 = 63
63	3	63/10 = 6
6	6	6/10 = 0
0	→ Break	

What if input is 0?

↳ Nothing

```
int N= scn.nextInt();
while (N≥0) {
    SOP(N%10);
    N= N/10;
}
```

⇒ Infinite Loop

Wrong ans

N	N≥0	N%10	N= N/10
3751	T	1	375
375	T	5	37
37	T	7	3
3	T	3	0
0	T	0	0
0	T	0	0
0	T	0	0

if (N == 0) {

```
              SOP(0)
    }
    else {
       while (N > 0) {
           SOP( N % 10 );
           N = N / 10;
       }
    }
}
```

What if n is -ve ?

digits (-6351) = digits (6351)

```
    if ( N == 0) {
        SOP(0)
    }
    else {
        if ( N < 0 ) {
            N = N × -1;
        }
        while (N > 0) {
            SOP( N % 10 );
            N = N / 10;
        }
    }
}
```
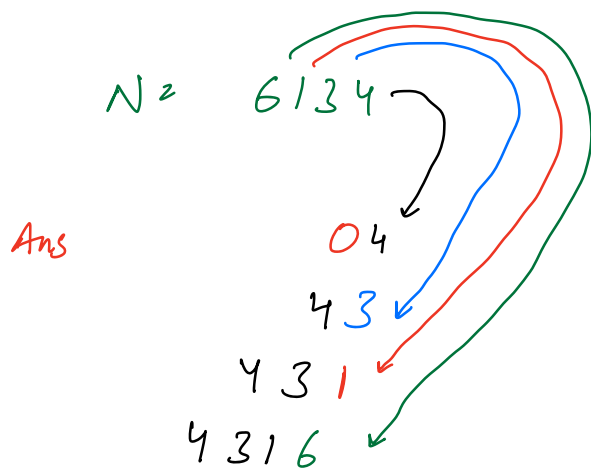
Q: Given N, print sum of digits

N = 6231 ⟹ 12
N = 10 ⟹ 1
N = 7 ⟹ 7

```
if ( N < o ) {
        N = N * -1;
}
sum = 0;
while ( N > 0 ) {
     int d = N % 10;
     sum  =   sum + d;
     N =   N/10;
}
 SOP ( sum )
```

Q: Given N, Reverse the number

N = 6321 ⟶ 1236
N = 712 ⟶ 217
N = 100 ⟶ 1

N = 314
d = 5

Ans: 3145 $=$ N x 10 + d
$=$ 314 x 10 + 5
$=$ 3140 + 5
$=$ 3145

N = 6134

Ans   0 4
        4 3
      4 3 1
    4 3 1 6

```
int N = Scn.nent Int()
int ans = 0;
while ( N > 0) {
    int d = N % 10;
    ans = ans x 10 + d;
    N = N / 10;
}
SOP ( ans )
```

N = 6341
Output : 1436
ans : 1436

Break : 10:15

```
// initialisation
   int i=1;
while ( i<=10) {  // condition
     SOP(i);   }  // statements

   i++;   // update
}


for( initialisation ; condition ; update ){

        SOP(i);   }  // statements

   }


   for( int i=1; i <= 10; i = i+1){

           SOP(i);
   }
Output :  1,2, 3,4, ....., 10, 11
                                 ↓
                           Loop breaks


   i = i+1,    i++ ,  ++i ,  i += 1


Q: Print odd numbers from 1 to 10
      using for loop
```

```
for(int i=1; i<=10; i=i+2){
        SOP(i);
}

for( int i=1; i<=10; i++){
        if (i%2==1){
                SOP(i);
        }
}
```

FACTORS

↳ Factor of an integer N is an
  integer d such that N%d==0

12 ⇒ 1, 2, 3, 4, 6, 12
15 ⇒ 1, 3, 5, 15

Property of factors

min factor of N ⇒ 1
max factor of N ⇒ N

Range of factors of N ⇒ $[1, N]$

```
for(int i=1; i<=N; i++){
```

```
    if ( N % i == 0 ){
            SOP(i);
    }
}
```

Prime Numbers

↳ A number which has exactly 2 factors

```
factor(1) ⇒ 1            x
factor(3) ⇒ [1,3]        ✓
factor(6) ⇒ [1 2 36]     x
factor(11) ⇒ [1 11]      ✓
```

Q: Given N, Print whether its prime or not

```
int cnt = 0;
for(int i=1; i<= N; i++){

        if ( N % i == 0){
                cnt = cnt+1;
        }
}
if( cnt == 2 ){
    SOP("Prime");
}
```

```
    else &
         SOP( "Not prime");
    3

    N = 12
```

i	i ≤ 12	cnt	
1	T	1	
2	T	2	
3	T	3	break
4	T	4	
5	F	4	
!			
12	T	6	

```
     int  cnt = 0;
     for ( int  i=1;  i ≤ N;  i++ )&
           if ( N % i == 0 )&
                 cnt =  cnt+1;
          3
          if ( cnt > 2 )&
               break;              // Breaks  1st
          3                        & parent  loop

    3
     if ( cnt == 2 )&
          SOP(" Prime ");
```

```
    }
   else {
        SOP("Not prime");
   }
}
```

① Loop {
② loop {
③ break
④ }
⑤ }

```
for( int i=1; i <= 10; i++){

        SOP(i);
        if (i%2 == 0){
            continue;
        }
        SOP( i + " is odd");
}
```