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**LAB 4. SCOPE MANAGEMENT**

1. **The result of executing the program with a KPL file without errors**
2. ***example1.kpl***

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1. ***example2.kpl***

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1. ***example3.kpl***

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1. ***example4.kpl***

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1. ***example5.kpl***

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1. ***example6.kpl***

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1. **The result of executing the program with errors**
2. **ERR\_UNDECLARED\_IDENT, "Undeclared identifier."**

|  |
| --- |
| Program Error1; (\* ERR\_UNDECLARED\_IDENT \*)  Begin  b = 1;  End. |

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1. **ERR\_UNDECLARED\_CONSTANT, "Undeclared constant."**

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| --- |
| Program Error2; (\* ERR\_UNDECLARED\_CONSTANT \*)  const b = a;  Begin  End. |

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1. **ERR\_UNDECLARED\_TYPE, "Undeclared type."**

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| --- |
| Program Error3; (\* ERR\_UNDECLARED\_TYPE \*)  var b:a;  Begin  End. |

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1. **ERR\_UNDECLARED\_VARIABLE, "Undeclared variable."**

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| --- |
| Program Error4; (\* ERR\_UNDECLARED\_VARIABLE \*)  Begin  For n := 1 To 7 Do  Begin  Call WRITELN;  End;  End. |

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1. **ERR\_INVALID\_RETURN, "Expect the owner of the current scope."**

|  |
| --- |
| Program Error5; (\* ERR\_INVALID\_RETURN \*)  FUNCTION F(n : Integer): INTEGER;  BEGIN  F := n/2;  END;  FUNCTION G(n : Integer): INTEGER;  BEGIN  F := 2;  G := 3;  END;  Begin  End. |

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1. **ERR\_UNDECLARED\_PROCEDURE, "Undeclared procedure."**

|  |
| --- |
| Program Error6; (\* ERR\_UNDECLARED\_PROCEDURE \*)  Begin  Call WRITESCREEN;  End. |

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1. **ERR\_DUPLICATE\_IDENT, "Duplicate identifier."**

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| --- |
| Program Error7; (\* ERR\_DUPLICATE\_IDENT \*)  VAR A : INTEGER;  A : INTEGER;  Begin  End. |

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1. **ERR\_INVALID\_LVALUE, "Invalid lvalue in assignment."**

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| --- |
| PROGRAM error8;  CONST a = 5;  BEGIN  a := 3;  END. |

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1. **With  the file example3.kpl, rename a parameter of the procedure HANOI to HANOI and execute. Analyze the reason for the error.**

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* Error: **ERR\_INVALID\_PROCEDURE**
* The parameter of the procedure HANOI is renamed to HANOI, causing a name conflict between the procedure and the parameter in the same scope.
* When recursively calling CALL HANOI(...), the compiler looks for HANOI in the current scope (procedure scope) and finds the parameter HANOI (of type OBJ\_PARAMETER), not the procedure (OBJ\_PROCEDURE).