

6) Looping

Instructions: DO, LEAVE and ITERATE

Resources: TSO/E REXX User's Guide
Chapter 4. Controlling the Flow Within an Exec

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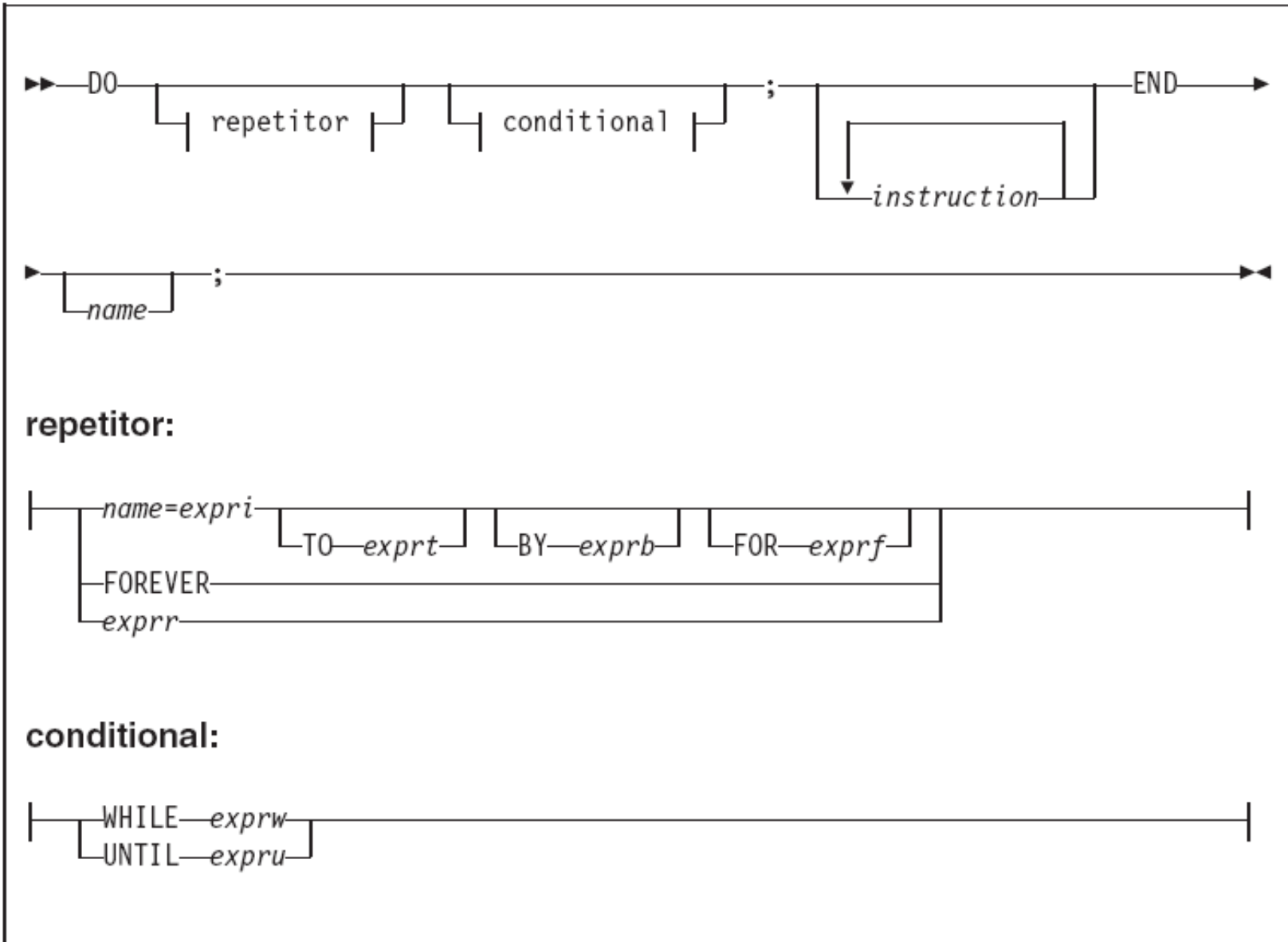
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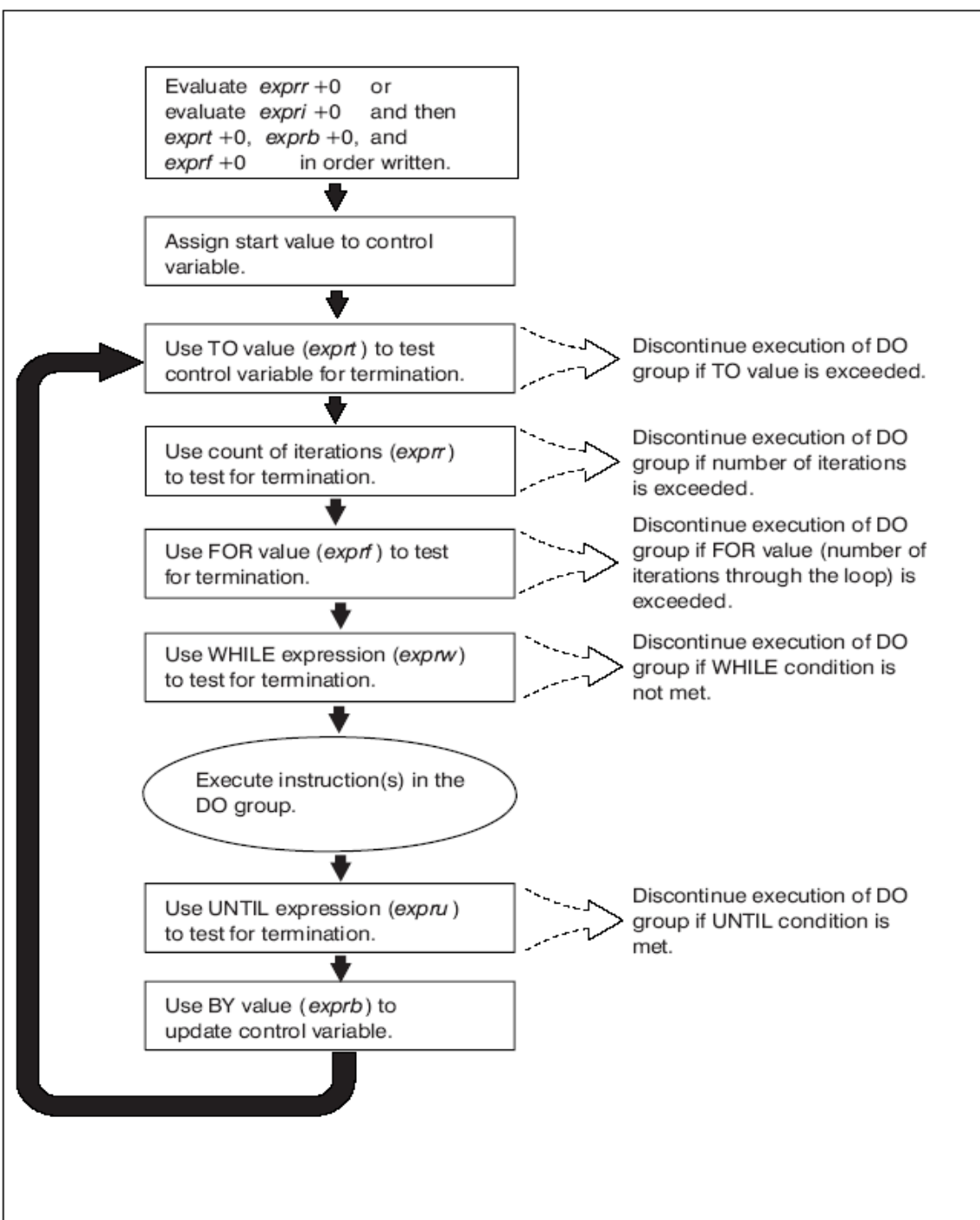
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DO



DO



DO with repetitor

```
LOOP = 0
do 5
  LOOP = LOOP + 1
  say LOOP
End
```

Output:

```
1
2
3
4
5
***
```

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DO FOREVER

```
DO FOREVER
  SAY "Your name please : "
  PARSE UPPER EXTERNAL name
  PARSE VAR name fore_name .
  IF fore_name = "BOB" THEN DO
    EXIT
  END
END
```

```
Your name please :
sdfgfd
Your name please :
fg
Your name please :
BOB
***
```

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Test Exercise 61

- Write a REXX program to loop 5 times and show even numbers to the screen only.

```
Count is : 2  
Count is : 4  
***
```

DO count = n TO m BY o

```
DO loop_counter = 1 TO 5 BY 1  
  SAY loop_counter  
END
```

```
1  
2  
3  
4  
5  
***
```


Test Exercise 6.2

- Write a REXX program to count to 10 showing only every third number.

```
1  
4  
7  
10  
***
```

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DO WHILE

```
loop_counter = 0
DO WHILE loop_counter < 5
  loop_counter = loop_counter + 1
  SAY loop_counter
END
```

```
1
2
3
4
5
***
```

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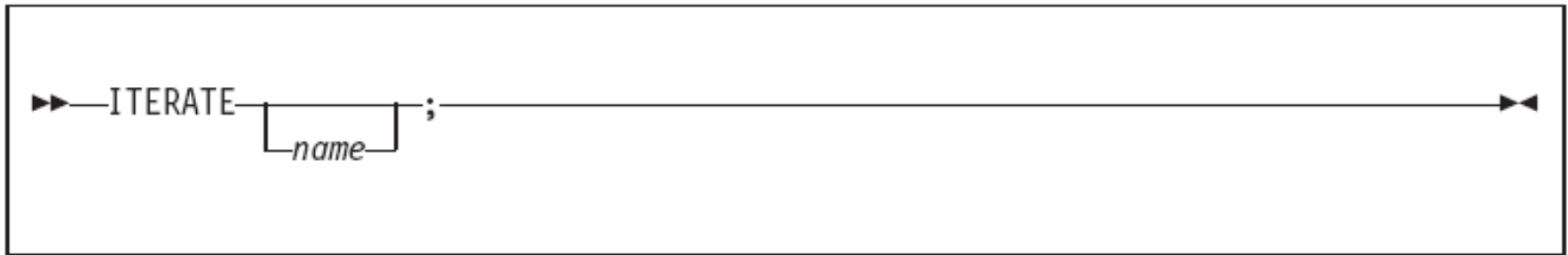
DO UNTIL

```
loop_counter = 0
DO UNTIL loop_counter < 5
  loop_counter = loop_counter + 1
  SAY loop_counter
END
```

```
1
***
```

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ITERATE



ITERATE alters the flow within a repetitive DO loop (that is, any DO construct other than that with a simple DO).

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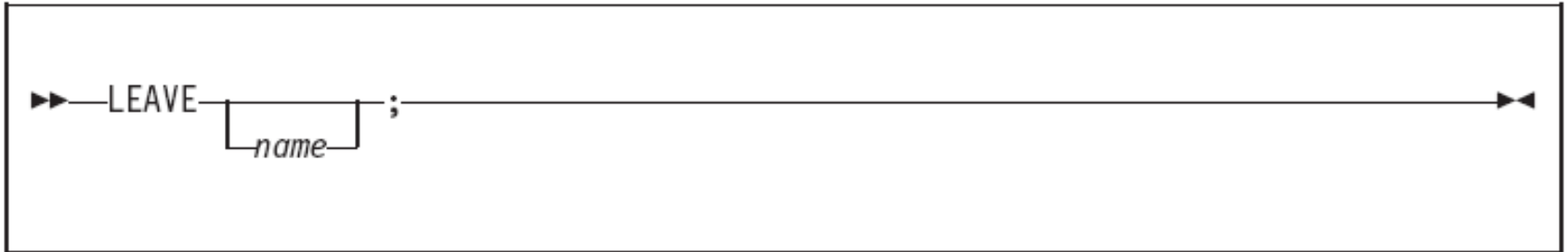
ITERATE

```
DO loop_counter = 1 TO 5
  IF loop_counter = 3 THEN DO
    ITERATE
  END
  SAY loop_counter
END
```

```
1
2
4
5
***
```

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LEAVE



LEAVE causes an immediate exit from one or more repetitive DO loops (that is, any DO construct other than a simple DO).

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LEAVE

```
DO loop_counter = 1 TO 5
  IF loop_counter = 3 THEN DO
    LEAVE
  END
  SAY loop_counter
END
```

```
1
2
***
```

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Looping with Compound variables

```
DO loop_counter = 1 TO 3
  PARSE UPPER EXTERNAL new_name
  full_name.loop_counter = new_name
END
DO test_counter = 3 TO 1 BY -1
  SAY full_name.test_counter
END
```

```
BOB
GARY
FRED
FRED
GARY
BOB
***
```

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Work section 6.1

- Write a REXX program which will:
 - ask for 10 numbers from the user
 - assign the numbers to compound variables
 - output each variable and its value
 - output the average of the 10 variables

```
Please enter a number:
```

```
1
```

```
Please enter a number:
```

```
2
```

```
Please enter a number:
```

```
3
```

```
Please enter a number:
```

```
4
```

```
Please enter a number:
```

```
5
```

```
1  
2  
3  
4  
5
```

```
Average = 3
```

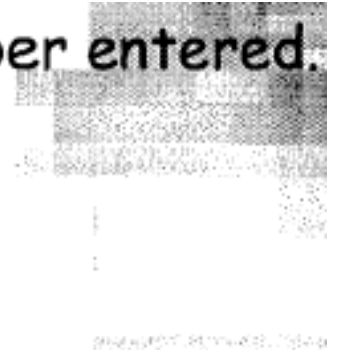
```
***
```

Work section 6.2

- Re-write Work section 2.1 to allow the user to enter their name as many times as they want.
- Stop the program if they don't enter any more names.

Additional Program

- Re-write program 6.1 and find the highest number entered.
- Also display the numbers in reverse order.



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6) Looping

Instructions: DO, LEAVE and ITERATE

Resources: TSO/E REXX User's Guide
Chapter 4. Controlling the Flow Within an Exec

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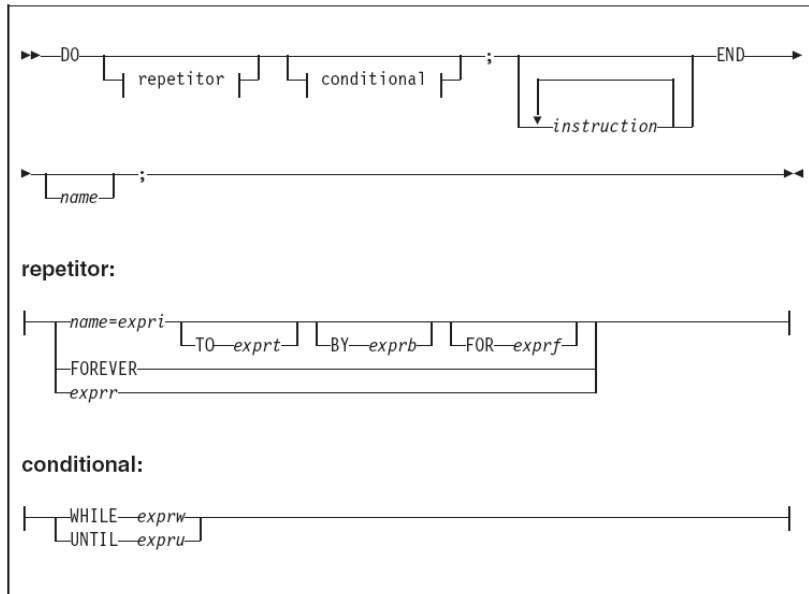
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DO

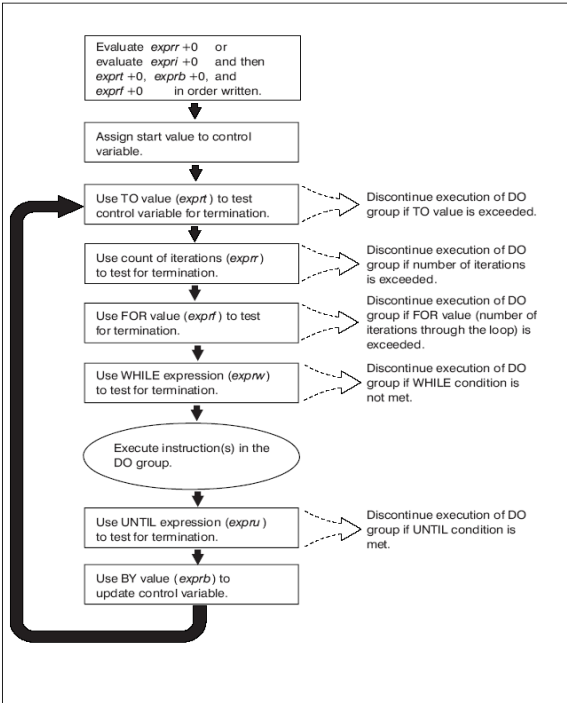


DO groups instructions together and optionally processes them repetitively. During repetitive execution, a control variable (*name*) can be stepped through some range of values.

If you specify neither *repetitor* nor *conditional*, the construct merely groups a number of instructions together. These are processed one time.

If a DO instruction has a repetitor phrase or a conditional phrase or both, the group of instructions forms a **repetitive DO loop**. The instructions are processed according to the repetitor phrase, optionally modified by the conditional phrase.

DO



Concept of a DO loop.

DO with repetitor

```
LOOP = 0
do 5
  LOOP = LOOP + 1
  say LOOP
End
```

Output:

```
1
2
3
4
5
***
```

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Write it and test it.

DO FOREVER

```
DO FOREVER
  SAY "Your name please : "
  PARSE UPPER EXTERNAL name
  PARSE VAR name fore_name .
  IF fore_name = "BOB" THEN DO
    EXIT
  END
END
```

```
Your name please :
sdfgfd
Your name please :
fg
Your name please :
BOB
***
```

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Write it and test it.

See 'MCOE.REXA.REXX(RX20163)'

Test Exercise 61

- Write a REXX program to loop 5 times and show even numbers to the screen only.

```
Count is : 2  
Count is : 4  
***
```

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Write it and test it.

See 'MCOE.REXA.REXX(RX20164)'

DO count = n TO m BY o

```
DO loop_counter = 1 TO 5 BY 1
  SAY loop_counter
END
```

```
1
2
3
4
5
***
```

Write it and test it.

Test Exercise 6.2

- Write a REXX program to count to 10 showing only every third number.

```
1  
4  
7  
10  
***
```

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Write it and test it

```
do LC = 1 to 10 by 3  
  say LC  
end
```

DO WHILE

```
loop_counter = 0
DO WHILE loop_counter < 5
  loop_counter = loop_counter + 1
  SAY loop_counter
END
```

```
1
2
3
4
5
***
```

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Write it and test it

The condition is evaluated **at the top** of the group of instructions. It discontinues execution of DO group if WHILE condition **is not met**.

DO UNTIL

```
loop_counter = 0
DO UNTIL loop_counter < 5
  loop_counter = loop_counter + 1
  SAY loop_counter
END
```

```
1
***
```

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Write it and test it.

The condition is evaluated **at the bottom** of the group of instructions – before the control variable has been stepped. It discontinues execution of DO group if UNTIL condition **is met**.

ITERATE

```
▶▶ ITERATE name ; ▶▶
```

ITERATE alters the flow within a repetitive DO loop (that is, any DO construct other than that with a simple DO).

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ITERATE

```
DO loop_counter = 1 TO 5
  IF loop_counter = 3 THEN DO
    ITERATE
  END
  SAY loop_counter
END
```

```
1
2
4
5
***
```

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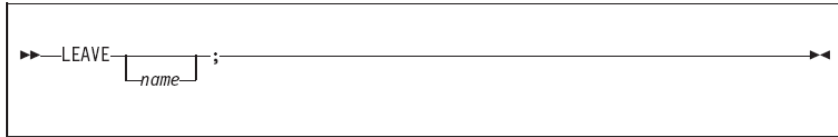
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Write it and test it. See the results to understand what the ITERATE does.

Execution of the group of instructions stops, and control is passed to the beginning of DO group instructions. The control variable (if any) is incremented and tested, as usual, and the group of instructions is processed again, unless the DO instruction ends the loop.

It means: ITERATE goes to the beginning of the loop.

LEAVE



LEAVE causes an immediate exit from one or more repetitive DO loops (that is, any DO construct other than a simple DO).

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Control is passed to the instruction following the END clause.

It means: LEAVE goes to the end of the loop. This is a difference from ITERATE.

LEAVE

```
DO loop_counter = 1 TO 5
  IF loop_counter = 3 THEN DO
    LEAVE
  END
  SAY loop_counter
END
```

```
1
2
***
```

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Write it and test it. See the results to understand what the LEAVE does.

Looping with Compound variables

```
DO loop_counter = 1 TO 3
  PARSE UPPER EXTERNAL new_name
  full_name.loop_counter = new_name
END
DO test_counter = 3 TO 1 BY -1
  SAY full_name.test_counter
END
```

```
BOB
GARY
FRED
FRED
GARY
BOB
***
```

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Write it and test it.

See 'MCOE.REXA.REXX(RX201611)'

There was an error in IOROUT module in IBM software, related to PARSE EXTERNAL instruction. Now it is fixed by IBM. See 'MCOE.REXA.REXX(PARSEXT)'

Work section 6.1

- Write a REXX program which will:
 - ask for 10 numbers from the user
 - assign the numbers to compound variables
 - output each variable and its value
 - output the average of the 10 variables

```
Please enter a number:
1
Please enter a number:
2
Please enter a number:
3
Please enter a number:
4
Please enter a number:
5

1
2
3
4
5

Average = 3
***
```

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Write it and test it. Ask for 5 numbers only. Check the results on the slide.

Work section 6.2

- Re-write Work section 2.1 to allow the user to enter their name as many times as they want.
- Stop the program if they don't enter any more names.

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Write it and test it. Check the results:

Enter first name:

Michal

Enter last name:

Kotrc

Michal Kotrc

Kotrc,Michal

KotrcMichal

MichalKotrc

Enter first name:

Additional Program

- Re-write program 6.1 and find the highest number entered.
- Also display the numbers in reverse order.



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Write it and test it.