

# BÁO CÁO

## BÀI 2: PHÂN TÍCH CÚ PHÁP

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### 1. Với example1.kpl

- File example.kpl

```
Program Example1; (* Example 1 *)  
Begin  
End. (* Example 1 *)
```

- Kết quả chạy:

```
C:\Users\admin\Downloads\PT_CPIncompleted>main ./Test/example1.kpl  
Parsing a Program ....  
1-1:KW_PROGRAM  
1-9:TK_IDENT(Example1)  
1-17:SB_SEMICOLON  
Parsing a Block ....  
Parsing subroutines ....  
Subroutines parsed ....  
2-1:KW_BEGIN  
3-1:KW_END  
Block parsed!  
3-5:SB_PERIOD  
Program parsed!
```

## 2. Example2.kpl

Program Example2; (\* Factorial \*)

Var n : Integer;

Function F(n : Integer) : Integer;

Begin

If n = 0 Then F := 1 Else F := N \* F (N - 1);

End;

Begin

For n := 1 To 7 Do

Begin

Call WriteLn;

Call WriteI( F(n));

End;

End. (\* Factorial \*)

- Kết quả:

```
D:\IT3323\Compiler Lab.20214988.PhamVanAnh-\week2\parser>main ./Test.kpl
Parsing a Program ....
1-1:KW PROGRAM
1-9:TK_IDENT(Example2)
1-17:SB_SEMICOLON
Parsing a Block ....
3-1:KW VAR
3-5:TK_IDENT(n)
3-7:SB_COLON
3-9:KW INTEGER
3-16:SB_SEMICOLON
Parsing subroutines ....
Parsing a function ....
5-1:KW FUNCTION
5-10:TK_IDENT(F)
5-11:SB_LPAR
5-12:TK_IDENT(n)
5-14:SB_COLON
5-16:KW INTEGER
5-23:SB_RPAR
5-25:SB_COLON
5-27:KW INTEGER
5-34:SB_SEMICOLON
Parsing a Block ....
Parsing subroutines ....
Subroutines parsed ....
6-3:KW BEGIN
Parsing an if statement ....
7-5:KW IF
Parsing an expression
7-8:TK_IDENT(n)
Expression parsed
7-10:SB_EQ
```

```
7-10:SB_EQ
Parsing an expression
7-12:TK_NUMBER(0)
Expression parsed
7-14:KW THEN
Parsing an assign statement ....
7-19:TK_IDENT(F)
7-22:SB_ASSIGN
Parsing an expression
7-24:TK_NUMBER(1)
Expression parsed
Assign statement parsed ....
7-26:KW ELSE
Parsing an assign statement ....
7-31:TK_IDENT(F)
7-34:SB_ASSIGN
Parsing an expression
7-36:TK_IDENT(N)
7-38:SB_TIMES
7-40:TK_IDENT(F)
7-42:SB_LPAR
Parsing an expression
7-43:TK_IDENT(N)
7-45:SB_MINUS
7-47:TK_NUMBER(1)
Expression parsed
7-48:SB_RPAR
Expression parsed
Assign statement parsed ....
If statement parsed ....
7-49:SB_SEMICOLON
8-3:KW END
Parsing Block 2 ....
Parsing Block 2 ....
Parsing Block 2 ....
Block parsed!
```

```
8-6:SB_SEMICOLON
Function parsed ....
Subroutines parsed ....
10-1:KW_BEGIN
Parsing a for statement ....
11-3:KW_FOR
11-7:TK_IDENT(n)
11-10:SB_ASSIGN
Parsing an expression
11-12:TK_NUMBER(1)
Expression parsed
11-14:KW_TO
Parsing an expression
11-17:TK_NUMBER(7)
Expression parsed
11-19:KW_DO
Parsing a group statement ....
12-5:KW_BEGIN
Parsing a call statement ....
13-7:KW_CALL
13-12:TK_IDENT(WriteLn)
Call statement parsed ....
13-19:SB_SEMICOLON
Parsing a call statement ....
14-7:KW_CALL
14-12:TK_IDENT(WriteI)
14-18:SB_LPAR
Parsing an expression
14-20:TK_IDENT(F)
14-21:SB_LPAR
Parsing an expression
14-22:TK_IDENT(n)
Expression parsed
14-23:SB_RPAR
Expression parsed
```

```
14-24:SB_RPAR
Call statement parsed ....
14-25:SB_SEMICOLON
15-5:KW_END
Group statement parsed ....
For statement parsed ....
15-8:SB_SEMICOLON
16-1:KW_END
Parsing Block 2 ....
Parsing Block 2 ....
Parsing Block 2 ....
Block parsed!
16-5:SB_PERIOD
Program parsed!
```

### 3. Example3.kpl

- File example3.kpl

```
Program InvalidExample2; (* Example with intentional errors *)
Var
  arr : array [1..10] of Char;
Function Calc(a : Integer, b : Char) : Integer (* Missing ':' after 'b' *)
Begin
  If a != 0 Then (* ERR_INVALIDCOMPARATOR: '!=' is not valid in Pascal, use '<>' *)
    Calc := a + b
  Else
    Calc := Calc(a 1); (* ERR_INVALIDSYNTAX: Missing operator between 'a' and '1' *)
  End;
Begin
  arr[.2.] := 'XY'; (* ERR_INVALIDSYNTAX: '.2.' is an invalid index *)
  Call Calc(3); (* ERR_INVALIDSYNTAX: 'Call' is not a valid Pascal keyword *)
End. (* InvalidExample2 *)
```

- Kết quả:

```
D:\IT3323.Complier_Lab.20214988.PhamVanAnh-\week2\parser>main ./Test/example3.kpl
Parsing a Program ....
1-1:KW_PROGRAM
1-9:TK_IDENT(InvalidExample2)
1-24:SB_SEMICOLON
Parsing a Block ....
2-1:KW_VAR
3-5:TK_IDENT(arr)
3-9:SB_COLON
3-11:KW_ARRAY
3-17:Invalid symbol!
```