SOFE 3950U / CSCI 3020U: Operating Systems

Assignment #1: Shell Project

Objectives

- Learn to work in groups to develop software using git
- Gain experience developing multi-source file projects in C
- Experience using Makefiles and other software build tools

Important Notes

- Work in the the same group as the **lab activities**
- All reports must be submitted as a PDF on blackboard, if source code is included submit everything as an archive (e.g. zip, tar.gz)
- Save the submission as <assignment_number>_<first student's id> (e.g. assignment1_100123456.zip)
- If you cannot submit the document on blackboard then please contact the TA with your submission at **somayyeh.aghababaei@uoit.net**

Assignment Details

Notice

It is recommended for this assignment activity and others that you save/bookmark the following resources as they are very useful for C programming.

- http://en.cppreference.com/w/c
- http://www.cplusplus.com/reference/clibrary/
- http://users.ece.utexas.edu/~adnan/c-refcard.pdf
- http://gribblelab.org/CBootcamp

The following resources are helpful as you will need to perform string tokenization and use POSIX functions.

- http://www.tutorialspoint.com/c_standard_library/c_function_strtok.htm
- http://www.thegeekstuff.com/2012/06/c-directory/

Assignment Clarifications

1. The assignment consists of completing and submitting the **entire** MyShell project, and is an extension of the lab 2 session where you were given guidance on the project and only required to submit a subset of the entire project.

2. For the purpose of this assignment, use the existing GitHub repository created during the lab 2 activity. You will be working in the **same groups** for the assignments as in the labs.

3. For the assignment you must ensure that all of the shell features (items **i … ix**) are implemented as specified.

4. Shell command clarifications:
    - **i**, each time the directory is changed you must set the character array **PWD** to the new current directory (this is a shell environment). You must use POSIX functions to change directories on the local filesystem.
    - **iii**, for dir you must use POSIX functions, see the resources above.

    - **iv,** for environ list all of your environment strings and their values in the terminal (e.g. PWD, SHELL, etc.)
    - **ix**, you must use a POSIX or other similar method in C to determine the directory the shell was executed from, the character array **SHELL** must then be set to this path.

5. **item 2** and **item 5** of the myshell description are **NOT** required for the submission, as they require the use of forking, which has not been covered in the course yet.

6. **Item 4** is much easier than it appears, any program executed in the terminal (which is a shell itself, likely **BASH**) supports STDIN and STDOUT file streams, your shell should already satisfy the criteria for **item 4** without any modification. You can use STDIN and STDOUT to have a text file containing all the commands to test as the STDIN **inputfile** and record the output in STDOUT to the **outputfile** verify that all your shell commands works as expected.

Deliverables

Notice

Please complete the deliverables and include your readme document, all source files, and the makefile.

1. All sources files, all of the **Project Requirements** described in the shell project document must be met, however recall that **items 2 and 5**, which require forking are **NOT** required. The primary evaluation will be that all of the shell features (items **i … ix**) are implemented as specified.

2. A makefile is included so that the source code can be compiled, if your makefile does not work then marks will be deducted.

3. A detailed readme document as outlined in the shell project document, which explains all of the functionality and usage of your shell.