

# 4. CYCLIC OPERATORS

## 4.1. OPERATOR FOR...

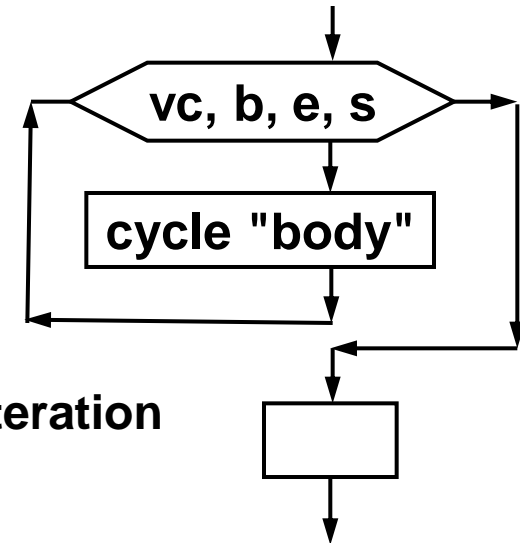
Stremnev A. Y., 2017

### CYCLE

sequence of actions ("body") which are repeated in program several times

```
For <variable-counter> = <begin> To <end> [Step <step-value>]  
<actions>  
[Exit For]  
<actions>  
Next <variable-counter>
```

} cycle "body"



**actions** - any useful operations (cycle "body")

**variable-counter (vc)** - defines the number of current iteration

**begin (b)** - start value of variable-counter

**end (e)** - last value of variable-counter for last cycle repetition

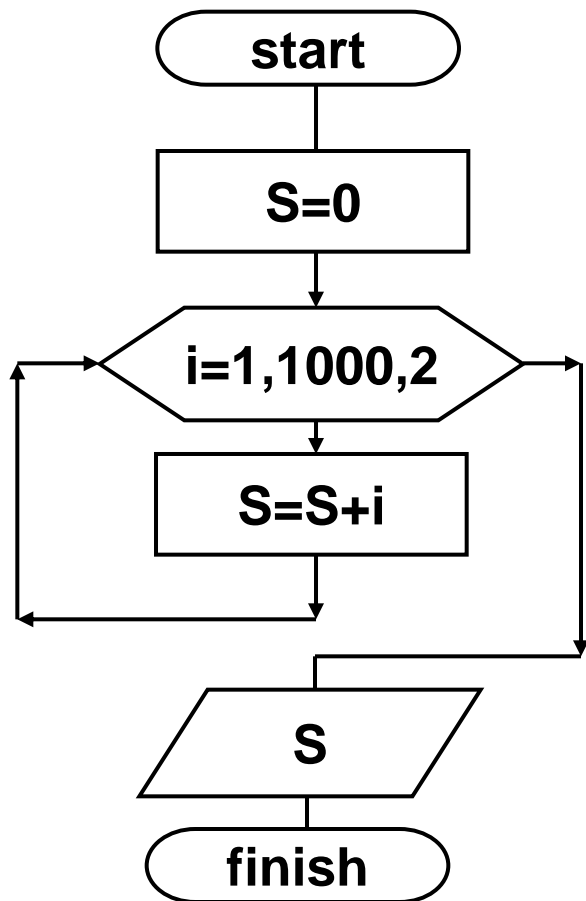
**step-value (s)** - increment for variable-counter after each iteration

**Exit For** - operator for finishing cycle before last value of variable-counter

# 4. CYCLIC OPERATORS

## 4.1. OPERATOR FOR...

Program for calculating sum of all odd numbers in the range from 1 to 1000



Sub Program\_1()

Dim i As Integer, S As Double

S = 0

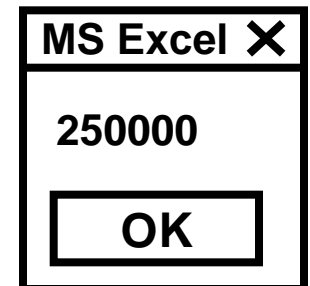
For i = 1 To 1000 Step 2

S = S + i

Next i

MsgBox S

End Sub

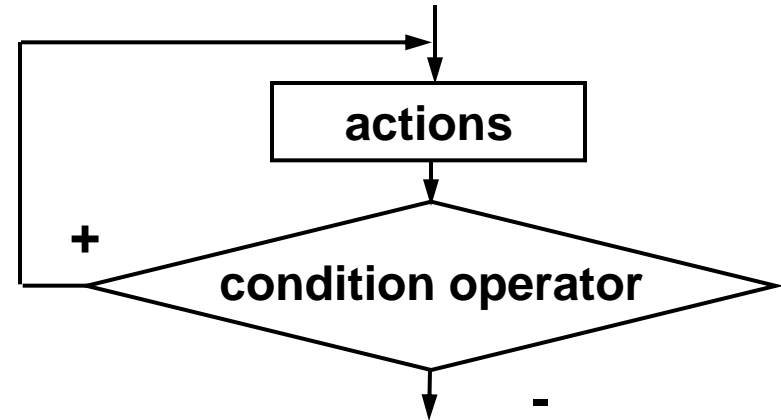


# 4. CYCLIC OPERATORS

## 4.2. OPERATOR DO...WHILE...

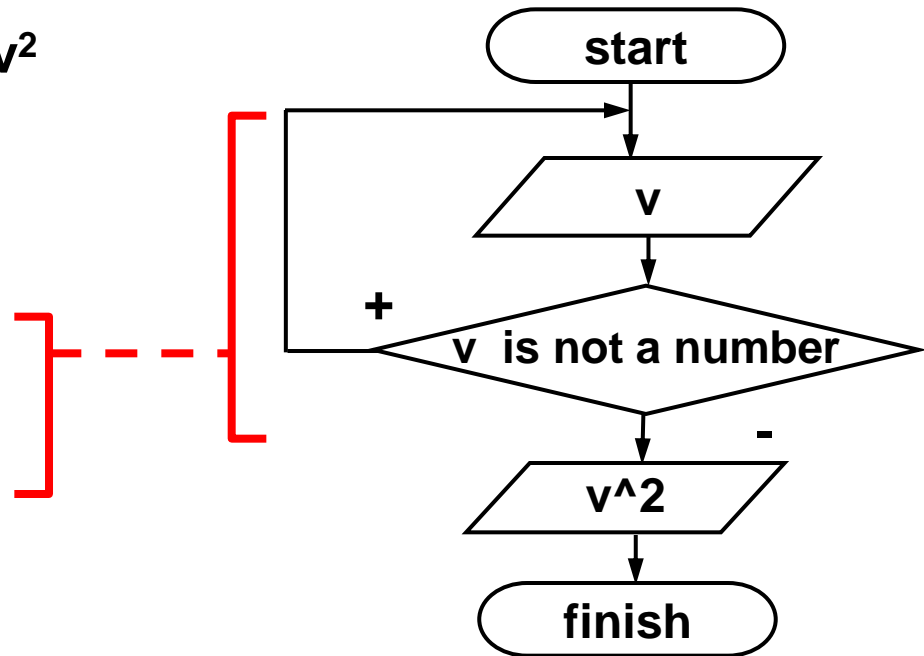
### Do...WHILE... with post-condition

<b>Do</b>	<b>DO</b>
<b>&lt;actions&gt;</b>	<b>some actions</b>
<b>[Exit Do]</b>	<b>WHILE...</b>
<b>&lt;actions&gt;</b>	
<b>Loop While &lt;condition operator&gt;</b>	



Program for calculating equation:  $v^2$   
(number 'v' is typed by user)

```
Sub Program_2()  
Dim v As Variant  
Do  
v = InputBox("Input a number:")  
Loop While IsNumeric(v) = False  
MsgBox v^2  
End Sub
```



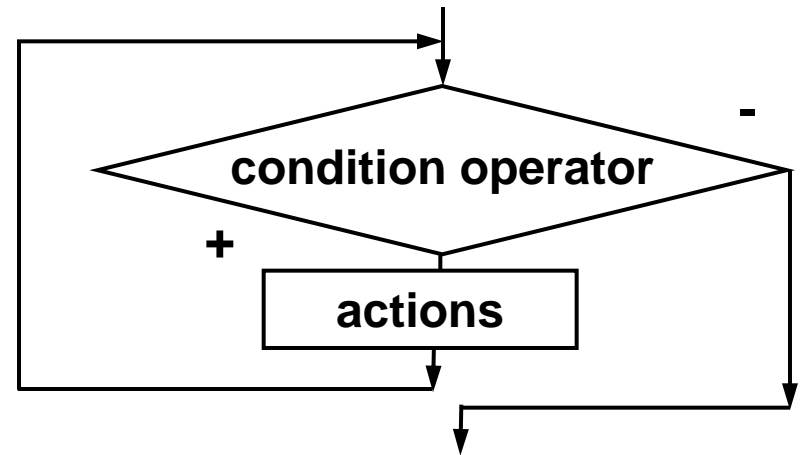
# 4. CYCLIC OPERATORS

## 4.2. OPARATOR DO...WHILE...

### Do...WHILE... with pre-condition

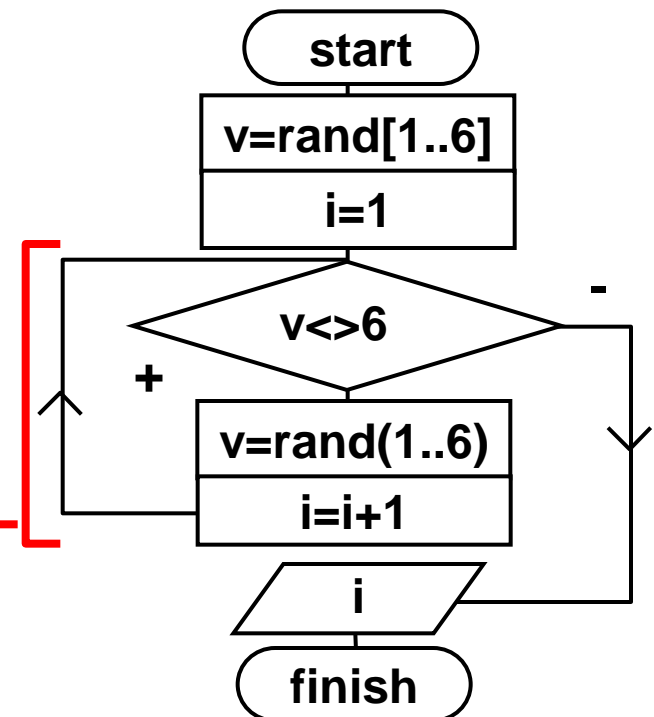
Do While <condition operator>  
<actions>  
[Exit Do]  
<actions>  
Loop

*WHILE ... DO  
something*



```
Sub Program_3()  
Dim v As Integer  
Dim i As Integer  
v = Rnd() * 5 + 1  
i = 1  
Do While v <> 6  
v = Rnd() * 5 + 1  
i = i + 1  
Loop  
MsgBox "Amount of attempts = " & i  
End Sub
```

The program throws out a playing cube waiting for side with value of 6. The program must show the amount of attempts after that.

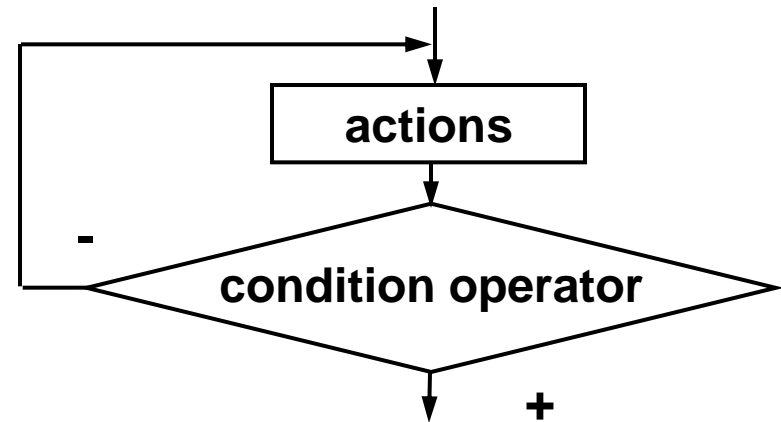


# 4. CYCLIC OPERATORS

## 4.3. OPERATOR DO...UNTIL...

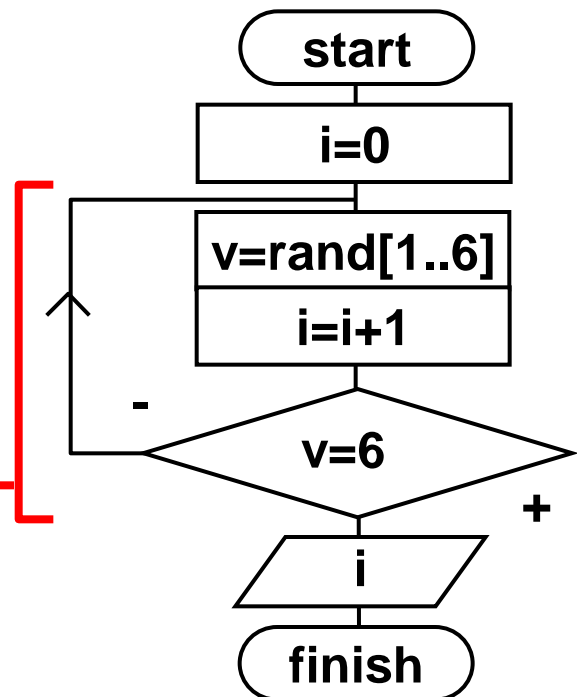
**Do**  
**<actions>**  
**[Exit Do]**  
**<actions>**  
**Loop Until <condition operator>**

**DO**  
**something**  
**UNTIL ...**



```
Sub Program_4()  
Dim v As Integer  
Dim i As Integer  
i = 0  
Do  
v = Rnd() * 5 + 1  
i = i + 1  
Loop Until v=6  
MsgBox "Amount of attempts = " & i  
End Sub
```

The program throws out a playing cube waiting for side with value of 6. The program must show the amount of attempts after that.

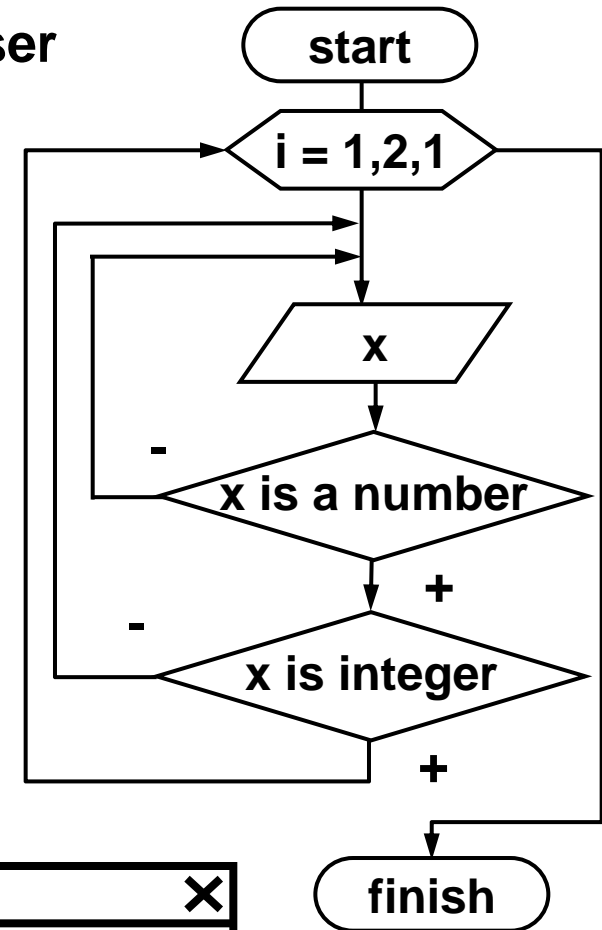
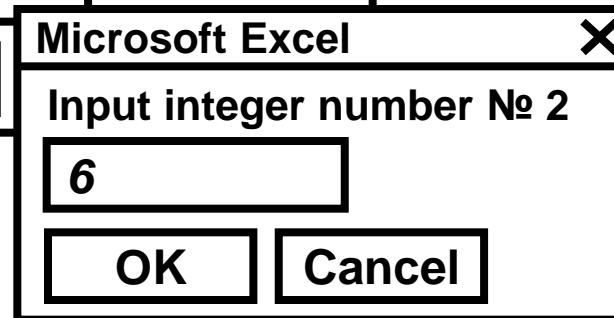
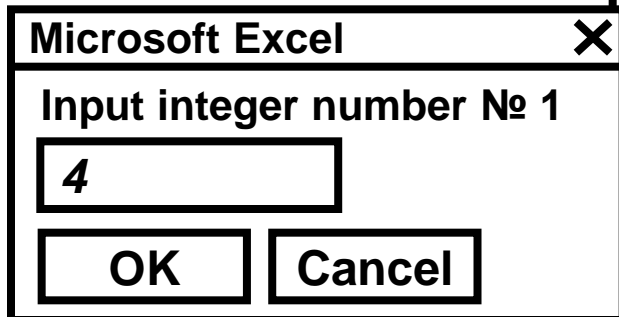
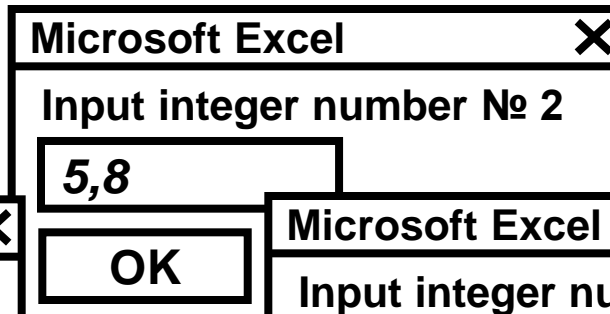
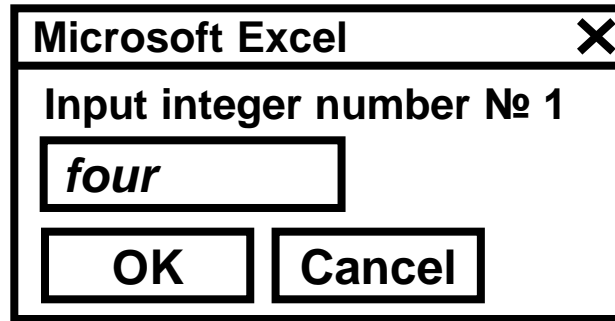


# 4. CYCLIC OPERATORS

## 4.4. CYCLE IN CYCLE

Program for getting two integer numbers from user

```
Sub Program_5()  
Dim i As Integer  
Dim x As Variant  
For i = 1 To 2 Step 1  
Do  
Do  
x = InputBox(" Input integer number № " & i)  
Loop Until IsNumeric(x)  
Loop Until x = CInt(x)  
Next i  
End Sub
```



# 4. CYCLIC OPERATORS

## 4.5. CONDITIONAL STATEMENTS IN CYCLES

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```
Sub Program_6()  
Dim i As Integer  
Dim x As Variant  
Dim xmax As Double  
Dim pr As Boolean  
pr = False  
For i = 1 To 3 Step 1  
Do
```

```
    x = InputBox("Input number № " & i)
```

```
Loop Until IsNumeric(x)
```

```
If pr = False Then
```

```
    xmax = x
```

```
    pr = True
```

```
Elseif x > xmax Then
```

```
    xmax = x
```

```
End If
```

```
Next i
```

```
MsgBox "max = " & xmax
```

```
End Sub
```

Search of max value  
among three  
numbers, which are  
entered by user

