

# PASCAL - PROGRAM STRUCTURES

Before we study basic building blocks of the Pascal programming language, let us look a bare minimum Pascal program structure so that we can take it as a reference in upcoming chapters.

## Pascal Program Structure

A Pascal program basically consists of the following parts –

- Program name
- Uses command
- Type declarations
- Constant declarations
- Variables declarations
- Functions declarations
- Procedures declarations
- Main program block
- Statements and Expressions within each block
- Comments

Every pascal program generally have a heading statement, a declaration and an execution part strictly in that order. Following format shows the basic syntax for a Pascal program –

```
program {name of the program}
uses {comma delimited names of libraries you use}
const {global constant declaration block}
var {global variable declaration block}

function {function declarations, if any}
{ local variables }
begin
...
end;

procedure { procedure declarations, if any}
{ local variables }
begin
...
end;

begin { main program block starts}
...
end. { the end of main program block }
```

## Pascal Hello World Example

Following is a simple pascal code that would print the words "Hello, World!":

```
program HelloWorld;
uses crt;

(* Here the main program block starts *)
begin
  writeln('Hello, World!');
  readkey;
end.
```

This will produce following result –

```
Hello, World!
```

Let us look various parts of the above program –

- The first line of the program **program HelloWorld;** indicates the name of the program.
- The second line of the program **uses crt;** is a preprocessor command, which tells the compiler to include the crt unit before going to actual compilation.
- The next lines enclosed within begin and end statements are the main program block. Every block in Pascal is enclosed within a **begin** statement and an **end** statement. However, the end statement indicating the end of the main program is followed by a full stop . instead of semicolon ;.
- The **begin** statement of the main program block is where the program execution begins.
- The lines within \* ... \* will be ignored by the compiler and it has been put to add a **comment** in the program.
- The statement **writeln'Hello, World!';** uses the writeln function available in Pascal which causes the message "Hello, World!" to be displayed on the screen.
- The statement **readkey;** allows the display to pause until the user presses a key. It is part of the crt unit. A unit is like a library in Pascal.
- The last statement **end.** ends your program.

## Compile and Execute Pascal Program

- Open a text editor and add the above-mentioned code.
- Save the file as *hello.pas*
- Open a command prompt and go to the directory, where you saved the file.
- Type **fpc hello.pas** at command prompt and press enter to compile your code.
- If there are no errors in your code, the command prompt will take you to the next line and would generate **hello** executable file and **hello.o** object file.
- Now, type **hello** at command prompt to execute your program.
- You will be able to see "Hello World" printed on the screen and program waits till you press any key.

```
$ fpc hello.pas
Free Pascal Compiler version 2.6.0 [2011/12/23] for x86_64
Copyright (c) 1993-2011 by Florian Klaempfl and others
Target OS: Linux for x86-64
Compiling hello.pas
Linking hello
8 lines compiled, 0.1 sec

$ ./hello
Hello, World!
```

Make sure that free pascal compiler **fpc** is in your path and that you are running it in the directory containing source file *hello.pas*

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