Lab Assignment 12 (02/28/2023) Saichandana V (vsc@iastate.edu)

Tasks:

Produce a source program for Gaussian elimination with partial pivoting and back substitution for solving a linear system Ax = b. And apply for function for the following system:

- o generate a sub-triangular matrix L with diagonals = 1, and others being random numbers between 0 and 1, compute $A = LL^T$. Say the size of A is $N \times N$.
- generate a random vector b of length N with entries between 0 and 1.
- o solve Ax = b.

Use Makefile. Submit source codes and screenshots.

- Push the code to GitHub.
- 3. File transfer and Up-to-date in Nova cluster

Submission Files and Results:

1. Screenshot

- 2. Push the code to GitHub
 - a. Git status check

b. Git add and git status

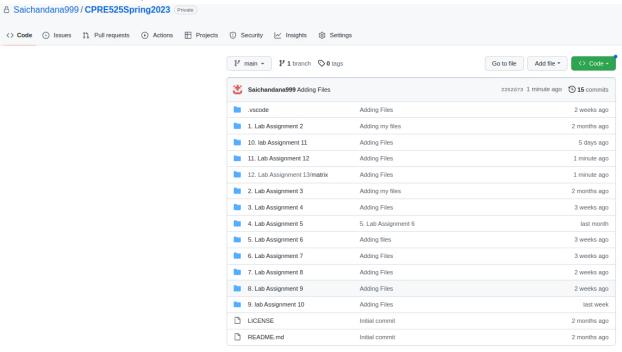
c. Git committed the files

```
(base) ubuntu@ubuntu-vm:-/Documents/chandanaWorkspace/CPRE 525 Spring 2023/CPRE525Spring2023$ git commit -m "Adding Files" [main 2252d73] Adding Files
12 files changed, 399 insertions(+), 5 deletions(-)
create mode 100644 11. Lab Assignment 12/11. Lab Assignment 12 Submission.pdf
create mode 100644 12. Lab Assignment 13/matrix/Makefile
create mode 100644 12. Lab Assignment 13/matrix/main.c
create mode 100644 12. Lab Assignment 13/matrix/main.exe
create mode 100644 12. Lab Assignment 13/matrix/main.o
create mode 100644 12. Lab Assignment 13/matrix/matrix.c
create mode 100644 12. Lab Assignment 13/matrix/matrix.c
create mode 100644 12. Lab Assignment 13/matrix/matrix.c
create mode 100644 12. Lab Assignment 13/matrix/matrix.o
```

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: 23, done.
Counting objects: 100% (23/23), done.
Delta compression using up to 8 threads
Compressing objects: 100% (16/16), done.
Writing objects: 100% (17/17), 645.34 KiB | 12.91 MiB/s, done.
Total 17 (delta 6), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (6/6), completed with 6 local objects.
To https://github.com/Saichandana999/CPRE525Spring2023.git
    49f59b6..2252d73 main -> main
```

e. Final GitHub repository



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

```
[vsc@nova ~]$ tree
           · 10. Lab Assignment 11 Submission.pdf
           - DeleteList.c
           - DeleteList.o
           GenerateList.c
           - GenerateList.o
           - GetKey.c
           GetKey.o
           - GetNumberOfNodes.c
           GetNumberOfNodes.o
           - main.c
          - main.exe
           - main.o
           - Makefile
           - node.h
           - Print.c
           - Print.o
           - SearchList.c
           - SearchList.o
            11. Lab Assignment 12 Submission.pdf

    DeleteStack.c

    DeleteStack.o

          DisplayOptions.c
          DisplayOptions.o

    DisplayStack.c

           DisplayStack.o

    GetStackSize.c

           - GetStackSize.o
           - main.c
           - main.exe
            main.o

    Makefile

           - node.h
           - Option.c
           - Option.o
           Peek.c
            Peek.o
            Pop.c
            Pop.o
            Push.c
            Push.o
               — main.c
               - main.exe
               - main.o
               - Makefile
                matrix.c
               - matrix.h
               - matrix.o
```