**ICS 365. Organization of Programming Languages.**

**Programming Assignment 1.**

**Due**: See Class Schedule

**Points**: 40

**Goals**: Prepare for C programming and understand the toolset.

**Part 1:**

**Install a C IDE.**

**Part 2:**

**Create a “Hello World” application.**

**Part 3:**

**Submit -**

**Create a word document with the answers to questions answered in part 2.**

**C program source code used.**

**Submit all files to D2L.**

**Part 1**

Install a ‘C’ compiler. Most any ‘C’ compiler with debugger will do. Here are 3 examples.

You may select any ‘c’ compiler you wish; however the debug environment must work when completed. NOTE: Window OS may want to look at the other C installation Guide using DEV C++, which is what I will be using.

1. Visual Studio: (See Appendix A)

Download:

https://www.visualstudio.com/en-us/downloads/download-visual-studio-vs.aspx

(The community edition is fine)

Install Help:

<https://msdn.microsoft.com/en-us/library/e2h7fzkw.aspx>

<https://www.visualstudio.com/en-us/get-started/setup/set-up-vs>

<https://www.youtube.com/watch?v=P6J679MH3p8>

1. X Code for MAC. (See Appendix B)

<https://developer.apple.com/library/ios/documentation/IDEs/Conceptual/AppStoreDistributionTutorial/Setup/Setup.html>

1. Clion for PC, MAC, and Linux (Sorry, you are on your own!)

https://www.jetbrains.com/clion/help/meet-clion.html

<https://www.jetbrains.com/clion/help/quick-start-guide.html>

(On windows Clion requires Cygwin or mingw)

<https://www.cygwin.com/>

http://mingw-w64.org/doku.php

**Part 2: Create a Hello World Project**

1. **Review Appendix A or Appendix B**
2. **Create a file with the following content:**

**(remember you might want getchar(); as the last line of the file if you are using windows)**

**#include <stdio.h>**

**int main(int argc, char \*argv[])**

**{**

**printf(“Hello world \n”);**

**}**

1. **Compile and run. What is the output?**

1. **Modify the program as below:**

**#include <stdio.h>**

**int main(int argc, char \*argv[])**

**{**

**printf(“Hello world \n”);**

**printf(“%s \n”, argv[0]);**

**printf(“%s \n”, argv[1]);**

**}**

**What is displayed? (There should be 3 lines)**

1. **Modify the program as follows:**

**#include <stdio.h>**

**int main()**

**{**

**char a = 30;**

**char b = 40;**

**char c = 10;**

**char d = (a \* b) / c;**

**printf ("%d ", d);**

**return 0;**

**}**

**What is the output?**

1. **Modify your source file as follows:**
2. #include <stdio.h>
3. void fun(int\*, int\*);
4. int main()
5. {
6. int i=5, j=2;
7. fun(&i, &j);
8. printf("%d, %d \n", i, j);
9. return 0;
10. }
11. void fun(int \*i, int \*j)
12. {
13. \*i = \*i\*\*i;
14. \*j = \*j\*\*j;
15. }

**What is the output?**

**Using a your debugging, set breakpoint at line 6.**

**Modify the value ‘i’ to be 6.**

**What is the output?**

**Submission Guidelines:**

1. **Copy of the code you used for this Homework.**
2. **Screen shots of code running, to prove the code works.**
3. **Create a word document or a text file containing the answers to the questions asked and submit to D2L.**
4. **No ZIP files, please. I will not open and grade zip files.**

**Appendix A**

**Using Microsoft Visual Studio for Simple C Programs**

**(http://www.swarthmore.edu/NatSci/tali/E15/Visual\_C.html)**

To edit your C program:

1. From the main menu select File -> New -> Project
2. In the New Project window:  
   Under Project types, select Win32 - Win32 Console Application  
   Name your project, and specify a location for your project directory  
   Click 'OK', then 'next'
3. In the Application Wizard:  
   Select Console application  
   **Select Empty project**

Uncheck “Security Development Lifecycle (SDL) checks

(don’t do this in real life!)

1. Once the project has been created, in the window on the left hand side you should see three folders:  
   Header Files  
   Resource Files  
   Source Files
2. Right-click on Source Files and Select Add-> New Item  
   Select Code, and give the file a name which ends in .c  
   (The default here will be a file with a \*.cpp extension (for a C++ file). You

To compile and run:

1. Press the green play button.
2. By default, you will be running in debug mode and it will run your code and bring up the command window.
3. To prevent the command window from closing as soon as the program finishes execution, add the following line to the end of your main function:   
   getchar();   
   This library function waits for any input key, and will therefore keep your console window open until a key is pressed.
4. OR Debug->Start Without Debugging
5. FINALLY Command Line Argument : Project->Properties->Debugging

**Add the world hello to Command Arguments and press ok.**

**Appendix B**

**Using Apple XCode for Simple C Programs**

1. Launch X-Code
2. File->New->Project
3. Select “Command Line Tool”, then click “Next”
4. Choose options for your new project:
   1. Project Name, in this case, PA1
   2. Organization Name: (Your name)
   3. Organization Identifier: ICS462
   4. Language ‘C’
   5. Then click “Next”
5. Select a folder, then click “Create”
6. You should see a “hello world” ‘c’ program.
7. Hit the “Play” button.
   1. The program should build
   2. You should see console output in the bottom of the screen.
8. Finally, Command Line Argument
   1. Product->Scheme->Edit Scheme add ‘hello’ to “arguments passed on launch”.