Advance topics in software engineering

Server-Client Implementation Using TCP Protocol

Group-A

Project running using GitBash

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1) Installing Git Bash

For Linux:

If you want to install the basic Git tools on Linux via a binary installer, you can generally do so through the package management tool that comes with your distribution. If you are on Fedora (or any closely related RPM-based distribution, such as RHEL or CentOS), you can use dnf:

$ sudo dnf install git-all (Enter password for privilege)

If you are on a Debian-based distribution, such as Ubuntu, try apt:

$ sudo apt install git-all (Enter password for privilege)

For more options, there are instructions for installing on several different Unix distributions on the website, at https://git-scm.com/download/linux.

For macOS:

There are several ways to install Git on a Mac. The easiest is probably to install the Xcode Command Line Tools. On Mavericks (10.9) or above you can do this simply by trying to run git from the Terminal the very first time.

$ git –version

Installing on Windows:

There are also a few ways to install Git on Windows. The most official build is available for download on the Git website. Just go to https://git-scm.com/download/win and the download will start automatically. Note that this is a project called Git for Windows, which is separate from Git itself; for more information on it, go to https://gitforwindows.org.

2) Starting GitBash

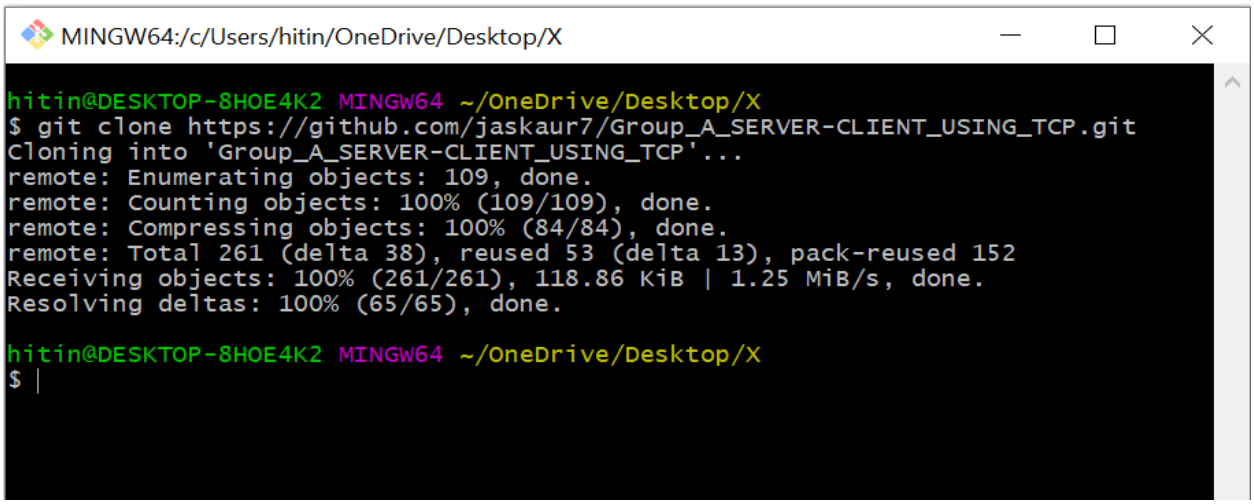
In Windows:

Create a new folder for the project. Right Click inside the folder to open a git bash.

Right Click + “Git Bash here”.

Type the following command in the git terminal:

$ git clone https://github.com/jaskaur7/Group_A_SERVER-CLIENT_USING_TCP.git



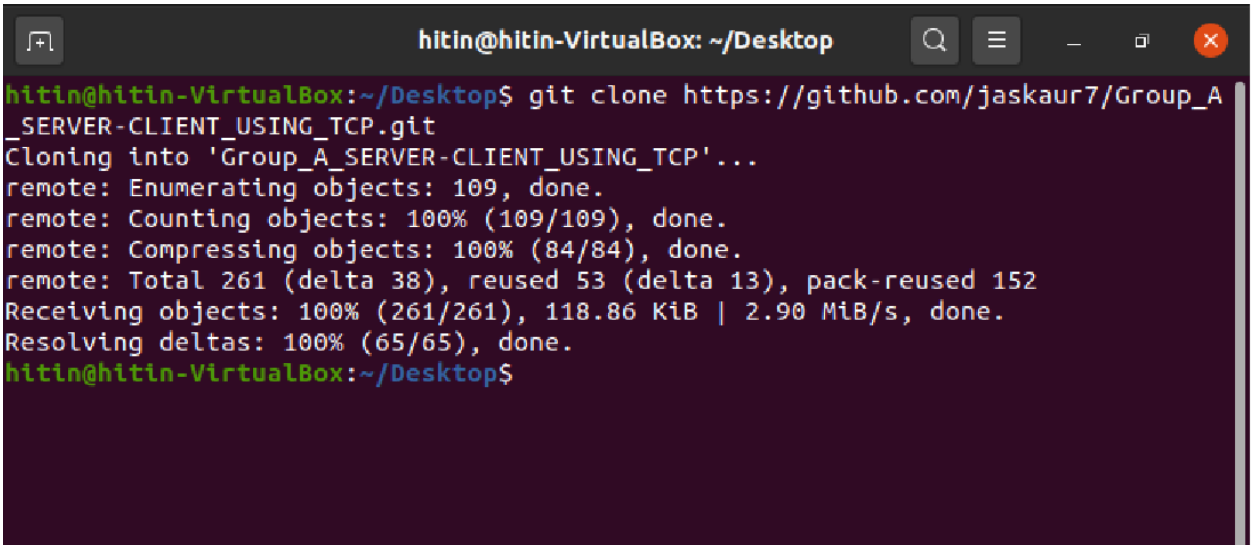
OR

Go to the link https://github.com/jaskaur7/Group_A_SERVER-CLIENT_USING_TCP.git and click on Clone or Download button and then download the zip folder of the software into the machine.

In Ubuntu:

Open new terminal using “ALT+CTRL+t” and then type the below command and press enter.

$ git clone https://github.com/jaskaur7/Group_A_SERVER-CLIENT_USING_TCP.git



3) Execute makefile:

After cloning the repository, the folder will be visible on Ubuntu command line using 'ls' command with the Group_A_SERVER-CLIENT_USING_TCP name. Switch to the folder and then run the make file using the following command:

$ make all

```
hitin@hitin-VirtualBox:~/Desktop/ProjectC$ make all
gcc -c ./src/client/client.c -o ./build/client.o
gcc -c ./src/common.c -o ./build/common.o
gcc ./build/client.o ./build/common.o -o ./bin/client
gcc -c ./src/server-singlethread/server.c -o ./build/serverSingle.o
gcc ./build/serverSingle.o ./build/common.o -o ./bin/serverSingle
gcc -c ./src/server-multithreaded/server.c -o ./build/serverMulti.o
gcc -c ./lib/queue.c -o ./build/queue.o
gcc -pthread ./build/serverMulti.o ./build/queue.o ./build/common.o -o ./bin/se
rverMulti
gcc -c ./test/src/test_client.c -o ./build/test_client.o
gcc ./build/test_client.o ./build/common.o -o ./bin/test_client
gcc -c ./test/src/test_server.c -o ./build/test_server.o
gcc ./build/test_server.o ./build/common.o -o ./bin/test_server
```

4) After the make file executes successfully you will see two directories bin/ and build/. Type the 'list' command using the syntax mentioned below:

$ ls -l (This will list the files under bin directory)

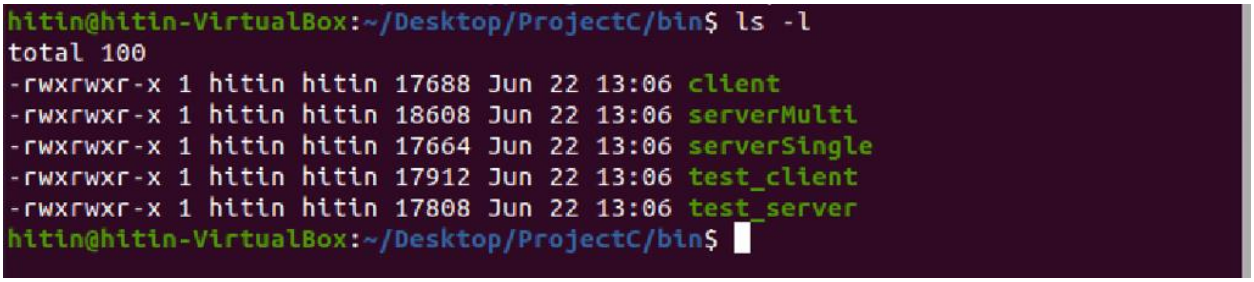
```
hitin@hitin-VirtualBox:~/Desktop/ProjectC$ ls -l
total 32
drwxr-xr-x 2 hitin hitin 4096 Jun 23 17:48 bin
drwxr-xr-x 2 hitin hitin 4096 Jun 23 17:48 build
drwxr-xr-x 2 hitin hitin 4096 Jun 15 17:09 doc
drwxr-xr-x 2 hitin hitin 4096 Jun 23 11:12 include
drwxr-xr-x 2 hitin hitin 4096 Jun 18 22:23 lib
-rw-rw-r-- 1 hitin hitin 1727 Jun 23 11:11 makefile
-rw-r--r-- 1 hitin hitin    0 May 30 18:41 README.md
drwxr-xr-x 5 hitin hitin 4096 Jun 18 18:55 src
drwxr-xr-x 3 hitin hitin 4096 Jun 20 21:27 test
hitin@hitin-VirtualBox:~/Desktop/ProjectC$
```

Now, Switch to the 'bin/ directory' using the below command and type the 'list' command:

$ cd bin/ (This will change the directory to bin directory)

$ ls -l (This will list the files under bin directory)

(P.S. The list command will show all the main files: client, serverSingle, serverMulti, test_client and test_server in the executable forms).



5) Execute the mentioned files with appropriate commands in order to for a TCP connect between Client & Single-thread Server and Client & Multi-thread Server as given in User Manual.