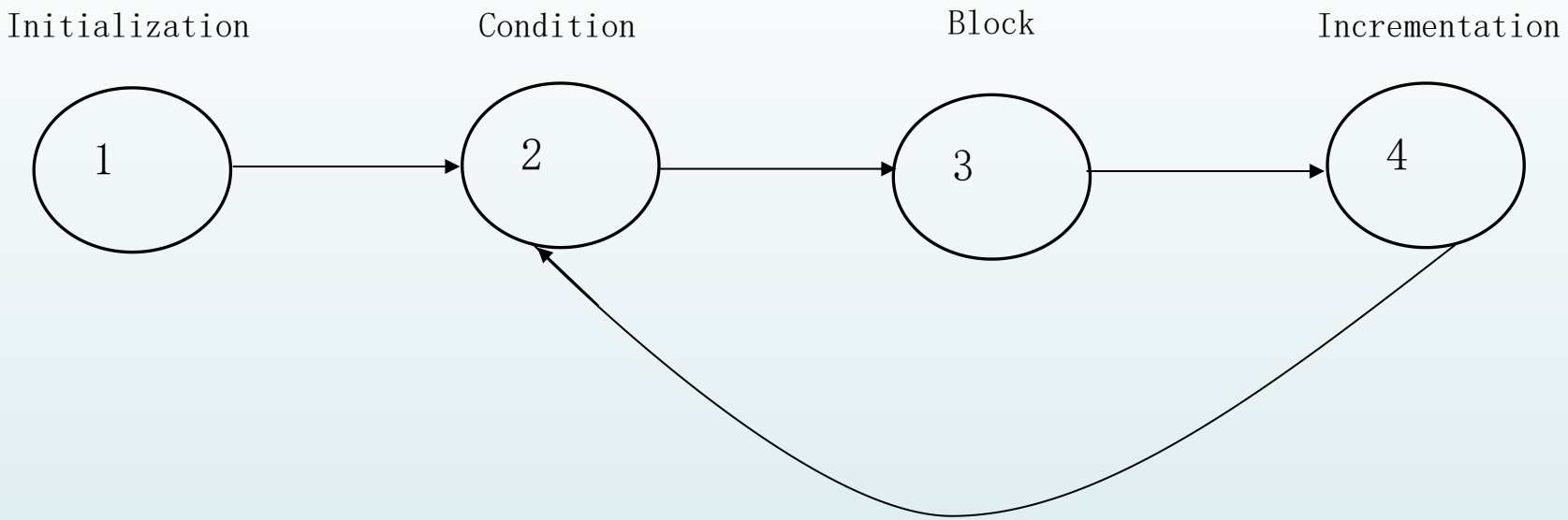
Loops: For & While



For & While

For loop

```
for (i=0;i<10;i++)
    printf( ‘’ %d’ ’ ,
i);
```

While loop

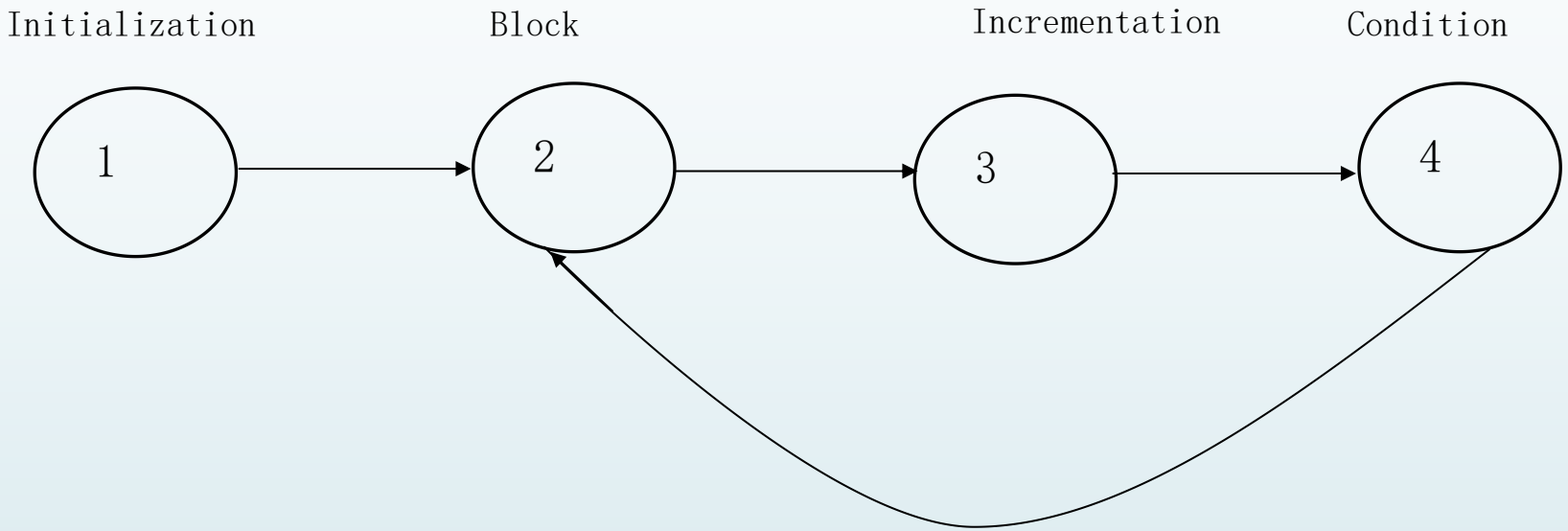
```
i=0;
While(i<10)
{

printf( ‘’ %d’ ’ ,
i);
        i++;
}
```

For & While

```
li $t0,0 # initialization i=0
Loop:
beq $t0, 10, End # Condition
# Bloc of instructions
li $v0,1
move $a0,$t0
Syscall # Print i
addi $t0,$t0,1 # incrementation i++
j Loop
End:
```

Do While



Do While

Do While loop

```
i=0;
do
{

printf( ‘’ %d’ ’ ,
i);
        i++;
} while(i<10);
```

Do While

```
li $t0,0 # initialization i=0
Loop:
# Bloc of instructions
li $v0,1
move $a0,$t0
Syscall # Print i
addi $t0,$t0,1 # incrementation i++
blt $t0, 10, Loop# Condition
```

Exercises

Exercise 1

Compute the sum of of N integer values entered at the keyboard.

Exercise 2

Write a program to determine the number of digits in a natural number.

Exercisel

```
.data
IN: .asciiz "Enter N: "
II: .asciiz "Enter integer: "
OS: .asciiz "The sum is: "
.text
li $v0,4
la $a0,IN
syscall
li $v0,5
syscall
move $t1,$v0
li $t0,0 # i=0
li $t2,0 # S=0
For:
beq $t0,$t1,End
li $v0,4
la $a0,II
syscall
li $v0,5
syscall
add $t2,$t2,$v0
addi $t0,$t0,1
j For
End:
li $v0,4
la $a0,OS
syscall
li $v0,1
move $a0,$t2
syscall
```

Exercise 2

```
.data
IN: .asciiz "Enter N: "
ON: .asciiz "Number is: "

.text
li $v0,4
la $a0,IN
syscall
li $v0,5
syscall
move $t1,$v0 #N
li $t0,0
DoWhile:
div $t1,$t1,10
addi $t0,$t0,1
bgt $t1,0,DoWhile
li $v0,4
la $a0,ON
syscall
li $v0,1
move $a0,$t0
syscall
```