Delphi

Contents

Delphi Chapter 5:

LOOPs:

What exactly is a loop?

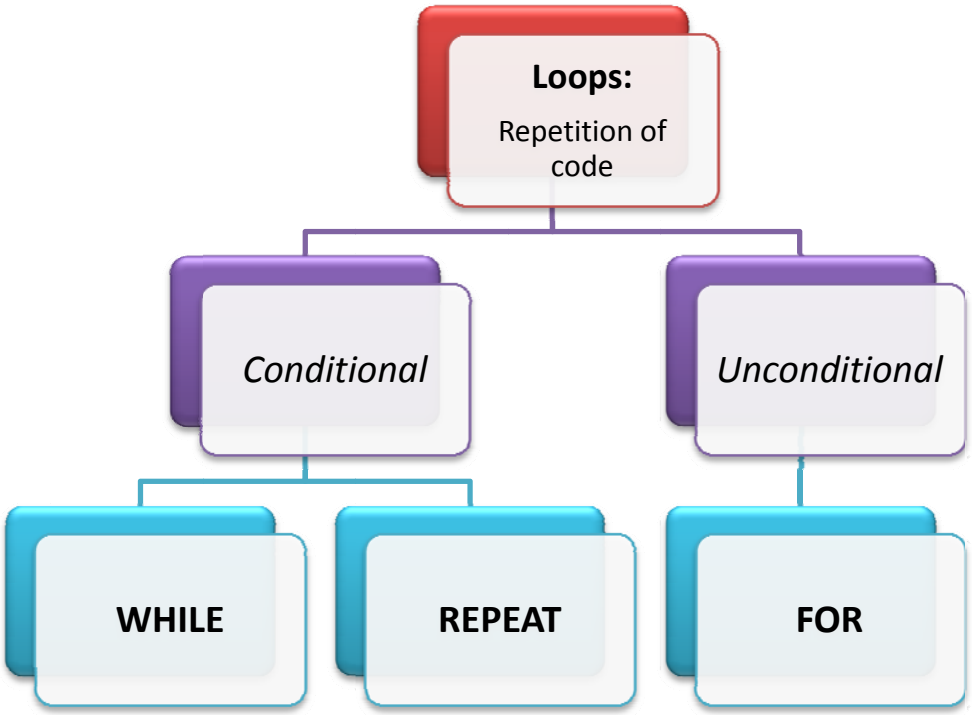
In computer programming, a loop is a sequence of instructions that is continually repeated until a certain condition is met. This s similar to a IF statement but will repeat a statement(s) for a predefined amount or until a certain condition is met.

What types of loops are there?

Within Delphi we most commonly use three types of loops:

1. For loop
2. While loop
3. Repeat loop
4. Nested Loop

When to use which loop?



For loop:

Basic algorithm using a For Loop:

```
Var
        Loop: integer;
        Name: String;
Begin
        For loop « 1 to 10 do
        Begin
                Names « Inputbox('Enter Name','Bellow','Here')
                Output(Names)
        End;

End;
```

An Example:

```
procedure TFrmDebSquire.mmOutputClick(Sender: TObject);
Var
  Loop: Integer;
begin
  LstOuput.Clear;
  for loop:= 1 to cnt do
    Begin
      LstOuput.Items.Add(Names[loop]+':  R'+floattostr(Amount[loop]))
    End;

End;
```

//Please note that this code requires understanding of how to use an array.

While Loop:

Basic algorithm using a For Loop:

Cnt « 0
Tot « 0
While cnt <= 5 do
Begin
    Input Num
    Tot « Tot + Num
    Cnt « cnt + 1
End;
Ave « tot / 6
Output ave

An Example:

```
procedure TForm1.BtnSetClick(Sender: TObject);
var
  Stop,Tot,Cnt,Num: Integer;
  ave: Real;
begin
  Stop:= strtoint(inputbox('Please Enter','The amount of numbers to average','5'));
  cnt:= 0;
  tot:= 0;
  While cnt <> stop do
    Begin
      Num:= strtoint(inputbox('Please Enter','The A Number','10'));
      Tot:= Tot + Num;
      inc(Cnt);
    end;
  Ave:= tot / stop;
  PnlOutput.Caption:= floattostr(Ave)
end;

end.
```

Repeat Loop:

Basic algorithm using a For Loop:

Cnt « 0
Tot « 0
Repeat
    Cnt « cnt +1
    Input Num
    Tot « Tot + Num
Until cnt = 6
Ave « tot / 6
Output ave

An Example:

```
procedure TForm1.BtnSetClick(Sender: TObject);
var
  Stop,Tot,Cnt,Num: Integer;
  ave: Real;
begin
  Stop:= strtoint(inputbox('Please Enter','The amount of numbers to average','5'));
  cnt:= 0;
  tot:= 0;
  repeat
    inc(cnt);
    Num:= strtoint(inputbox('Please Enter','The A Number','10'));
    Tot:= Tot + Num
  until cnt = stop;
  Ave:= tot / stop;
  PnlOutput.Caption:= floattostr(Ave)

end;

end.
```

Nested Loop:

This type of loop is rather abstract; the simplest way to describe it is a loop within a loop. Thus if the first loop repeats twice and the second loop repeats twice as well, then for every loop of the first loop there are another two loops. In this case we end with four total loops. However a nested loop can be much more powerful. It can create a patter such as, as well as sorting arrays alphabetically, descending or ascending.

X
XX
XXX
XXXX

Here is an algorithm to create the above pattern:

For outer « 1 to 4 do
    Begin
        Temp « ‘’;
        For inner « Outer to 4 do
            Begin
                Temp « Temp + ‘X’;
            End;
        Output(Temp)
    End;

An Example: *This is the code I used to sort an array (of names) alphabetically.*

```
procedure TFrmDebSquire.mmSortAlphaNameClick(Sender: TObject);
Var
  inner: Integer;
  Outer: Integer;
  TempNa: String;
  TempAm: Real;
begin
  For outer:= 1 to cnt do
    Begin
      For inner:= Outer+1 to cnt do
        Begin
          If Names[Outer] > Names[inner]
            Then begin
              TempNa:= Names[inner];
              TempAm:= Amount[inner];
              Names[inner]:= Names[outer];
              Amount[inner]:= Amount[outer];
              Names[outer]:= TempNa;
              Amount[outer]:= TempAm;
            end;
         mmOutputClick(Sender);
        End;
    End;
end;
```

//Please note that this code requires understanding of how to use an array.

Delphi Chapter 6:

FLAGs:

On the next tutorial we will cover what a flag is and how to use one, as well as what a Boolean variable is and how this links to a flag. Please download the next tutorial at: Click Here!