

# Elements of PASCAL Programming (Source Code)

```
...an_done) {  
    if(plant[0].bar_id == 1)  
        temp_mode = mode;  
        mode = watch_bars;  
        file_output("newlac",c  
an_done = on;  
}
```

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# What is Source Code?

Source Codes are as a series of instructions, that will perform a specific task.

It is generated from a Psuedocode, which provides a guide for the programmer. This will minimize the number of syntax or logic errors he/she may encounter.

Once the programmer completes the source code, the program is ready for use.

# Identifiers

Identifiers are special names created by the programmer for:

1. The name of the program
2. Constants used in the program
3. Variables used in the program

# Rules for Creating Identifiers

- Cannot be a RESERVE WORD or the name of the Program
- Cannot have decimal points only letters and numbers
- They must begin with a Letter
- They must not have SPACES
- They must not be longer than 64 characters
- They must not have mathematical symbols

**Another programming term for Identifiers is VARIABLES.**

# Identifier Examples

Identifier / Variable	Incorrect Name	Problem	Correct Name
Variable for Hourly Rate	Hourly Rate	Spaces between words	HourlyRate
Variable for Name of Student	SN	Does not identify what the name represents	StudentName
Constant for General Consumption Tax	17.5_GCT	Starts with a number	GCT
Program name for a program to calculate company payroll	Company-payroll	Uses a mathematical Operator	CompanyPayroll
Income Tax	Income/Tax	Uses a mathematical Operator	IncomeTax

# Rules and use for Reserved Words

- **PROGRAM** - used to start the program followed by a variable which is used to give the program a name
- **CONST** - used to declare values that will be constant throughout the program
- **VAR** - used to declare variables that will be used to store data that may change throughout the use of the program
- **BEGIN** - used to indicate that program instructions are about to be written
- **WRITE/WRITELN** - used to display information or data stored in a variable on the screen
- **READ/READLN** - used to accept data into a variable
- **END** - used to terminate the program & a full stop will precede it (**END.**)  
**For every BEGIN at all times there must be an END.**

# Symbols used in Calculations

Symbols	Uses
*	Used to perform Multiplication
/ or DIV	Used to perform Division ( <b>DIV</b> with integers and <b>Slash (/)</b> with real numbers)
+	Used to perform Addition
-	Used to perform Subtraction
:=	Used to store the result of a calculation to a variable

# SYNTAX Errors

Syntax Errors: these occur when the rules governing the reserved words, symbols and identifiers combines to create the program instructions are broken.

Example:

- (a) All programs must end with a fullstop (.)
- (b) There should be a semi-colon (;) at the end of each program instruction, except in special cases such as after a “BEGIN”, “CONST” or “VAR”
- (c) Reserve words are spelt incorrectly.

# LOGIC Errors

These errors will produce INCORRECT RESULTS, it will not stop the program from executing.

This will occur by placing a minus sign (-) where a plus (+) sign should be or writing an incorrect formulae to perform a calculation.

These errors must be detected by the programmer based on the output of the program.

# Run Time Errors

These are errors that will not be detected because the compiler/interpreter may prohibit the program from executing or stop while executing.

The program may also execute but may not function properly.

# The structure for all Pascal Programs

```
PROGRAM name_of_program;
```

```
CONST
```

```
    variable = "data";
```

```
VAR
```

```
    variable:datatype;
```

```
BEGIN
```

```
    program instructions;
```

```
END.
```

# COMMENTS

Comments are not recognized by the computer but by the programmer. It is used to describe the purpose for a line or sequence of codes to other persons reading the code and may need to make adjustments.

Comments will appear in the colour **Blue**.

It can be written using one of three methods below:

- END. (*\* used to terminate the program \**)
- END. { *used to terminate the program* }
- END. // *used to terminate the program*

# COMMENTS

Every program that you will write will and must have at least three (3) comments.

These comments will appear in the colour **Blue**.

They will generally appear after the name of the program:

1. *//Programmer: states who is creating the program*
2. *(\*Date: states the date when you began to write it\*)*
3. *{Purpose: states what the program is intended to do}*

***As a programmer you will decide on which style(s) of comment you wish to use, as you do not have to use all three at anytime.***

# Find the mistakes below and Correct them

```
Add_Two_Numbers:
```

```
Var
```

```
1num , num2: integer;
```

```
Begin;
```

```
    Write ('Enter first number:');
```

```
    Readln ( 1num )
```

```
    Writeln ( " Enter second number: " );
```

```
    Raedln (num 2);
```

```
    Sum = num1 - num2;
```

```
    Writel ('Sum of the two numbers is: ' , sum).
```

```
End
```



**Let's write some Code!**

# Programming in PASCAL

Your first Program, simply to display information on the Screen

```
Program Hello_App;
```

```
//Programmer:
```

```
{Date: March 29, 2020}
```

```
{*Purpose: This program will be used to display a sentence on the screen*}
```

```
BEGIN
```

```
Write('Hello World. I am learning PASCAL!!');
```

```
Readln; {this allows the user to pause the program before closing}
```

```
END.
```

*Write a program called My\_Name, to display your name.*

## Third Program: Accept two numbers, add them & give the result

**Program** Adding\_App;

*//The three comments will be placed here*

**Var**

Num1, Num2, Ans: Integer;

**Begin**

Write ('Enter the first number:');

*//this tells the user what to do*

Readln (Num1);

*{allows the user to enter a number}*

Writeln ('Enter the second number:');

Readln (Num2);

Ans := Num1 + Num2;

*//the two numbers are being added*

Writeln ('The total is: ',ans);

*(\* info and the total is being displayed \*)*

Readln; *(\*this allows the user to pause the program before closing\*)*

**End.** *//this is used to terminate/stop the program*

# PASCAL EXERCISES

*Complete any two (2) programs for the problems listed below; one of them **MUST** be question FOUR (4):*

- 1. Subtract two numbers and give the result.*
- 2. Multiply two numbers and give the result.*
- 3. Divide two numbers and give the result.*
- 4. Accept three numbers, find the total and display the average.*

*Start from the Variables and Purpose to Source Code for each problem.*

11A ▶

12

THE  
END

▶ 11A

12