

Lab 1

Git and GitHub

Objectives

Towards the end of this lab, you should be able to

- Differentiate between Git and GitHub
- Create a GitHub account
- Maintain both local and remote repositories using Git commands.

What is Git?

- **Git** is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

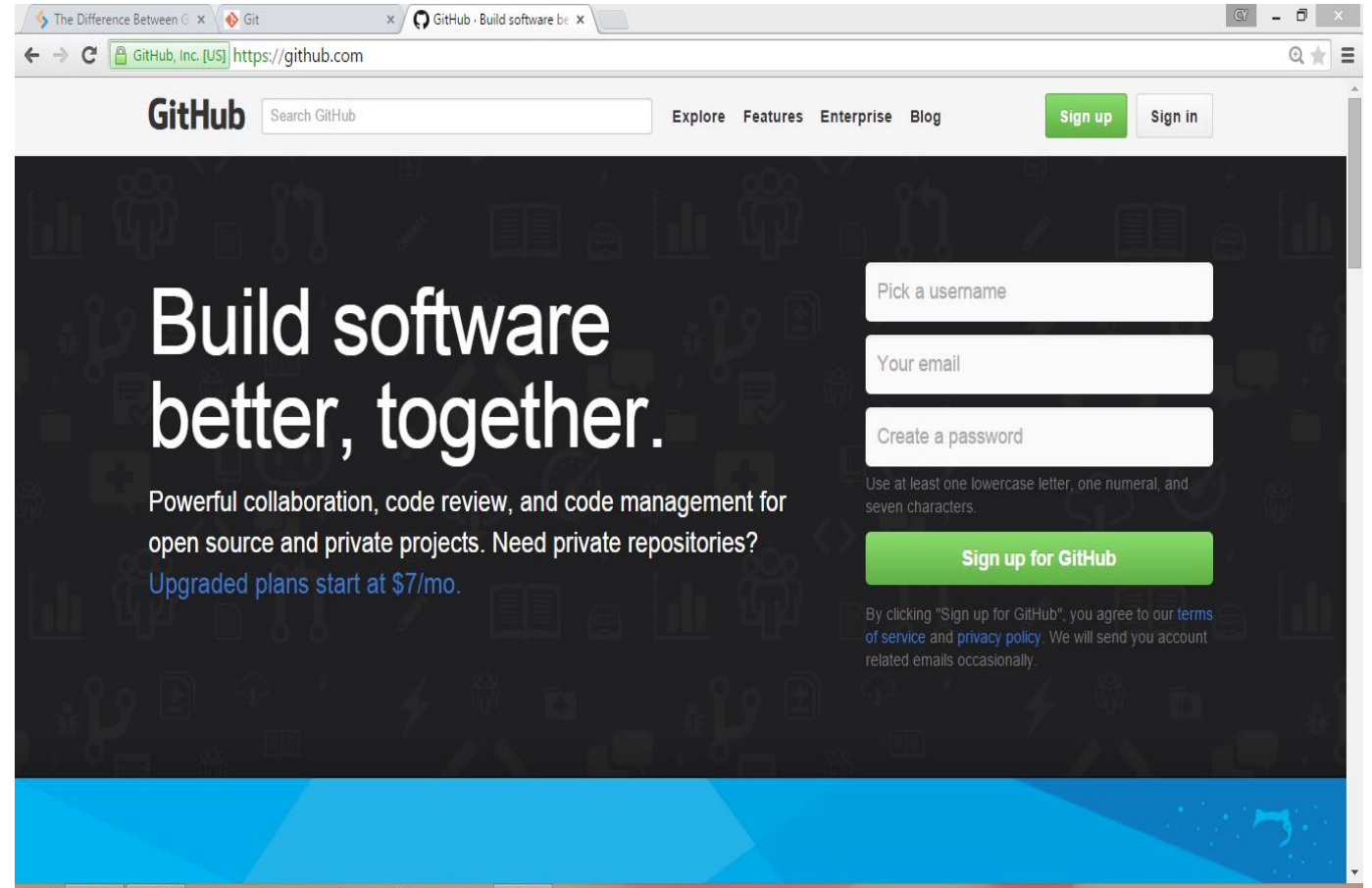
(<https://git-scm.com/>, 2015)

What is GitHub?

- A website on which you can host and publish your Git repositories as well as collaborate with others.
- Provides basic functionalities to maintain your repositories.
- The difference between Git and GitHub can be found at <https://youtu.be/B44jvGEdrko>

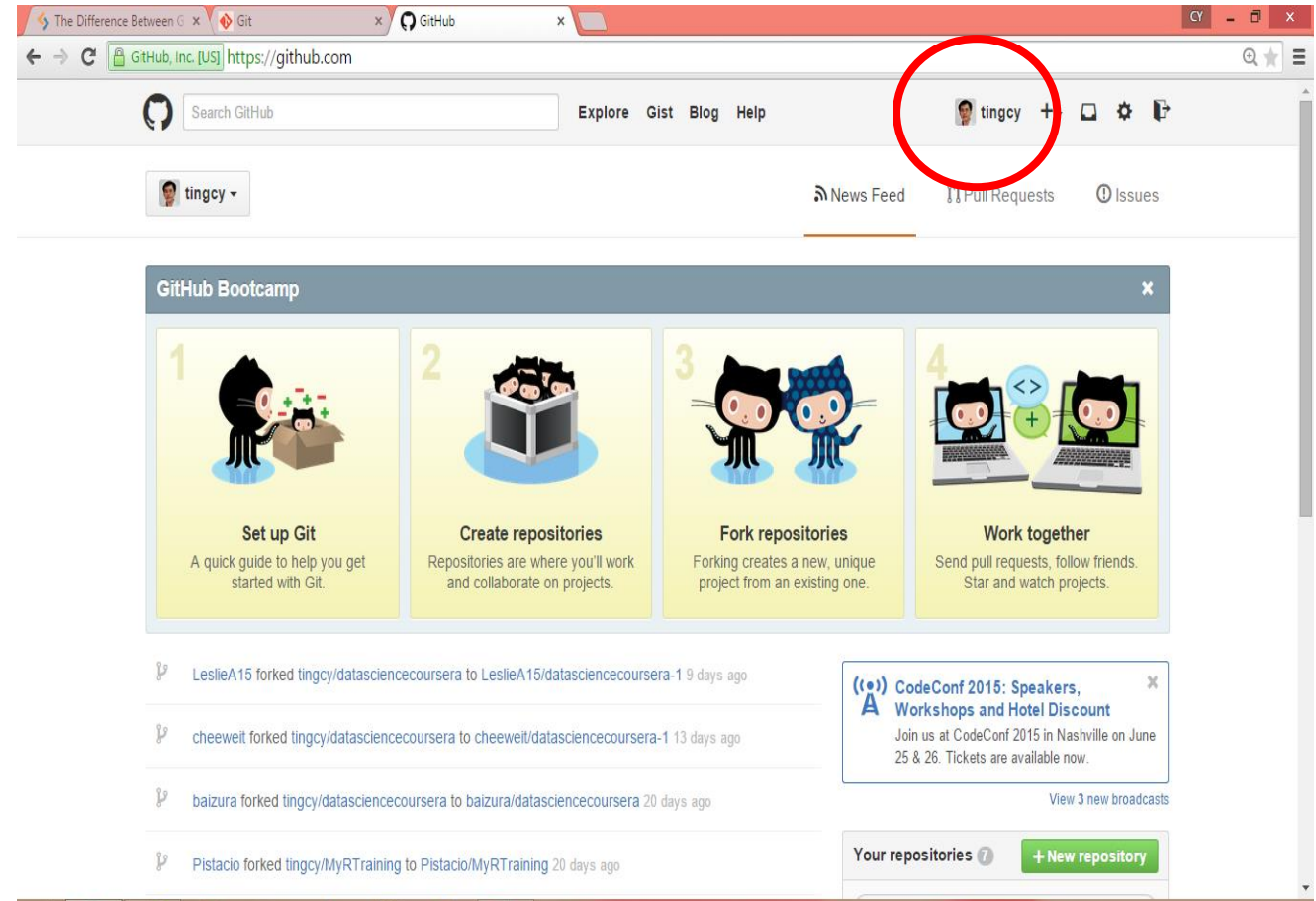
Creating a GitHub Account

- Navigate to <https://github.com>
- Create a new account by clicking at the “sign up” button.



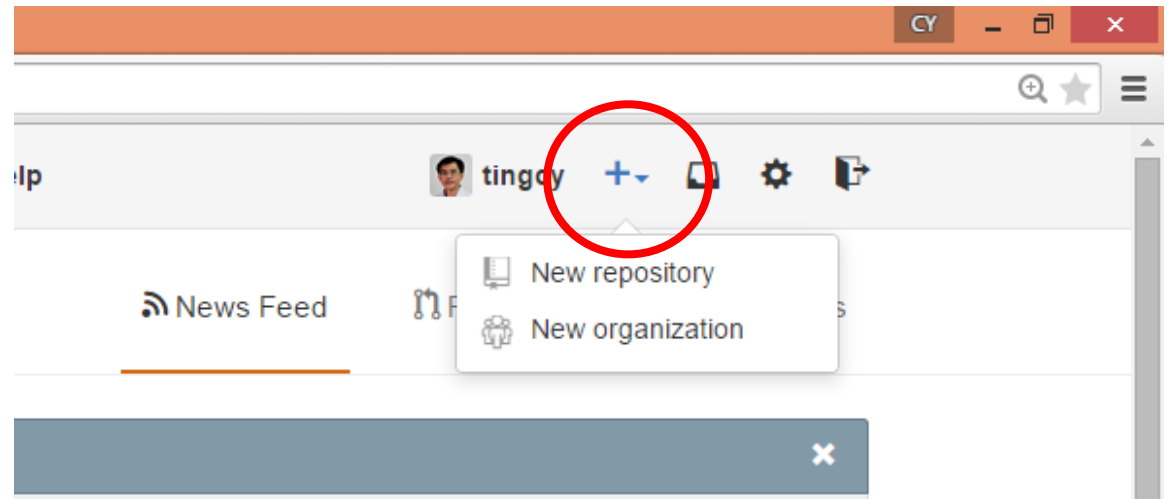
Creating a GitHub Account

- Using your username and password, once log in, you should see your username appear at the right-upper corner of the webpage.



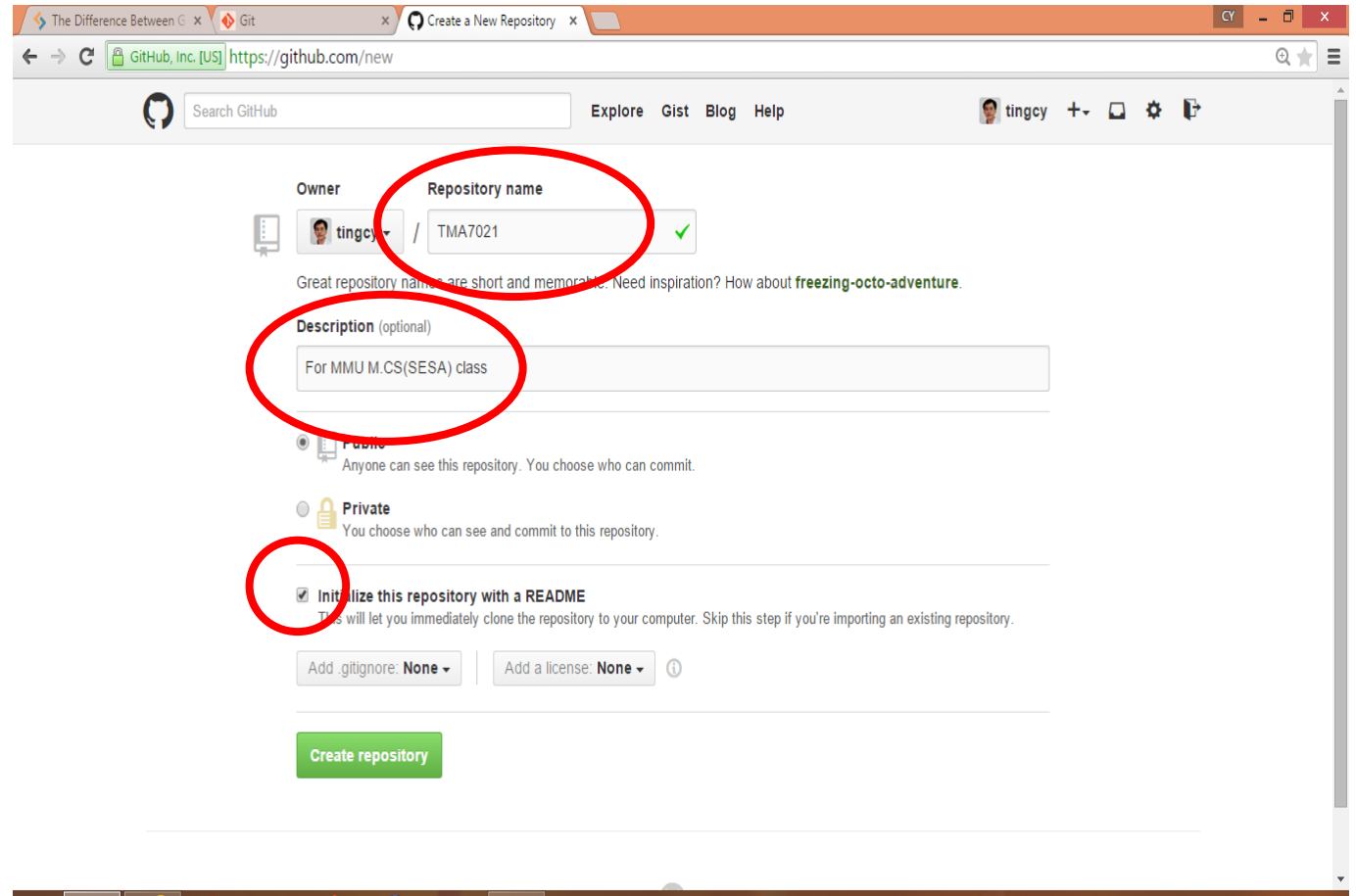
Creating a GitHub Account

- Click at the “+” sign to create a new repository.



Creating a GitHub Account

- Type “**TMA7021**” at the “Repository name”
- Put some description to your repository (optional).
- Tick at the checkbox “Initialize this repository with a README”
- Lastly, click at the “**Create repository**” button.



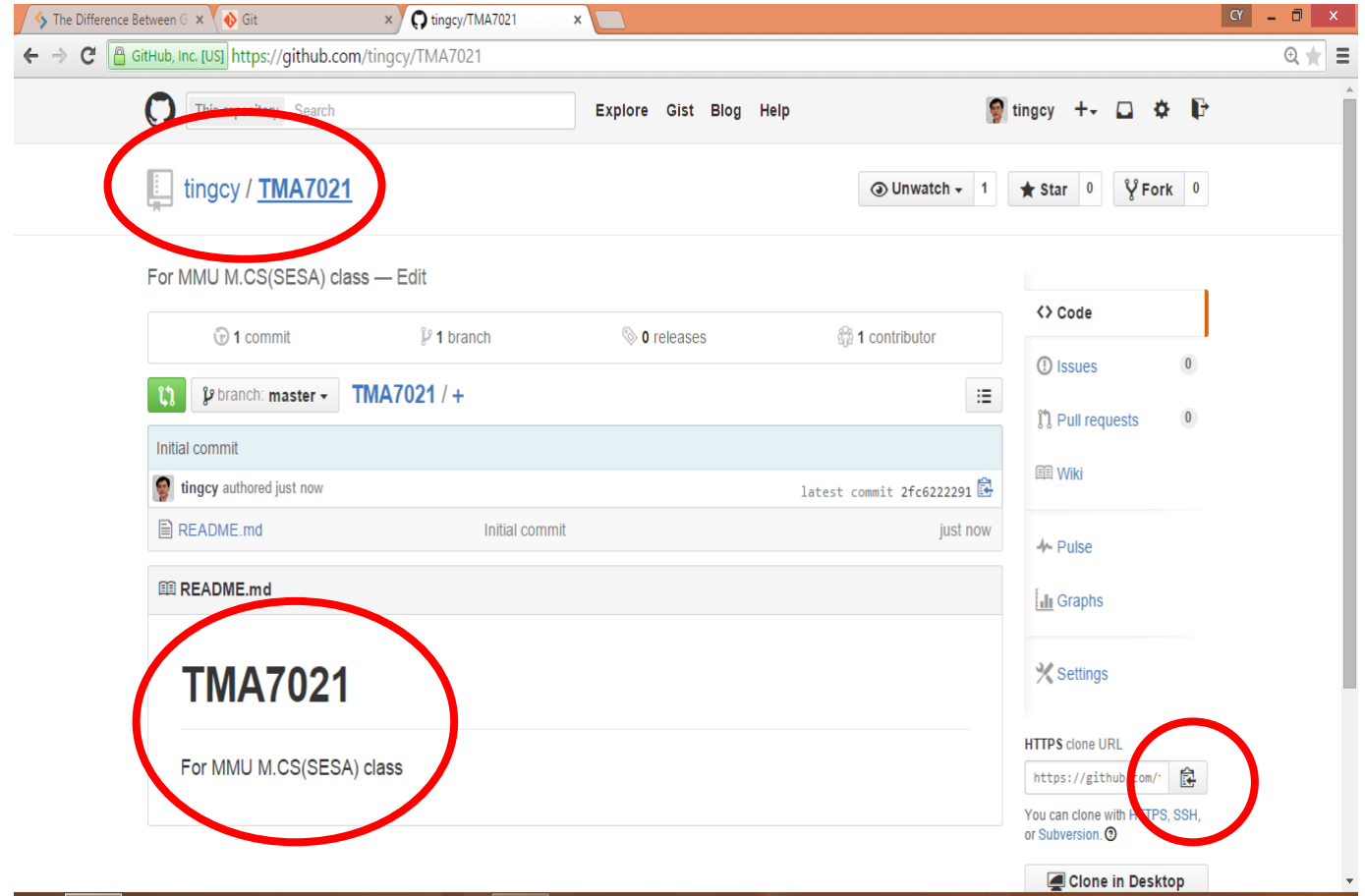
The screenshot shows the GitHub 'Create a New Repository' page. The browser address bar shows 'https://github.com/new'. The page has a search bar and navigation links (Explore, Gist, Blog, Help). The user 'tingcy' is logged in. The form fields are as follows:

- Owner:** tingcy
- Repository name:** TMA7021 (with a green checkmark icon)
- Description (optional):** For MMU M.CS(SES) class
- Visibility:** Public (selected), Private (unselected)
- Initialize this repository with a README:** ☒ (checked)
- Add .gitignore:** None (selected)
- Add a license:** None (selected)
- Create repository:** (green button)

Red circles highlight the 'Repository name' field, the 'Description' field, and the 'Initialize this repository with a README' checkbox.

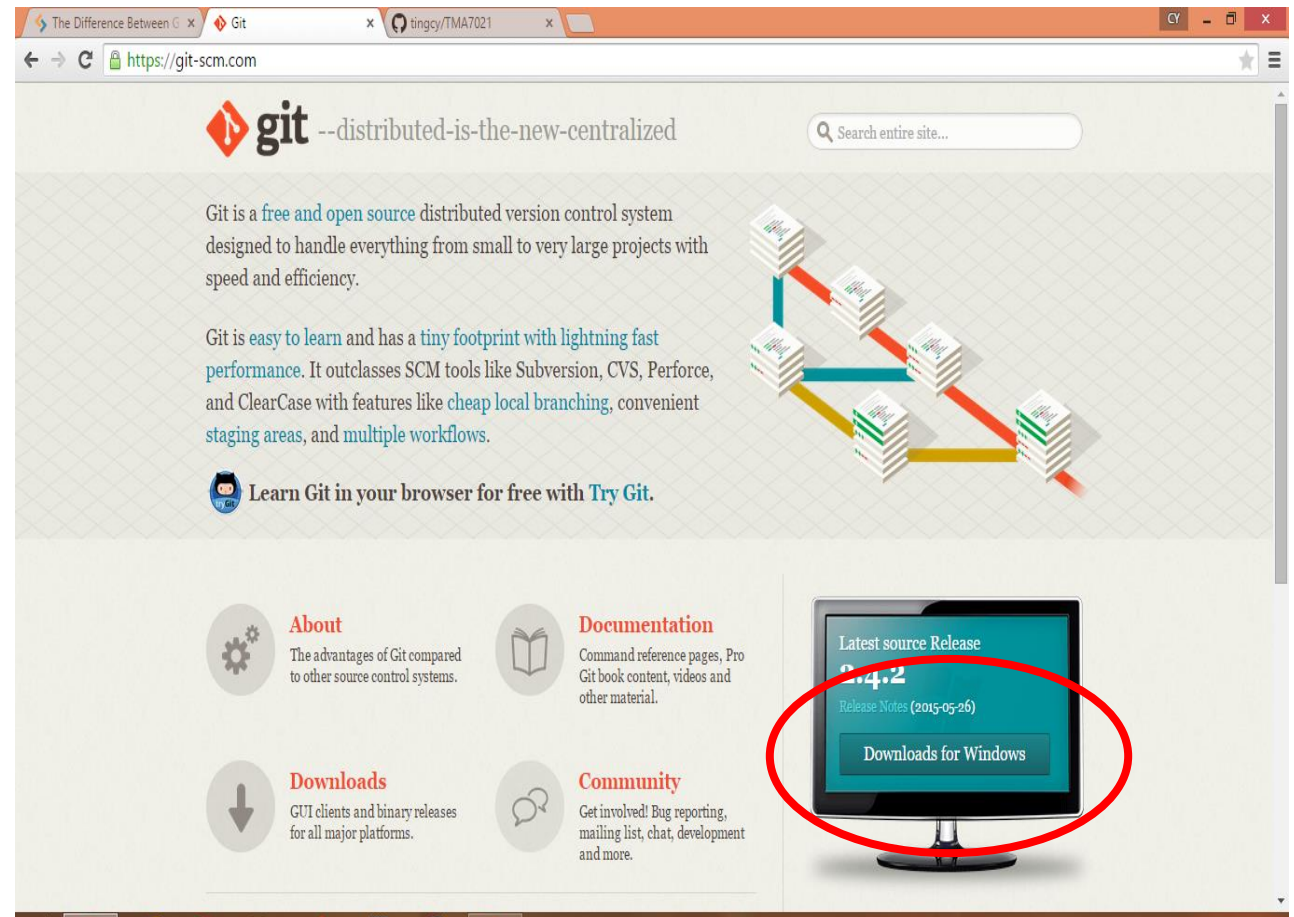
Creating a GitHub Account

- A new repository TMA7021 has been successfully created for you!
- The content of the README.md file is “TMA7021” and “For MMU M.CS(SES) class”
- At the **HTTPS clone URL** section, copy the URL.



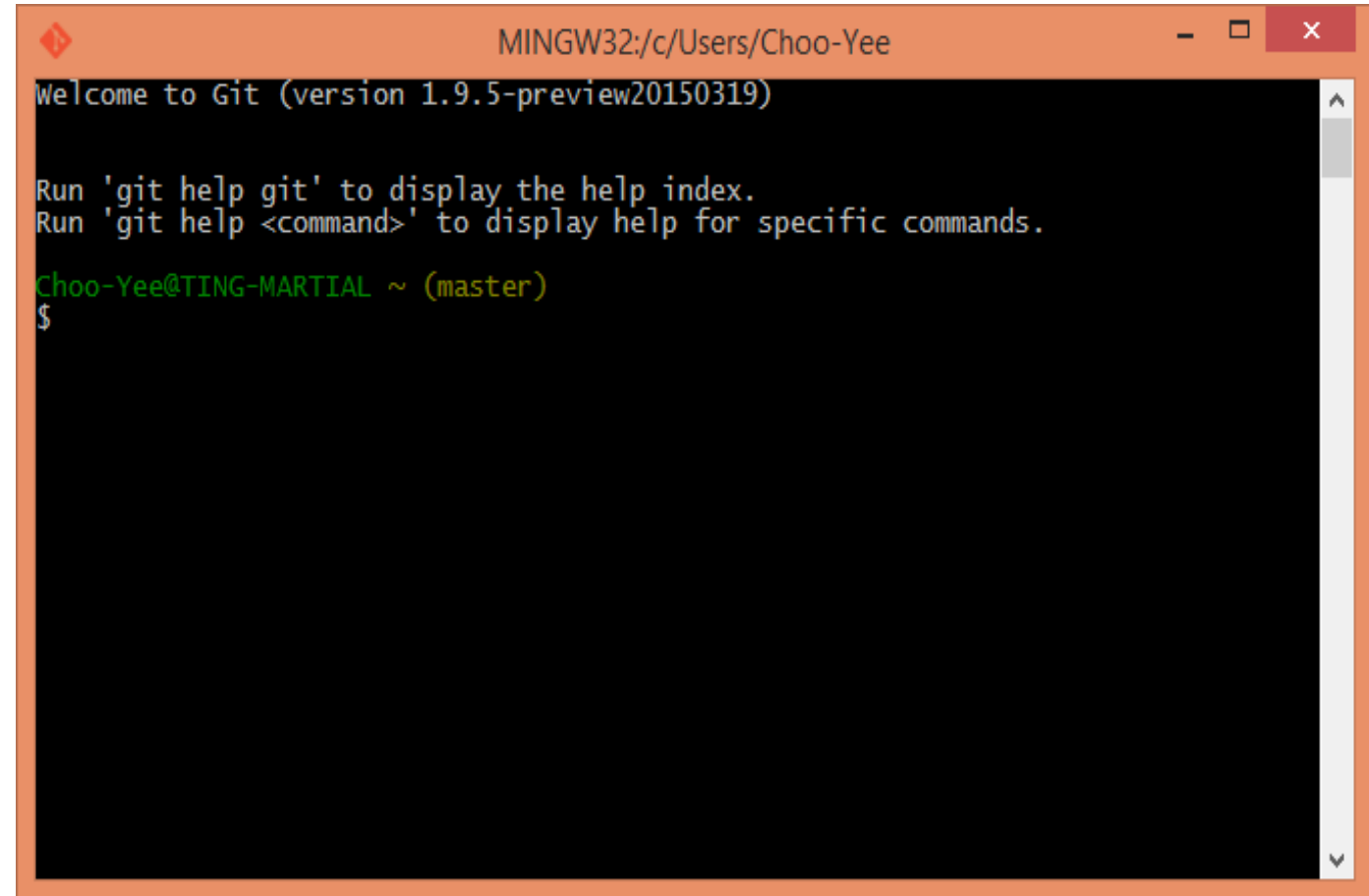
Installing Git

- Navigate to <https://git-scm.com/> to download git.
- Select the appropriate platform.



Git Bash

- After installing git, execute the Git Bash program.

A screenshot of a Git Bash terminal window. The window has an orange title bar with the text "MINGW32:/c/Users/Choo-Yee" and standard window controls. The terminal content is as follows:

```
Welcome to Git (version 1.9.5-preview20150319)

Run 'git help git' to display the help index.
Run 'git help <command>' to display help for specific commands.

Choo-Yee@TING-MARTIAL ~ (master)
$
```

Git Bash Commands: Cloning a Repo

Type the following commands:

```
$ git config --global user.name "YOUR NAME"  
$ git config --global user.email "YOUR EMAIL"
```

Navigate to the directory/folder where you want to place the clone copy of the remote repo. E.g., I want to place to clone repo into the directory **Dropbox\Teaching\TMA7021_DMAnalytics**, I type

```
$ cd Dropbox/Teaching/TMA7021_DMAnalytics
```

Git Bash Commands: Cloning a Repo

To list the content of the folder, you type:

```
$ ls
```

Before cloning, make sure you have copied the URL (see slide 9).
To start cloning the remote repo TMA7021, you type:

```
$ git clone https://github.com/XXX/yyy.git
```

Type `ls` to check the content of the directory/folder, you should see TMA7021 created. Navigate into TMA7021 by using the command

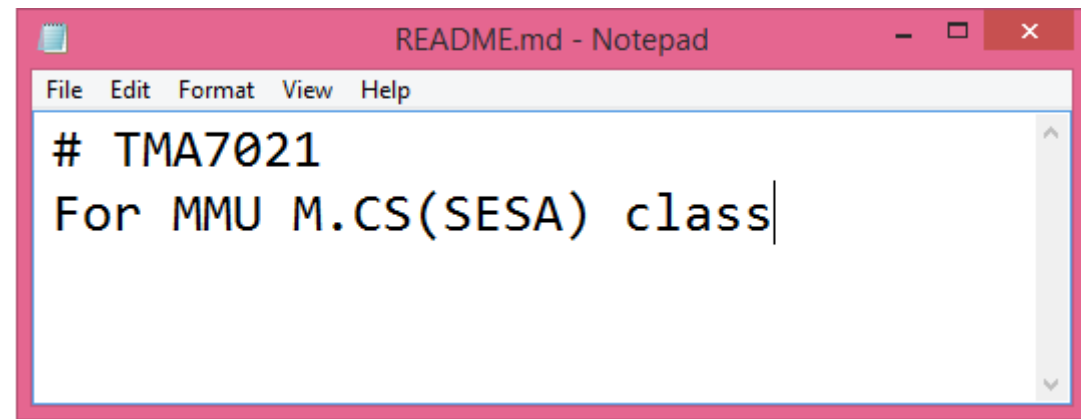
```
$ cd TMA7021
```

Creating a GitHub Account

- Check the content of TMA7021 by issuing the command `ls`. You should see `README.md`

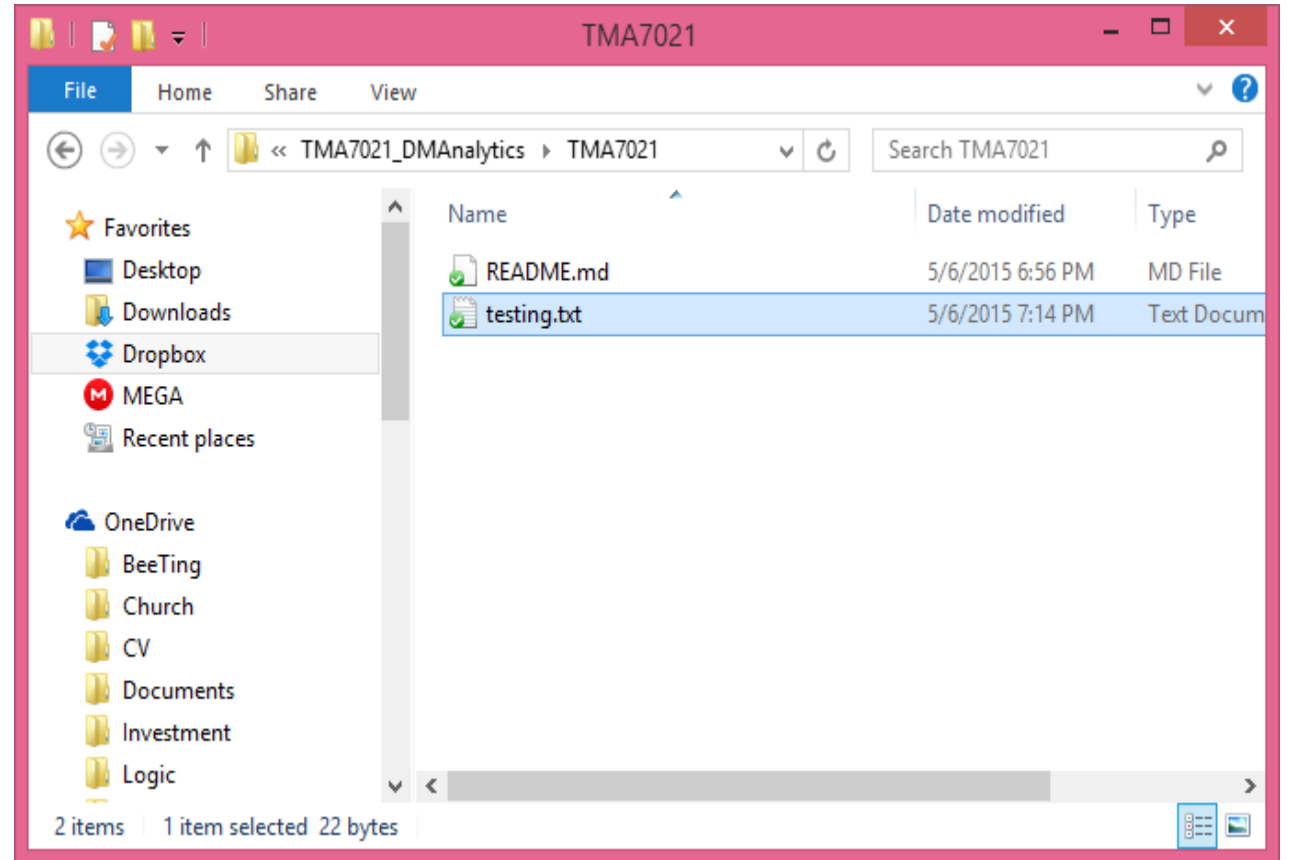
```
Choo-Yee@TING-MARTIAL ~/Dropbox/Teaching/TMA7021_DMAAnalytics/TMA7021 (master)
$ ls
README.md
```

- Open the file using notepad and you will see the content. You can edit the content.



Adding a File to Remote Repo

- If you are using Windows, use the File Explorer to navigate **TMA7021**.
- Create a new file named **testing.txt**. The content of the file should be *"This is my first test."*



Adding a File to Remote Repo

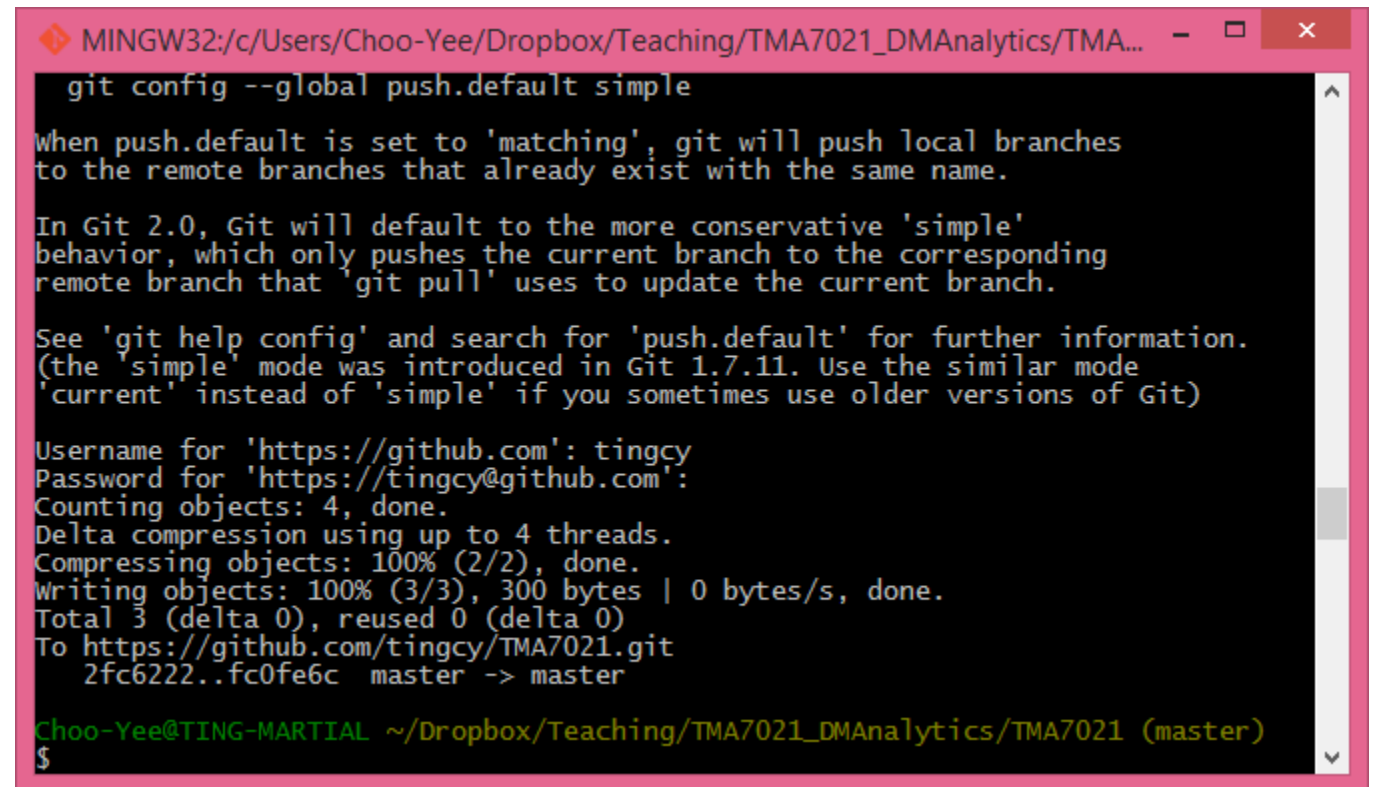
- Using Git Bash, check whether `testing.txt` is inside TMA7021.

```
Choo-Yee@TING-MARTIAL ~/Dropbox/Teaching/TMA7021_DMAnalytics/TMA7021 (master)
$ ls
README.md  testing.txt
```

- Type the following set of commands to add the file into your remote repo:
\$ `git add testing.txt`
\$ `git commit -m "adding new file"`
\$ `git push`
- Key in your username and password of your GitHub account.

Adding a File to Remote Repo

- Message is shown indicating that file has been successfully uploaded to your GitHub repo.

A terminal window with a pink border and title bar. The title bar text is "MINGW32:/c/Users/Choo-Yee/Dropbox/Teaching/TMA7021_DMAAnalytics/TMA...". The terminal content shows the command "git config --global push.default simple" and its output, which includes a message about the 'simple' push behavior and the successful execution of a git push command. The push output shows "Counting objects: 4, done.", "Delta compression using up to 4 threads.", "Compressing objects: 100% (2/2), done.", "Writing objects: 100% (3/3), 300 bytes | 0 bytes/s, done.", "Total 3 (delta 0), reused 0 (delta 0)", and "To https://github.com/tingcy/TMA7021.git 2fc6222..fc0fe6c master -> master". The prompt at the bottom is "Choo-Yee@TING-MARTIAL ~/Dropbox/Teaching/TMA7021_DMAAnalytics/TMA7021 (master) \$".

```
MINGW32:/c/Users/Choo-Yee/Dropbox/Teaching/TMA7021_DMAAnalytics/TMA... - □ ×
git config --global push.default simple

When push.default is set to 'matching', git will push local branches
to the remote branches that already exist with the same name.

In Git 2.0, Git will default to the more conservative 'simple'
behavior, which only pushes the current branch to the corresponding
remote branch that 'git pull' uses to update the current branch.

See 'git help config' and search for 'push.default' for further information.
(the 'simple' mode was introduced in Git 1.7.11. Use the similar mode
'current' instead of 'simple' if you sometimes use older versions of Git)

Username for 'https://github.com': tingcy
Password for 'https://tingcy@github.com':
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 300 bytes | 0 bytes/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/tingcy/TMA7021.git
  2fc6222..fc0fe6c  master -> master

Choo-Yee@TING-MARTIAL ~/Dropbox/Teaching/TMA7021_DMAAnalytics/TMA7021 (master)
$
```

Adding a File to Remote Repo

Refresh your
GitHub and
testing.txt is
added to your
remote repo

The screenshot shows a web browser displaying the GitHub repository page for 'tingcy/TMA7021'. The page title is 'For MMU M.CS(SES) class — Edit'. It shows 2 commits, 1 branch, 0 releases, and 1 contributor. The 'branch: master' is selected, and the commit hash 'TMA7021 / +' is visible. A table of commits is shown, with the latest commit 'fc0fe6c6ba' highlighted. This commit, authored by 'tingcy' 4 minutes ago, includes a file named 'testing.txt' (adding new file) and a file named 'README.md' (initial commit). The file 'testing.txt' is circled in red. Below the commit table, the repository name 'TMA7021' is displayed, followed by the description 'For MMU M.CS(SES) class'. On the right side, there are links for 'Code', 'Issues', 'Pull requests', 'Wiki', 'Pulse', 'Graphs', and 'Settings'. At the bottom right, the 'HTTPS clone URL' is provided as 'https://github.com/...', along with buttons for 'Clone in Desktop' and 'Download ZIP'. The browser's address bar shows the URL 'https://github.com/tingcy/TMA7021'. The taskbar at the bottom shows a 'Git-1.9.5-preview201...exe' window with the status 'Canceled'.

Remove a Local Repo

- In case you need to remove the current local repo, so that you can re-clone the remote repo, the command is

```
$ rm -rf TMA7021
```

Note: Make sure you know what you are doing.

Remove a File from both Local and Remote Repo

- In case you need to remove a file (in this example testing.txt) from both local and remote repo, the command is

```
$ git rm testing.txt
```

```
$ git commit -m "remove file testing.txt"
```

```
$ git push
```

You will need to key in username and password.

Note: Make sure you know what you are doing.