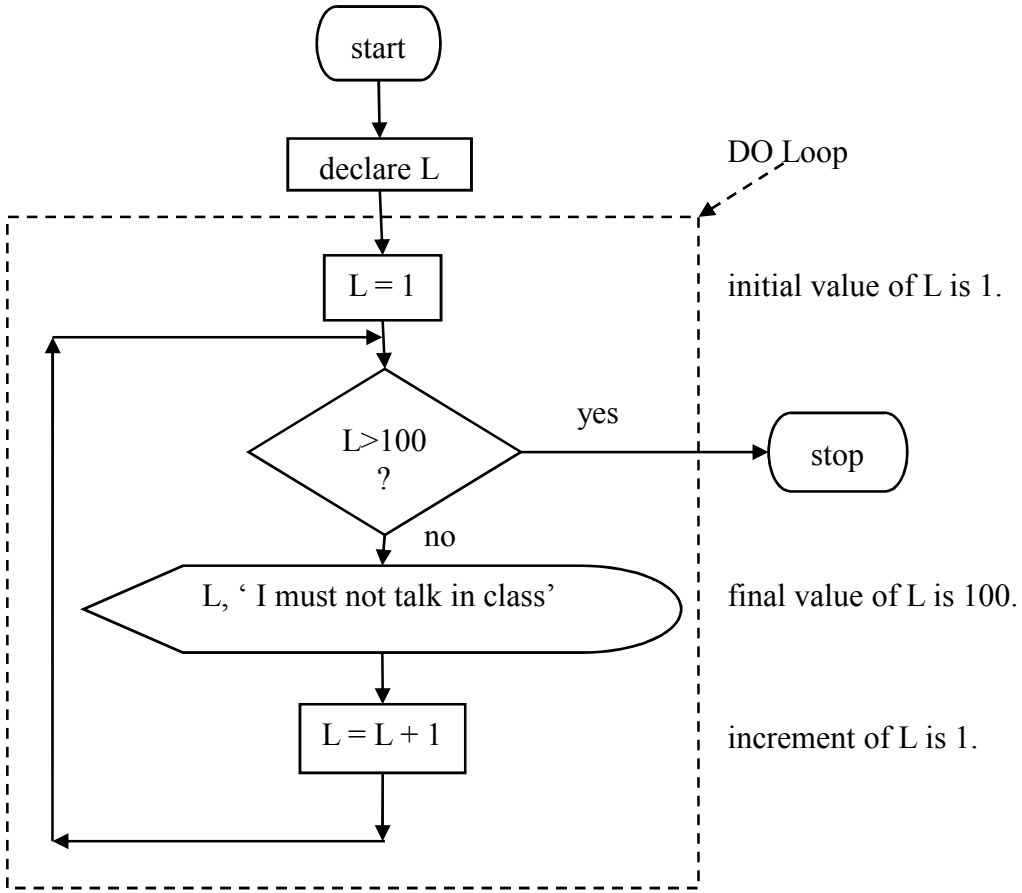
Do Loop

The syntax of DO loop:

DO variable = *initial_value*, *final_value*[, *increment*]
[statements]
END DO

Example:

```
PROGRAM LINES
! Illustration of DO-loops
IMPLICIT NONE
INTEGER L ! a counter
DO L = 1, 100 ! start of repeated section
PRINT *, L, ' I must not talk in class'
END DO ! end of repeated section
END PROGRAM LINES
```



Do Loop

The syntax of DO loop:

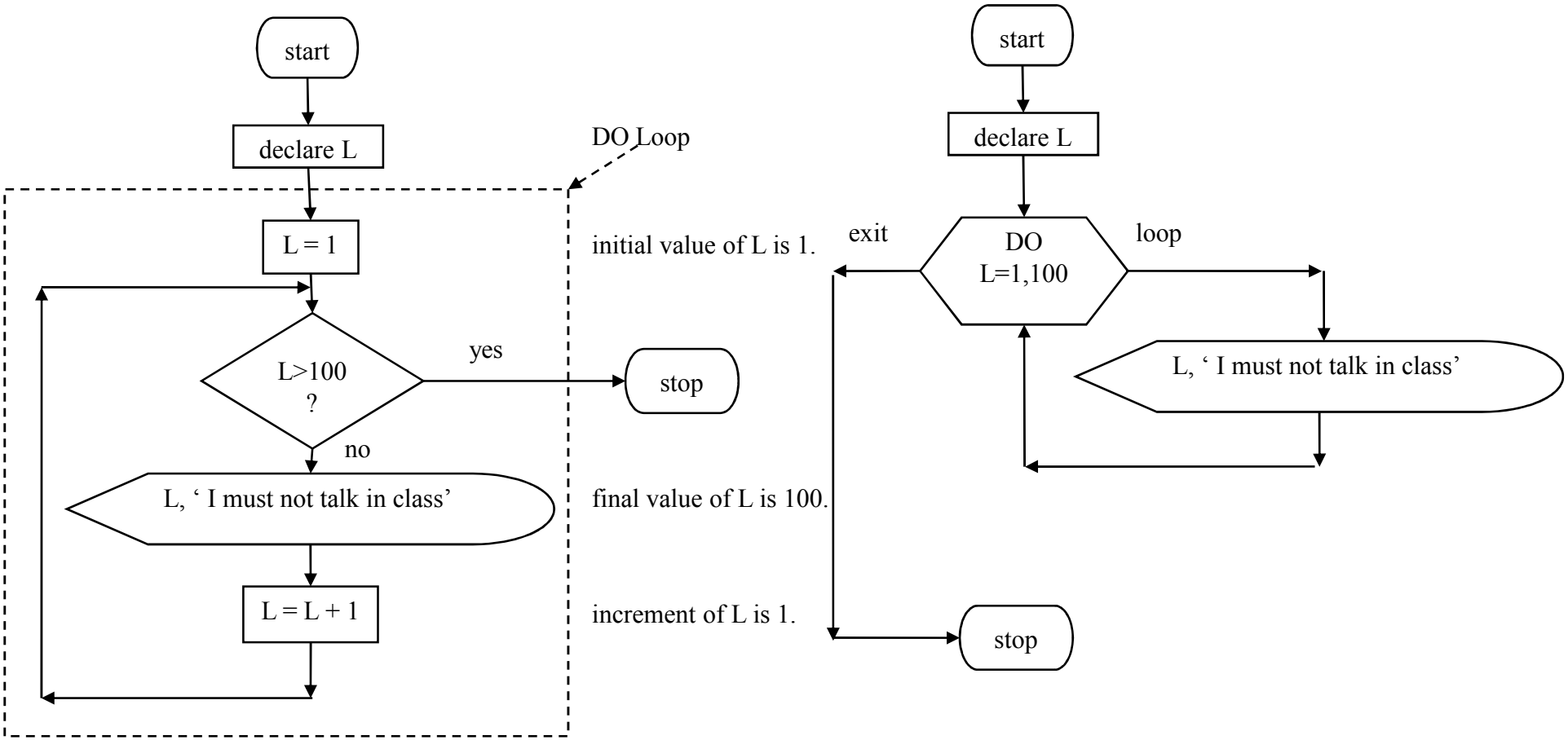
DO label variable = *initial_value*, *final_value*[, *increment*]
[statements]

label **CONTINUE**

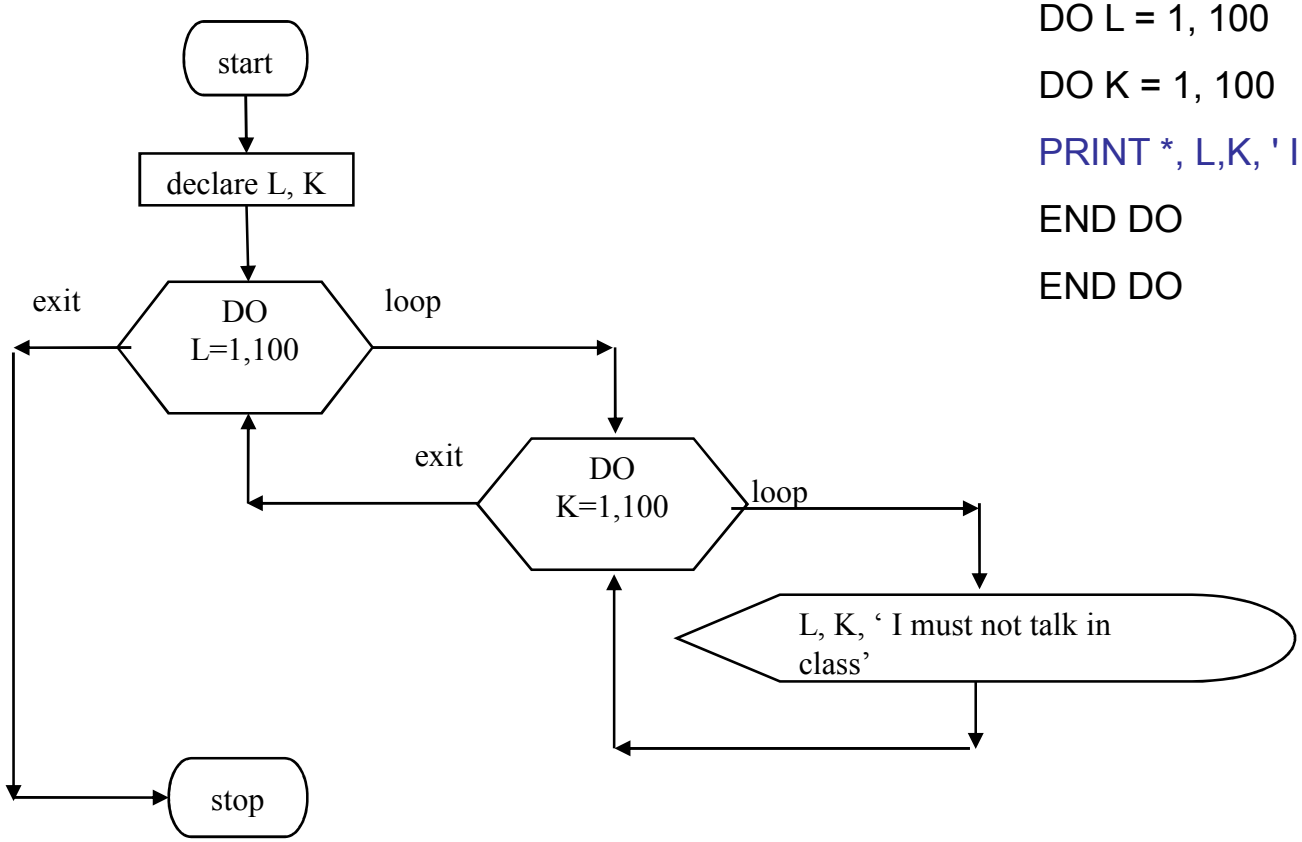
Example:

```
        PROGRAM LINES
        ! Illustration of DO-loops
        IMPLICIT NONE
        INTEGER L ! a counter
        DO 100 L = 1, 100 ! start of repeated section
        PRINT *, L, ' I must not talk in class'
100     CONTINUE ! end of repeated section
        END PROGRAM LINES
```

Do Loop - flowchart



Nested Do Loops

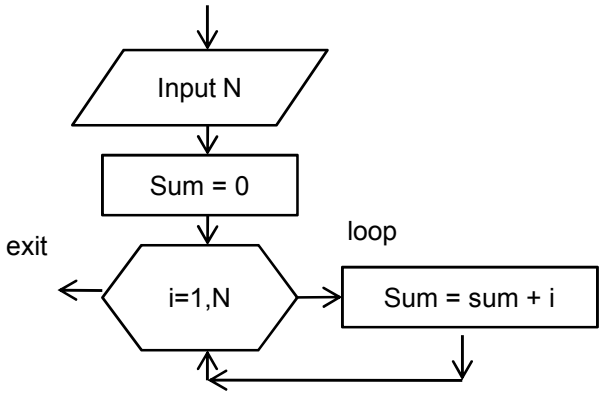



```
DO L = 1, 100
DO K = 1, 100
PRINT *, L,K, ' I must not talk in class‘
END DO
END DO
```

Examples

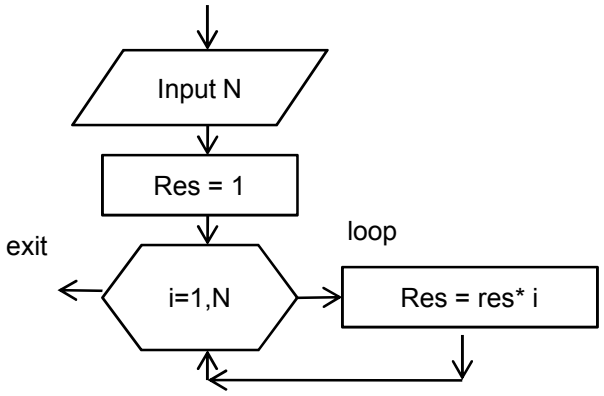
1. N: input from keyboard; calculate sum=1+2+3+….N

```
Read(*,*) N
Sum = 0
Do i = 1, N
Sum = sum + i
End Do
```



2. N: input from keyboard; calculate res=1*2*3*….*N

```
Read(*,*) N
res = 1
Do i = 1, N
res = res * i
End Do
```



Examples

3. If N = 10, what is the output of the program?

```
Read(*,*) N
Sum = 0
Do i = N, 2, -2
Sum = sum + i
End Do
```

Ans: 30 (10+8+6+4+2)

Examples

4. What is the output of the program?

```
DO I = 1, 3                                  ! start of outer loop
PRINT *, '**********I = ', I, '********'
DO J = 1, 2                                  ! start of inner loop
PRINT *, I, ' * ' ,J , ' = ', I*J
END DO
PRINT *                                      ! a blank line
END DO                                       ! end of repeated section
```

Ans:

```
**********I = 1 ********
1*1 = 1
1*2 = 2
**********I = 2 ********
2*1 = 2
2*2 = 4
**********I = 3 ********
3*1 = 3
3*2 = 6
```

Examples

5. What is the output of the program?

```
X0 = 0.0                          ! set initial value
DX = 0.2                          ! set increment
DO I = 1, 10, 2                   ! start of repeated section
X = X0 + (I - 1) * DX             ! actual value to be output
PRINT *, X
END DO
```

Ans:
```
0.0     (i=1)
0.4     (i=3)
0.8
…….
1.6     (i=9)
```