Lab 13

LAB GOALS

- Understanding command line arguments in C++
- argc and argv

Step 1: Start with a simple C++ console project.

Step 2: Add a new C++ source file named (main.cpp).
Step 3: The objective of this lab is to understand and use command line arguments. Command line arguments are information that can be passed to a C or C++ program from the operating system command line. These are known as (argc and argv).

Argc = is an integer and represents the number of parameters (including the program name itself) that are typed by the user.

Argv = is an array of character strings which hold the program name, and the parameters that are passed to the program.

Example: Assuming we have a program called “copy”, and the program takes two arguments called “source” and “destination”, the command line may look like:

   c:\> copy source destination

In this case, the argc will be 3, and Argv will be an array of character strings that will look like the table below: (note that each argument is a null terminated character string.

| Argv[0]    | copy\0       |
| Argv[1]    | source\0     |
| Argv[2]    | destination\0|

Type the following code in your program. Note that the main() function which often does not have any parameters, now has two parameters.

```cpp
#include <iostream>

using namespace std;

void main( int argc, char *argv[] )
{
    cout << "Argc = " << argc << endl;

    for (int i=0; i< argc; i++)
        cout << "Argv[" << i << "] = " << argv[i] << endl;

    getchar();
}
```

Step 4: Compile and run the above program using the IDE. Note that the output of the program may look something like the following screen shot below. Note that argc is currently showing (1) and the argv[0] shows the path and name of our executing program.
You may be wondering about the following questions:

1) When did I send any command line arguments to my program?
2) If I wanted to, how would I be able to send my own command line arguments from a Visual Studio IDE?
3) If I was going to run the program from the DOS or Unix (Operating system) prompt, how would I send command line arguments to my program?

Below we will answer these three questions:

**Question 1: When did I send any command line arguments to my program?**

Well, you did not! However when we run our program using the Visual Studio IDE, the IDE automatically compiles and executes our program for us. When the program starts to execute, the “command” in the command line is simply the name of the program (along with the path c:\......) which is passed to the argv parameter of our main() function.

Below is an image showing the command line arguments passed to the program:

![Command Line Arguments](image)

So in the example above, the path is:

C:\A_Data\Visual_Studio_Projects\Visual_C++\I308_Lab_Argc_Argv\Debug

And the program executable file name is:

I308_Lab_Argc_Argv.exe

**Question 2: If I wanted to, how would I be able to send my own command line arguments from a Visual Studio IDE?**

Visual Studio allows you to provide command line arguments from within the IDE. To provide command line arguments to your program follow the steps below:

1) On the Visual Studio menu, click **Project**, then click on your “current project” **Properties**
2) Once the dialog box appears, click “Configuration Properties”, then click “Debugging”  
3) On the right panel you will see an option for “Command Arguments”, click in the box and type the command line arguments, and then click **OK**
Now run your program again and note the results:

The parameters entered in the dialog box in the previous page were passed to your program and are now accessible through the Argv[] array.

<table>
<thead>
<tr>
<th>Argv[0]</th>
<th>C:.........\1308_Lab_Argc_Argv.exe\0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argv[1]</td>
<td>argument1\0</td>
</tr>
<tr>
<td>Argv[2]</td>
<td>argument2\0</td>
</tr>
<tr>
<td>Argv[3]</td>
<td>etc\0</td>
</tr>
</tbody>
</table>

**Question 3**: If I was going to run the program from the DOS (Operating system) prompt, how would I send command line arguments to my program?

Well, this is fairly easy to do.

1) Go to the DOS prompt window:

2) Change directory to your project’s “Debug” folder.

3) Provide the “command” and its “arguments”. E.g. `1308_Lab_Argc_Argv.exe arg1 arg2 arg3`
4) Run the program.