**Lab Sections**

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Scope of Function Names

**Scope of Function Names**

1. **Objectives**

**After you complete this experiment you will be able to determine the scope of a function name.**

1. **Introduction**

The scope is the region in a program where a name (identifier) has meaning. As you already know, all identifiers must be declared before they can be used

More information on scope can be found in your course textbook and on the web.

1. **Experiments**

**Step 1: In this experiment you will discover the scope rules that are used in a program.**

**Enter, save, compile and execute the following program in MSVS. Call the new project “FunctionNameScopeExp1” and the program “FunctionNameScope1.cpp”. Answer the questions below:**

#include <iostream>

using namespace std;

void Function\_One()

{

cout<<"You are in Function One"<<endl;

cout<<"Function\_One called no one"<<endl<<endl;

}

void Function\_Two()

{

cout<<"You are in Function\_Two"<<endl;

cout<<"Function\_Two will call Function\_One"<<endl<<endl;

Function\_One();

}

void Function\_Three()

{

cout<<"You are in Function\_Three"<<endl;

cout<<"Function\_Three will call Function\_Two"<<endl<<endl;

Function\_Two();

}

int main()

{

Function\_Three();

Function\_Two();

Function\_One();

return 0;

}

1. Does the program in Step 1 compile without any errors? Explain.
2. We didn’t use prototypes. When would the program in Step 1 need prototypes? Explain your answer.
3. Please state a rule about **where** functions must be declared (ie. scope) when compared to the **location** of the function call that you observed in the program in Step 1?

**Step 2: In this experiment you will discover the scope rules that are used in a C++ program.**

**Enter, save, compile and execute the following program in MSVS. Call the new project “FunctionNameScopeExp2” and the program “FunctionNameScope2.cpp”. Answer the questions below:**

#include <iostream>

using namespace std;

void Function\_One()

{

cout<<"You are in Function One"<<endl;

cout<<"Function\_One will call Function\_Two"<<endl<<endl;

Function\_Two();

}

void Function\_Two()

{

cout<<"You are in Function\_Two"<<endl;

cout<<"Function\_Two will call Function\_Three"<<endl<<endl;

Function\_Three();

}

void Function\_Three()

{

cout<<"You are in Function\_Three"<<endl;

cout<<"Function\_Three calls no one"<<endl<<endl;

}

int main()

{

Function\_Three();

Function\_Two();

Function\_One();

return 0;

}

1. Does the program in Step 2 compile without any errors? If not, what are the error message(s)?
2. Does the program in Step 2 need prototypes? Explain your answer.
3. Please state a rule about scope that you observed in the program in Step 2?

**Step 3: In this experiment you will discover the scope rules that are used in a program.**

**Enter, save, compile and execute the following program in MSVS. Call the new project “FunctionNameScopeExp3” and the program “FunctionNameScope3.cpp”. Answer the questions below:**

#include <iostream>

using namespace std;

void Function\_One();

void Function\_Two();

void Function\_Three();

void Function\_One()

{

cout<<"You are in Function One"<<endl;

cout<<"Function\_One will call Function\_Two"<<endl<<endl;

Function\_Two();

}

void Function\_Two()

{

cout<<"You are in Function\_Two"<<endl;

cout<<"Function\_Two will call Function\_Three"<<endl<<endl;

Function\_Three();

}

void Function\_Three()

{

cout<<"You are in Function\_Three"<<endl;

cout<<"Function\_Three calls no one"<<endl<<endl;

}

int main()

{

Function\_Three();

Function\_Two();

Function\_One();

return 0;

}

1. Does the program in Step 3 compile without any errors? If not, what are the error message(s)?
2. What are the differences between the programs in Step 2 and Step 3?
3. Please state a rule about scope that you observed in the program in Step 3.

**Step 4: In this experiment you will discover the scope rules that are used in a program.**

**Enter, save, compile and execute the following program in MSVS. Call the new project “FunctionNameScopeExp4” and the program “FunctionNameScope4.cpp”. Answer the questions below:**

#include <iostream>

using namespace std;

void Function\_One(int);

void Function\_Two();

void Function\_Three();

void Function\_One(int Function\_Two)

{

cout<<"You are in Function One"<<endl;

cout<<"Function\_One will call Function\_Two"<<endl<<endl;

Function\_Two();

}

void Function\_Two()

{

cout<<"You are in Function\_Two"<<endl;

cout<<"Function\_Two will call Function\_Three"<<endl<<endl;

Function\_Three();

}

void Function\_Three()

{

cout<<"You are in Function\_Three"<<endl;

cout<<"Function\_Three calls no one"<<endl<<endl;

}

int main()

{

Function\_Three();

Function\_Two();

Function\_One(5);

return 0;

}

1. Does the program in Step 4 compile without any errors? If not, what are the error message(s)?
2. State a rule about scope that you observed in the program in Step 4.