

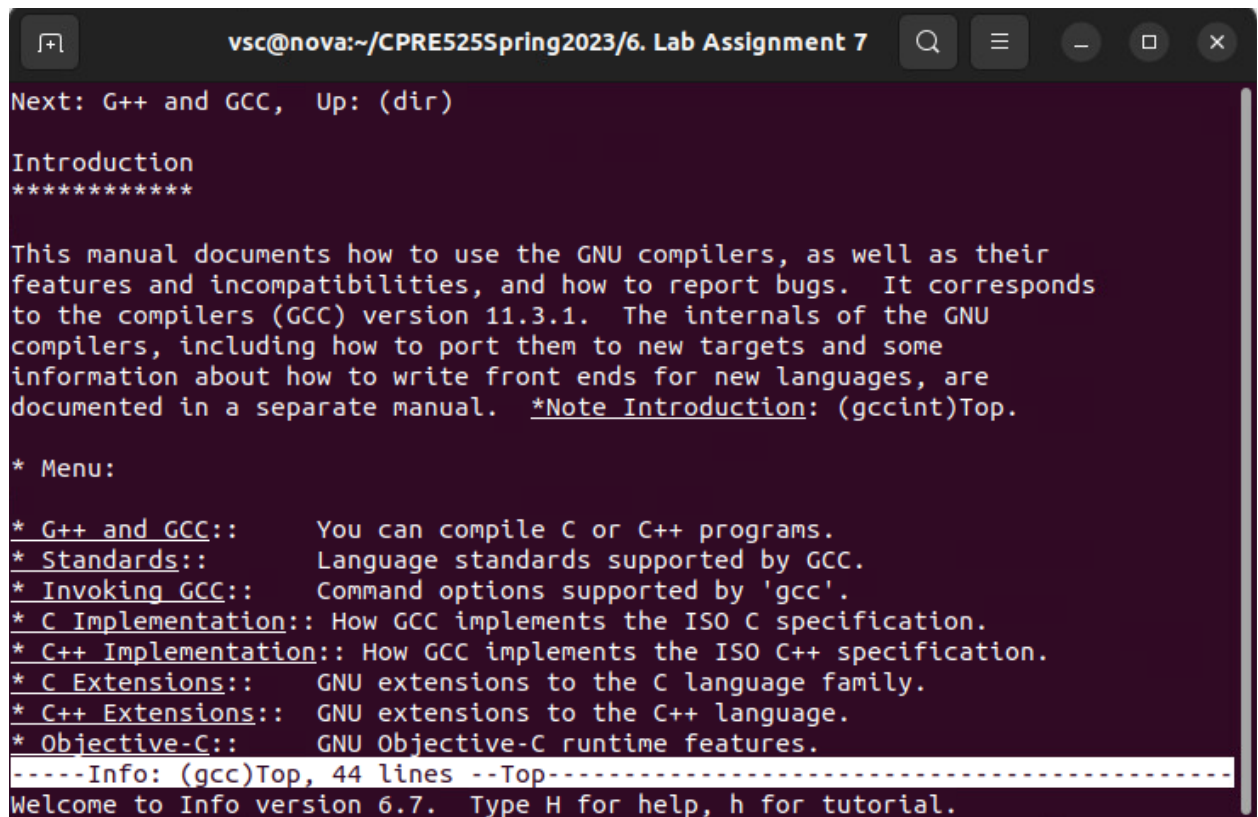
Lab Assignment 7 (02/07/2023)
Saichandana V (vsc@iastate.edu)

Tasks:

1. Make sure u have installed the c compiler on ur machine
2. Produce a source code with a main function, and in the main function
 - a. Compute the factorial of n
 - b. Add an if-else to check if n is non-negative
 - c. Compile the file and submit the source code and a screenshot
3. Push the code to GitHub.
4. File transfer and Up-to-date in Nova cluster

Submission Files and Results:

1. I ensured the C compiler (gcc) is already installed in my nova. Here are the screenshots for **info gcc & gcc man**. From the results, I noticed **gcc 6.7** was installed in my nova.



```
vsc@nova:~/CPRE525Spring2023/6. Lab Assignment 7
Next: G++ and GCC, Up: (dir)

Introduction
*****

This manual documents how to use the GNU compilers, as well as their
features and incompatibilities, and how to report bugs. It corresponds
to the compilers (GCC) version 11.3.1. The internals of the GNU
compilers, including how to port them to new targets and some
information about how to write front ends for new languages, are
documented in a separate manual. *Note Introduction: (gccint)Top.

* Menu:

* G++ and GCC::      You can compile C or C++ programs.
* Standards::       Language standards supported by GCC.
* Invoking GCC::    Command options supported by 'gcc'.
* C Implementation:: How GCC implements the ISO C specification.
* C++ Implementation:: How GCC implements the ISO C++ specification.
* C Extensions::    GNU extensions to the C language family.
* C++ Extensions::  GNU extensions to the C++ language.
* Objective-C::     GNU Objective-C runtime features.
-----Info: (gcc)Top, 44 lines --Top-----
Welcome to Info version 6.7. Type H for help, h for tutorial.
```

```
vsc@nova:~/CPRE525Spring2023/6. Lab Assignment 7
GCC(1)                                GNU                                GCC(1)

NAME
    gcc - GNU project C and C++ compiler

SYNOPSIS
    gcc [-c|-S|-E] [-std=standard]
        [-g] [-pg] [-Olevel]
        [-Wwarn...] [-Wpedantic]
        [-Idir...] [-Ldir...]
        [-Dmacro[=defn]...] [-Umacro]
        [-foption...] [-mmachine-option...]
        [-o outfile] [@file] infile...

    Only the most useful options are listed here; see below for the
    remainder.  g++ accepts mostly the same options as gcc.

DESCRIPTION
    When you invoke GCC, it normally does preprocessing, compilation,
    assembly and linking.  The "overall options" allow you to stop this
    process at an intermediate stage.  For example, the -c option says not
    to run the linker.  Then the output consists of object files output by
    the assembler.

Manual page gcc(1) line 1 (press h for help or q to quit)
```

2. I prepared a factorial n function using recursion logic and called it in the main function. Before, calling the factorial function, I coded for if-else to check if n is non-negative. I made the code interactive such that the user can enter a number for the result. In the code, I used scanf function to receive the input and direct it to the following instructions in the code.

- Here is the snapshot for the execution of the code

```
[vsc@nova 6. Lab Assignment 7]$ gcc -o Factorial Factorial.c
[vsc@nova 6. Lab Assignment 7]$ ls
Factorial  Factorial.c
[vsc@nova 6. Lab Assignment 7]$
```

- Here is the snapshot for the factorial of non-negative and negative numbers

```
[vsc@nova 6. Lab Assignment 7]$ ./Factorial
Enter a non-negative integer: 5
The factorial of 5 is 120
[vsc@nova 6. Lab Assignment 7]$ ./Factorial
Enter a non-negative integer: -5
Error: n must be a non-negative integer
[vsc@nova 6. Lab Assignment 7]$
```

3. Push the code to GitHub

a. Git status check

```
(base) ubuntu@ubuntu-vm:~/Documents/chandanaWorkspace/CPRE 525 Spring 2023/CPRE525Spring2023$  
git status  
On branch main  
Your branch is up to date with 'origin/main'.  
  
Changes not staged for commit:  
  (use "git add <file>..." to update what will be committed)  
  (use "git restore <file>..." to discard changes in working directory)  
        modified:   5. Lab Assignment 6/mylinalg.py  
  
Untracked files:  
  (use "git add <file>..." to include in what will be committed)  
        5. Lab Assignment 6/5. Lab Assignment 6 Submission.pdf  
        6. Lab Assignment 7/  
  
no changes added to commit (use "git add" and/or "git commit -a")
```

b. Git add and git status

```
(base) ubuntu@ubuntu-vm:~/Documents/chandanaWorkspace/CPRE 525 Spring 2023/CPRE525Spring2023$  
git add .  
(base) ubuntu@ubuntu-vm:~/Documents/chandanaWorkspace/CPRE 525 Spring 2023/CPRE525Spring2023$  
git status  
On branch main  
Your branch is up to date with 'origin/main'.  
  
Changes to be committed:  
  (use "git restore --staged <file>..." to unstage)  
        new file:   5. Lab Assignment 6/5. Lab Assignment 6 Submission.pdf  
        modified:   5. Lab Assignment 6/mylinalg.py  
        new file:   6. Lab Assignment 7/Factorial  
        new file:   6. Lab Assignment 7/Factorial.c
```

c. Git committed the files

```
(base) ubuntu@ubuntu-vm:~/Documents/chandanaWorkspace/CPRE 525 Spring 2023/CPRE525Spring2023$  
git commit -m 'Adding files'  
[main 7104637] Adding files  
 4 files changed, 41 insertions(+)  
 create mode 100644 5. Lab Assignment 6/5. Lab Assignment 6 Submission.pdf  
 create mode 100755 6. Lab Assignment 7/Factorial  
 create mode 100644 6. Lab Assignment 7/Factorial.c
```

d. Git push

```
(base) ubuntu@ubuntu-vm:~/Documents/chandanaWorkspace/CPRE 525 Spring 2023/CPRE525Spring2023$  
git push  
Username for 'https://github.com': Saichandana999  
Password for 'https://Saichandana999@github.com':  
Enumerating objects: 11, done.  
Counting objects: 100% (11/11), done.  
Delta compression using up to 8 threads  
Compressing objects: 100% (8/8), done.  
Writing objects: 100% (8/8), 857.50 KiB | 15.04 MiB/s, done.  
Total 8 (delta 2), reused 0 (delta 0), pack-reused 0  
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.  
To https://github.com/Saichandana999/CPRE525Spring2023.git  
   f0d9de7..7104637  main -> main
```

e. Final GitHub repository

Saichandana999 / CPRE525Spring2023 Private

<> Code Issues Pull requests Actions Projects Security Insights Settings

main 1 branch 0 tags Go to file Add file <> Code

Saichandana999 Adding files 7104637 3 minutes ago 8 commits

1. Lab Assignment 2	Adding my files	2 weeks ago
2. Lab Assignment 3	Adding my files	2 weeks ago
3. Lab Assignment 4	updated argument tolerance	last week
4. Lab Assignment 5	5. Lab Assignment 6	4 days ago
5. Lab Assignment 6	Adding files	3 minutes ago
6. Lab Assignment 7	Adding files	3 minutes ago
LICENSE	Initial commit	2 weeks ago
README.md	Initial commit	2 weeks ago

4. Files transferred and up-to-date in Nova cluster.

```
[vsc@nova ~]$ tree
.
├── CPRE525Spring2023
│   ├── 1. Lab Assignment 2
│   │   ├── 1. Lab Assignment 2 Screen Shots for both 2 and 3 steps.pdf
│   │   ├── demo_myfuncs.py
│   │   └── myfuncs.py
│   ├── 2. Lab Assignment 3
│   │   ├── 2. Lab Assignment 3 Screen Shots.pdf
│   │   └── demo_pythonlist.py
│   ├── 3. Lab Assignment 4
│   │   ├── 3. Lab Assignment 4 Submission.pdf
│   │   ├── demo_myfuncs.py
│   │   ├── myfuncs.py
│   │   ├── __pycache__
│   │   │   └── myfuncs.cpython-39.pyc
│   ├── 4. Lab Assignment 5
│   │   ├── 4. Lab Assignment 5 Submission.pdf
│   │   ├── guass_elimination_solve.py
│   │   └── practice_numpyLinearAlgebra.py
│   ├── 5. Lab Assignment 6
│   │   ├── 5. Lab Assignment 6 Submission.pdf
│   │   ├── guass_elimination_cp525.py
│   │   ├── mylinalg.py
│   │   ├── __pycache__
│   │   │   └── guass_elimination_cp525.cpython-310.pyc
│   ├── 6. Lab Assignment 7
│   │   ├── Factorial
│   │   └── Factorial.c
│   ├── LICENSE
│   └── README.md
└── 9 directories, 20 files
```

