Workshop #1

Worth: 1% of final grade
Breakdown: Part-1 Coding: 10% | Part-2 Coding: 40% | Part-2 Reflection: 50%

Topic(s)

- A Simple C Program implementing standard output
- Using Visual Studio's **I**ntegrated **D**evelopment **E**nvironment (IDE)
- Using PuTTy – a client application supporting the **S**ecured Socket **Sh**ell network Protocol (SSH) to interact with a Linux server
- Using WinSCP or FileZilla client application supporting the **S**ecured **F**ile **T**ransfer **P**rotocol (SFTP) to copy files to a remote Linux server

Learning Outcomes

Upon successful completion of this workshop, you will have demonstrated the abilities:
- to use Visual Studio to code, edit and execute a C-language program
- to login to a remote host using SSH client application
- to transfer source code files between a local computer and a remote host using an SFTP client application
- To describe to your instructor what you have learned in completing this workshop

Submission Policy

- Part-1 is due on Thursday
- Part-2 is due on Sunday
- In each case, the due date is the **end of day by 23:59** EST (UTC – 5)
- **Late submissions will NOT be accepted**

All files you create or modify MUST contain the following 4 pieces of information; your:
1. Full name
2. Student Number
3. Seneca Email Address
4. Section Information Code

Notes
- Due dates are in effect **even during a holiday**
- You are responsible for **backing up your work regularly**

Late Submission/Incomplete Penalties

If any Part-1, Part-2, or Reflection portions are missing, the mark will be **ZERO**.

Part-1 (10%)

Instructions

Create a C program that displays to the standard output (screen):

> ❯ ***** Welcome to Seneca's C Programming Course ***** ❮

Note: this should display on a separate line. Only the part between ❯ and ❮ and highlighted in <mark>yellow</mark> are to be printed. The yellow is just to highlight the text to be printed, you do not print in yellow.

Visual Studio 2019

Code your program on your local computer:

- Start **Visual Studio 2019** (free Community version)
- Select "**Create a new project**" from the splash screen:
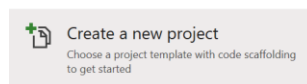
- Type "**Empty Project**" in the new project filter:

- Select the C++ template with Windows and Console on the lower line:

- Click the **NEXT** button
- Enter "**Workshop1**" as the Project Name
- Set the Location where you want to save the project (use the button with the ellipsis "…" to specify a different path from the default)
    - **Note**: If you are using a public computer, it is **strongly** advised you use a USB removable/flash drive
- Click the button: "**Create**"
- From the top menu bar, select **Project** -> **Add New Item**
- Select "**Code**" under the "Visual C++" tree (left panel)
- Select "**C++ File (.cpp)**" (right panel)
- Enter "**w1p1.c**" as the File Name (bottom panel)
    - **Note**: Make sure the file extension is **ALWAYS** "**.c**" (This forces Visual Studio to use the C compiler)
- Click the button "**Add**"
- Enter your source code in the main window (the contents of file "**w1p1.c**")
- Compile your code: From the top menu bar, select **Build** -> **Build Solution**
    - If there are errors, fix your errors and re-attempt building
      (keyboard shortcut: <**CTRL**> + <**Shift**> + **B**)
- If successful (bottom left corner status message), execute your program: From the top menu bar, select **Debug** -> **Start without Debugging** (keyboard shortcut: <**CTRL**> + **F5**)

<u>Remote Linux System (matrix)</u>

Prepare your matrix environment for this course and for submitting your workshops:

- Open an SSH client application like <u>PuTTy</u>
- Connect to the <u>host</u>: **matrix.senecac.on.ca ||OR|| matrix.senecacollege.ca**
- Login using your Seneca *userid* and *password* (be careful: case-sensitive)
- Create a directory named btp100 where all your workshops will be stored and change into that directory:

```
[… ~]$ mkdir btp100 <ENTER>
[… ~]$ cd btp100 <ENTER>
```

- Create another directory inside btp100 called "w01" to store workshop #1 files:

```
[… btp100]$ mkdir w01 <ENTER>
[… btp100]$ cd w01 <ENTER>
```

- Remain connected to matrix and leave this application open

Copying your source code file to matrix:

- Open an SFTP client application like WinSCP or FileZilla
- Connect to the <u>host</u>: **matrix.senecac.on.ca ||OR|| matrix.senecacollege.ca**
- Login using your Seneca *userid* and *password* (be careful: case-sensitive)
- Transfer your source file "**w1p1.c**" from your local computer to the remote matrix directory w01 that is inside directory btp100 (~/btp100/w01)
  - Avoid unexpected errors; ensure your transfer mode is set to "**Text**" (<u>NOT</u> Auto):
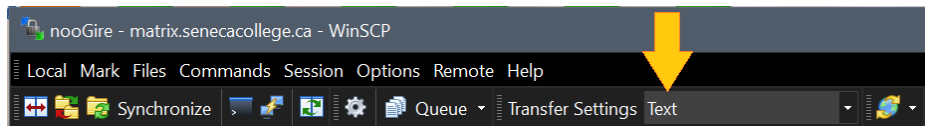
- After copying the file to matrix, you may close the SFTP application

Test your code on matrix:

- Return to your SSH client application (PuTTy)
- Be sure your current directory is the w01 directory (inside btp100)
- Confirm your transferred file exists in this directory by listing the contents:

```
[… w01]$ ls <ENTER>
```

- Compile and run your solution on matrix:

```
[… w01]$ gcc -Wall w1p1.c -o w1 <ENTER>
[… w01]$ w1 <ENTER>
```

- ***Make sure the output is <u>EXACTLY</u> as the sample output illustrates earlier in this workshop***

Part-1 Submission

1. Upload (file transfer) your source file "**w1p1.c**" to your matrix account
2. Login to matrix in an SSH terminal and change directory to where you placed your workshop source code.
3. Manually compile and run your program to make sure everything works properly:

   gcc -Wall w1p1.c -o w1 *<ENTER>*

   If there are no error/warnings are generated, execute it: **w1** *<ENTER>*

4. Run the below submission command below (replace **profname.proflastname** with **your professors** Seneca userid and replace **NAA** with your section):

   ~profName.proflastname/submit 100w1/NAA_p1 *<ENTER>*

5. Follow the on-screen submission instructions

Part-2 (40%)

Instructions

Upgrade your Part-1 program to display the following:

```
+------------------------------+
| Introduction to C Programming |
+------------------------------+
Program written by:
Your_Full_Name
```

- Substitute the **highlighted yellow section** with your full name
- Save your upgraded code to a file named "**w1p2.c**"

Reflection (50%)

Instructions

- Create a text file named "**reflect.txt**"
- In 3-4 sentences describe in **your own words**:
  1. What you have learned in completing this workshop
  2. Briefly describe what SSH is and how you used it in this workshop
  3. Briefly describe what SFTP is and how you used it in this workshop

Part-2 Submission

1. Upload your source file "**w1p2.c**" to your matrix account
2. Upload your reflection file "**reflect.txt**" to your matrix account (to the same directory)
3. Login to matrix in an SSH terminal and change directory to where you placed your workshop source code.
4. Manually compile and run your program to make sure everything works properly:

   ```
   gcc -Wall w1p2.c -o w1 <ENTER>
   ```

   *If there are no error/warnings are generated, execute it: **w1** <ENTER>*

5. Run the below submission command below (replace **profname.proflastname** with <u>**your professors**</u> Seneca userid and replace **NAA** with your section):

   ```
   ~profName.proflastname/submit 100w1/NAA_p2 <ENTER>
   ```

6. Follow the on-screen submission instructions