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FOR..DO

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FOR...DO Loops (author: Tao Yue, state: changed)

FOR...DO is a loop construct in Pascal. Of course, that may raise the question "What is a loop?".

Loops

Looping means repeating a statement or compound statement over and over until some condition is met.

There are three types of loops:

- fixed repetition - only repeats a fixed number of times
- pretest - tests a Boolean expression, then goes into the loop if TRUE
- posttest - executes the loop, then tests the Boolean expression

FOR...DO Loop

In Pascal, the fixed repetition loop is the for loop. The general form is:

```
for index := StartingLow to EndingHigh do
  statement;
```

The index variable must be of an **ordinal** data. The index can be used in calculations within the body of the loop, but its value cannot be changed (i.e. `count:=5` will cause a program exception.)

In Pascal, the `for` loop can only count in increments (steps) of 1. A loop can be interrupted using the *break* statement. An example of using the index is:

```
sum := 0;
for count := 1 to 100 do
begin
  sum := sum + count;
  if sum = 38 then break;
end;
```

The computer would do the sum the long way and still finish it in far less time than it took the mathematician Gauss to do the sum the short way (`1+100 = 101. 2+99 = 101.` See a pattern? There are 100 numbers, so the pattern repeats 50 times. `101*50 = 5050`. This isn't advanced mathematics, its attribution to Gauss is probably apocryphal.).

In the `for-to-do` loop, the starting value MUST be lower than the ending value, or the loop will never execute! If you want to count down, you should use the `for-downto-do` loop:

```
for index := StartingHigh downto EndingLow do
  statement;
```

See also

While ...Do loops

Repeat... Until loops

For... in loops

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Category: Object Pascal Introduction