

Lab 1 - Intro to Visual Studio

Lab Topics

1. Creating a simple C++ program with MS Visual C++.
2. Accessing your files remotely via SSH.
3. Accessing Course Management System and submitting code.

Directions

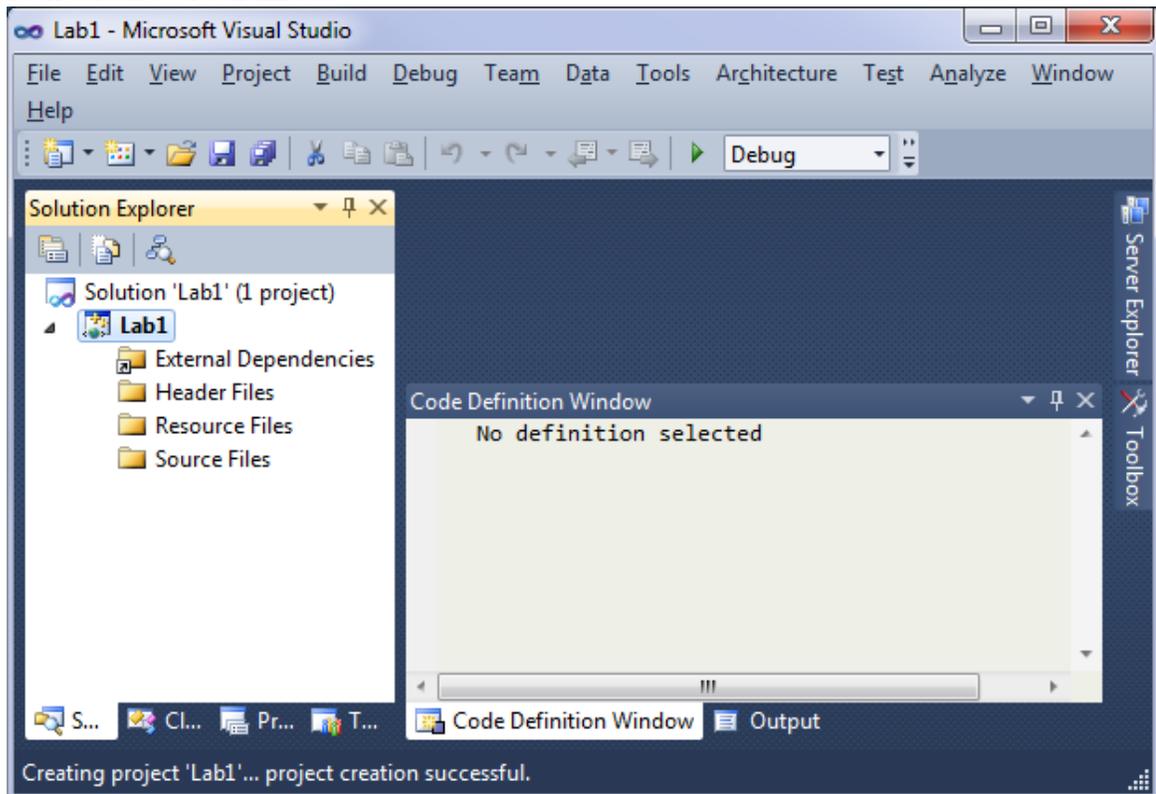
- The labs are marked based on attendance and effort.
- It is your responsibility to ensure the TA records your progress by the end of the lab.
- Do each step of the lab in order.
- While completing these labs, you are encouraged to help your classmates and receive as much help as you like. Assignments, however, are individual work.
You may not work on assignments during your lab time.
- If you complete the lab early, you should experiment with C++; however, you may leave if you prefer.
- If you do not finish the lab exercises during your lab time, you are encouraged to complete them later to finish learning the material. You will still receive full marks if you arrived on-time and put in your best effort to complete the lab.

1. Hello World

This section shows how to use the MS Visual C++ IDE (Integrated Development Environment) to create and run a very simple program. You may find it useful to also consult Appendix M from the text book (available on the course website under Labs) which provides a guide on using a slightly different version of the tool.

1. **Mount the H: drive** by clicking the "Mount Filespace" icon on the desktop. This maps your university wide personal folder to the H: drive on this computer.
 - While working on campus, always store all your files on the H: drive. That way your files will be accessible to you from any SFU computer, or from your home.
2. **Create a new folder on the H: drive called CMPT125.** Use this folder for all your course related material while on campus.
3. **Launch *Microsoft Visual Studio 2010*** via the Start menu.
 - If prompted, choose *Microsoft Visual C++* for your development environment.

4. Create a **new project** as follows:
 - Select a *Win32 Console Application* for the type of application.
You may need to select the *Visual C++ --> Win32* category for the left, and then *Win32 Console Application* from the right.
 - Enter the name: **Lab1**
 - Enter the location: **H:\CMPT125**
Note: You may not be able to browse to this location: you may have to type it in directly.
 - Enter the solution name: **Lab1** (may be automatically entered based on the name).
 - Click OK.
5. You should now see the *Win32 Application Wizard*:
 - Click **Next** to see the *Application Settings* screen.
 - **Select "Empty project"**. This will prevent MS Visual C++ from generating a bunch of files we do not want.
 - Click **Finish**.
6. It should now look like:



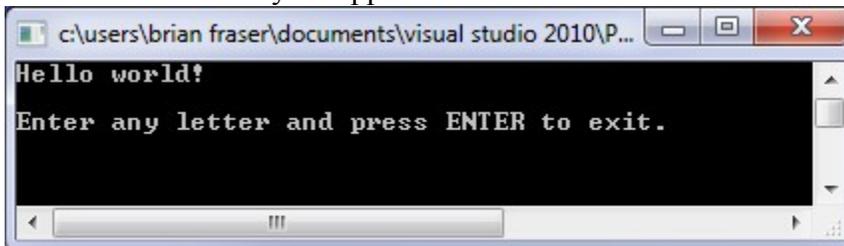
7. Create a **new C++ file** (.cpp file) named **myLab1.cpp**:
 - Right click on the *Source Files* folder, and select **Add --> New Item**.
 - Select *C++ File (.cpp)*.
 - At the bottom, enter the name: **myLab1.cpp**
 - Click **Add**.
8. Enter the following code (you may copy-and-paste this code to speed up the process). Note you should change initial comment.

```
// <name>, <ID>, <Student Number>
// Lab 1 Program
#include <iostream>
using namespace std;

int main() {
    // Some simple output to the screen.
    cout<<"Hello world!"<<endl;

    // Pause until the user enters a letter and presses ENTER.
    char a;
    cout<<endl<<"Enter any letter and press ENTER to exit.";
    cin >> a;
    return 0;
}
```

9. **Compile** the program by selecting **Build --> Build Solution** from the menu. Alternatively, try pressing **F7** as a shortcut. This will save you a lot of time!
 - Make sure there are no errors in the Output window. If there are, double click on the error and correct the problem.
10. Run your program by selecting **Debug --> Start Debugging** from the menu. You may also press **F5** as a shortcut.
11. You should then see your application run:



Congratulations! You've got your C++ program running!

2. Exploring `cout`

Get used to exploring and self-discovery with these labs. Here's an easy start:

1. Experiment by adding additional `cout` statements in your code. Have it print out the name of your favorite colour.
2. Add statements to your program to, in addition to the above behaviour, print out the following text, including the 2 lines of 10 `*`'s:

```
*****
```

A quote by Sir John A. Macdonald:

Let us be French, let us be English, but most importantly let us be Canadian!

```
*****
```

Note to Python programmers: C++ does not have an operator to repeat a character; you will have to type the all the `*`'s you want directly.

3. Add a syntax error to your code (for example, remove a `';` from the end of a statement).
 - a) Notice the editor shows a red underline on the next statement in the file. If you mouse over the red-underline, it will show a description of the error.
 - b) Compile the file (F7). Notice the error message in the Output window. Double click on the error message to jump straight to the line of code which has the problem.
 - c) Before fixing the error, try to run the program by pressing F5. Notice how it will not let you run the program (but will offer to run an older working version if you like). Compilers cannot allow your program to run if it contains any errors at all.
 - d) Correct the error and recompile your program. It should now compile correctly.

3. SSH for Remote Access

SSH is a secure shell program which allows you to remotely access the CSIL work-stations. This exercise will show you how you can access your files saved on H: drive remotely.

1. Launch SSH Secure Shell:
Start → All Programs → SSH Secure Shell
2. Open a connection to **fraser.sfu.ca**
3. Log in using your SFU user ID and password.
4. You will now be in the directory which maps as the H: drive in CSIL.
5. Open the file-browser within SSH. Change to the CMPT125 folder and download a copy of your *myLab1.cpp* file to this computer.
You can also use this program to remotely upload files to your H: drive. This may be useful if you are planning to work from home sometimes.

4. Submission Server

Assignments are submitted using the Course Management System. This tool also shows you your grades for this course. Get in the habit of submitting carefully! For assignments, you can only get marks if you submit your work correctly!

1. Create a .ZIP file which contains your .cpp file from this lab as follows:
 - a. **Open Windows Explorer** to your source code files for this lab.
The files should be in the folder: H:\CMPT125\Lab1\Lab1\
 - b. Create the ZIP file by selecting the file in Windows Explorer, right click it and select *Send To* → *Compressed (zipped) Folder*.
In some future assignments, you will submit multiple C++ file in a single ZIP file.
2. In a web browser, go to the Course Management System:
<https://courses.cs.sfu.ca/>
3. Log in using your standard SFU ("Unix") user ID and password.
4. Select *CMPT 125 D2 --> Lab1 Experiment*.
5. In the *Actions* box (top right), select to submit an assignment. Upload your ZIP file.
6. You should now be able to view the file you submitted.
If you resubmit a file, only the last version you submitted will be marked.

Note that we are not marking the correctness of this lab. What you submit here is just a test of the system.

5. Extra Challenge

Try these tasks for an extra challenge. (Not for credit).

- ◆ Using `cout`, draw a square on the screen out of *'s:

```
*****
*       *
*****
```

- ◆ Write some code which outputs the following text on the screen:
He'll say, "WOW! He\she did great!"

6. Skills and Understanding

You should now know how to:

1. Create a new Visual C++ project, compile and run it.
2. Use `cout` to put output on the screen.
3. Access your files via SSH, and submit via the Course Management System.

6.1 Show the TA

- ◆ your program in Visual C++, and run.
- ◆ that you have submitted your ZIP file via the Course Management System.