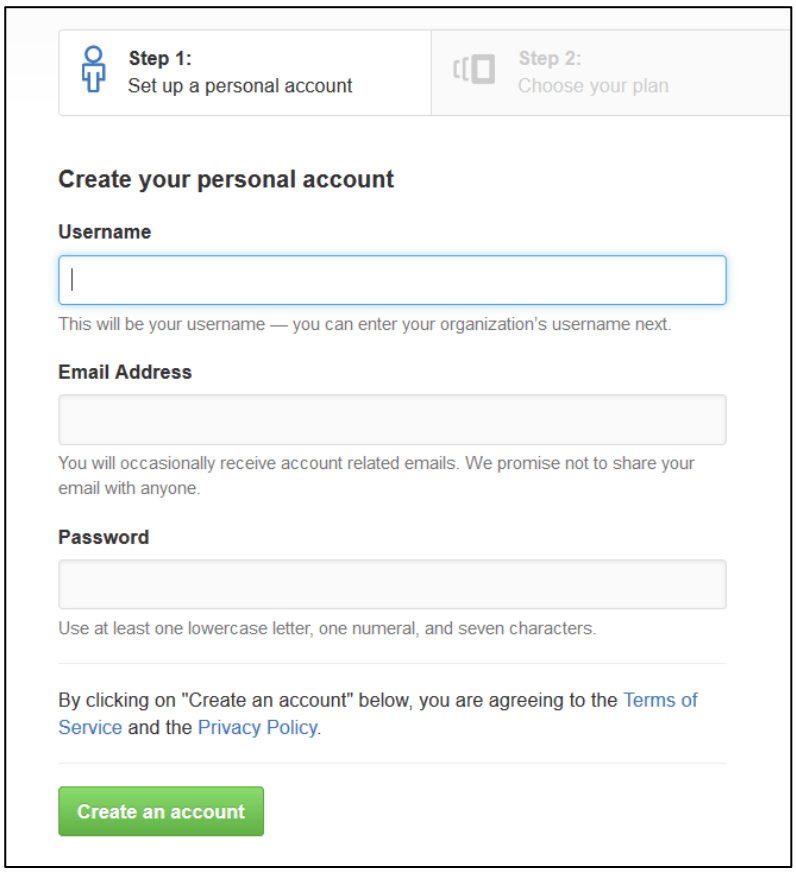
Lab: Git and GitHub

Problems for exercises and homework for the "Programming Fundamentals" course @ SoftUni.

I. Create a GitHub Developer Profile

1. Create a GitHub Profile

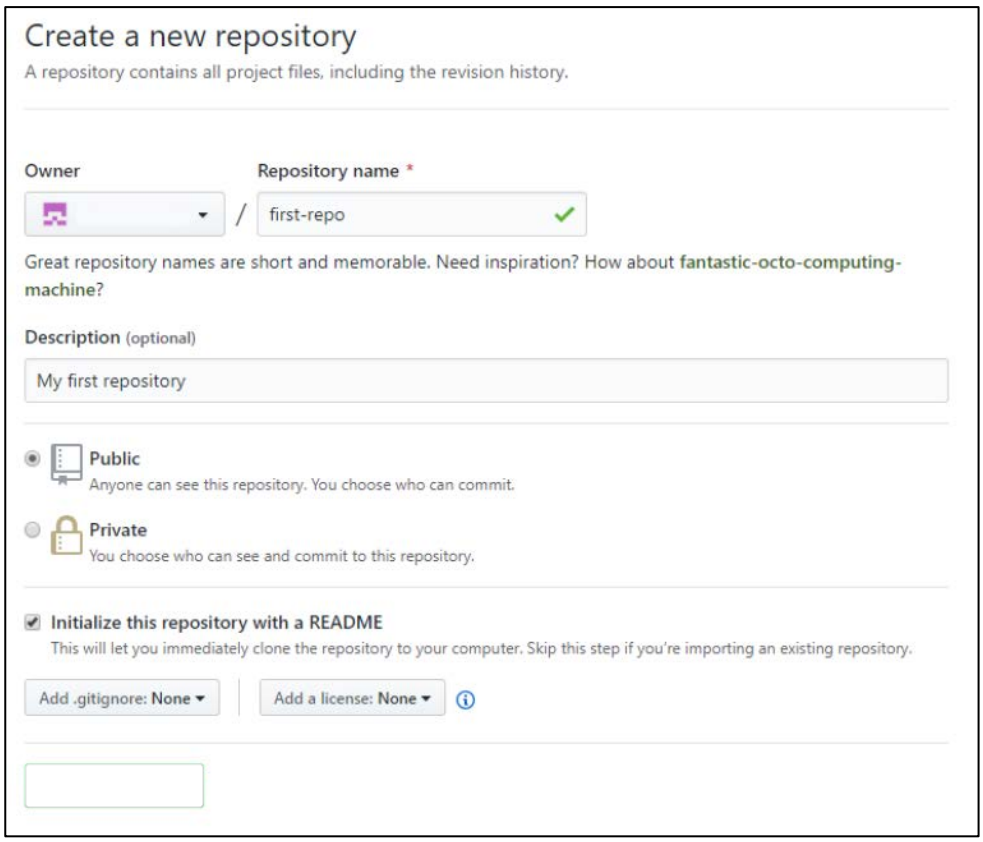
Register for a free **developer account at GitHub**: http://github.com. Submit your developer profile's URL as output of this homework.



II. Creating a Repo + Conflict + Resolve

2. Create a GitHub Repository

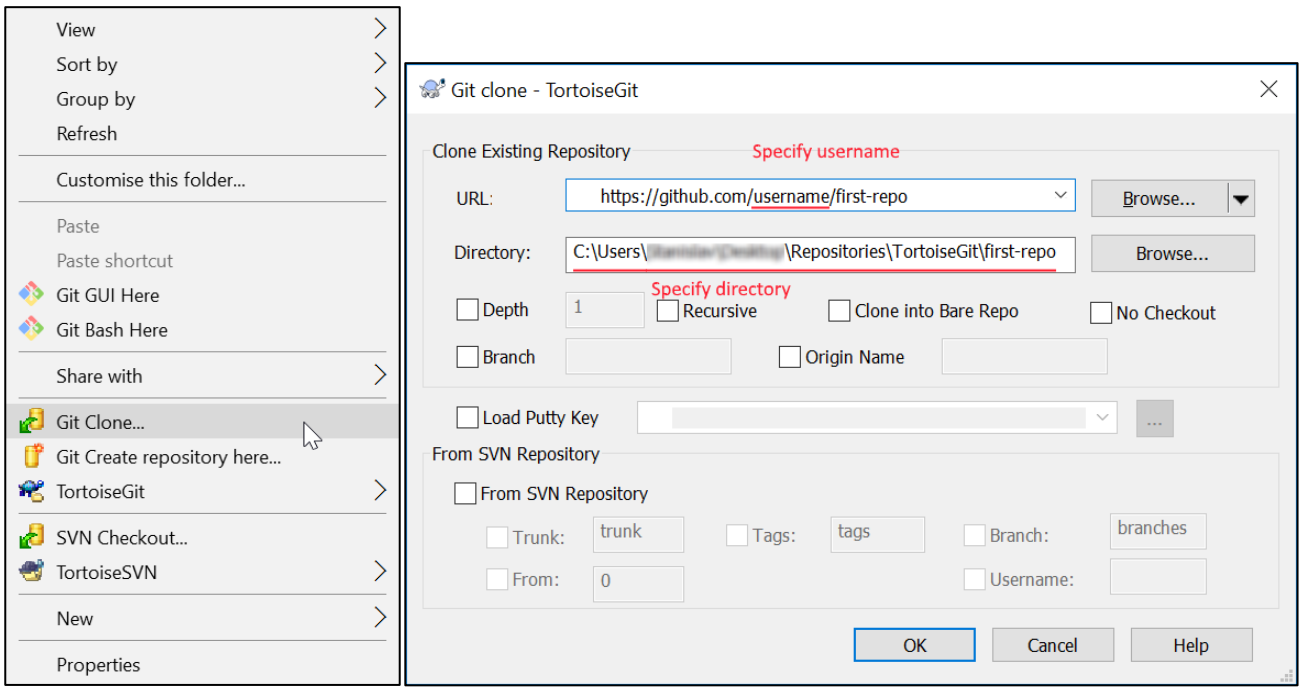
- New repository form: https://github.com/new.
- Choose a name for the repo, e.g. "**`first-repo`**". Make sure to "**Initialize this repository with a README**".



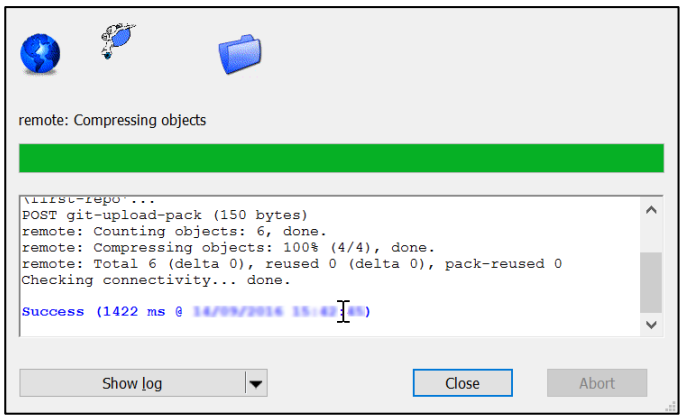
3. Clone a Repository Twice

Clone that repository on two different places on your personal device.

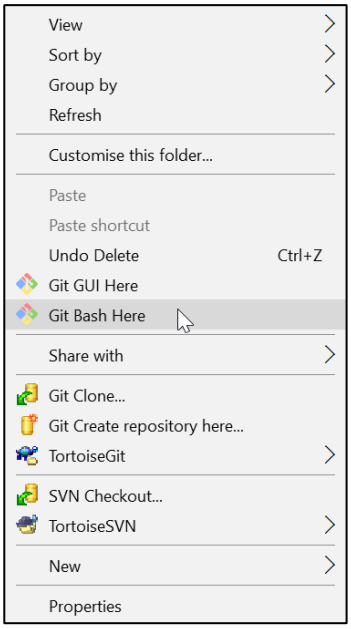
- Use Git **clone** for cloning with **TortoiseGit**.
  - Go in the desired directory, right click on blank space anywhere in the folder and copy the link of your repository.

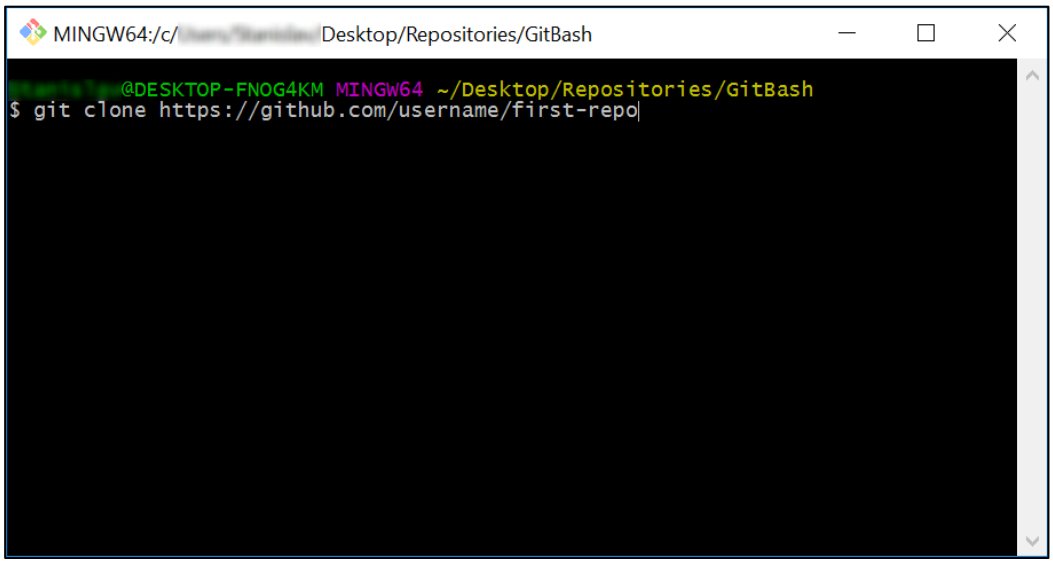


- The result should be something like this:

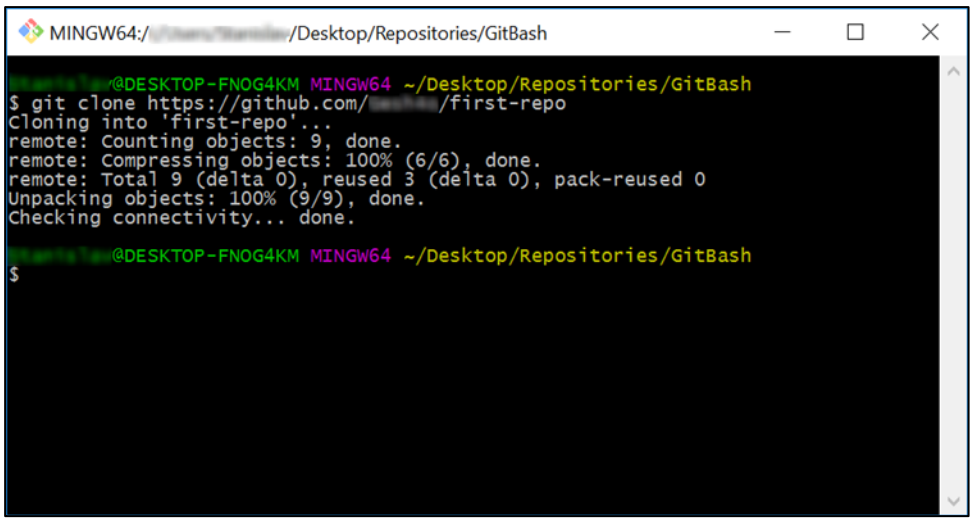


- Use **"git clone"** command for cloning with **GitBash**.
  - Go to the desired **directory**, right click on blank space anywhere in the folder, select "**Git Bash here**" and type **"git clone"** command followed by the link of your repository.





- The result should be something like this:



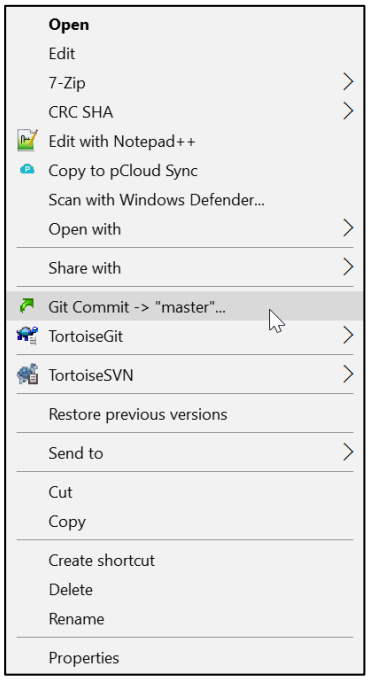
4. Make a Conflict

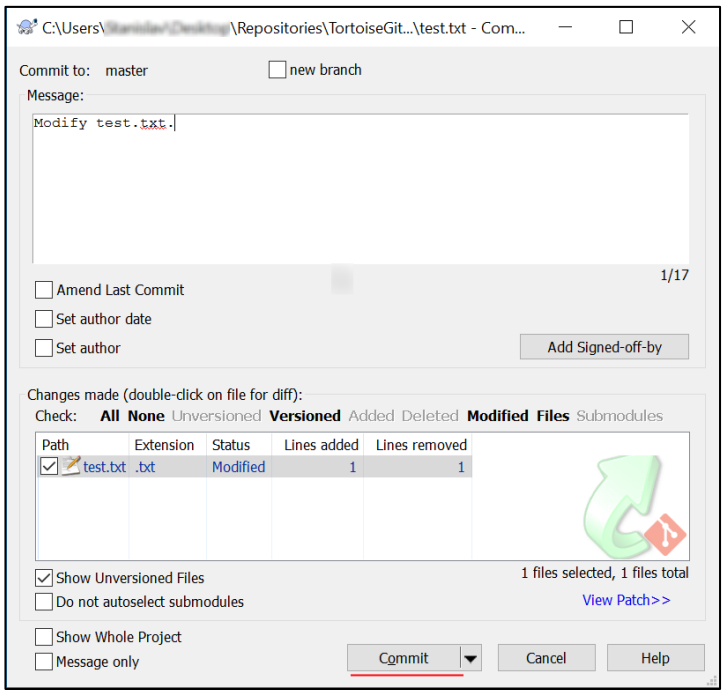
Update content in both directories differently:

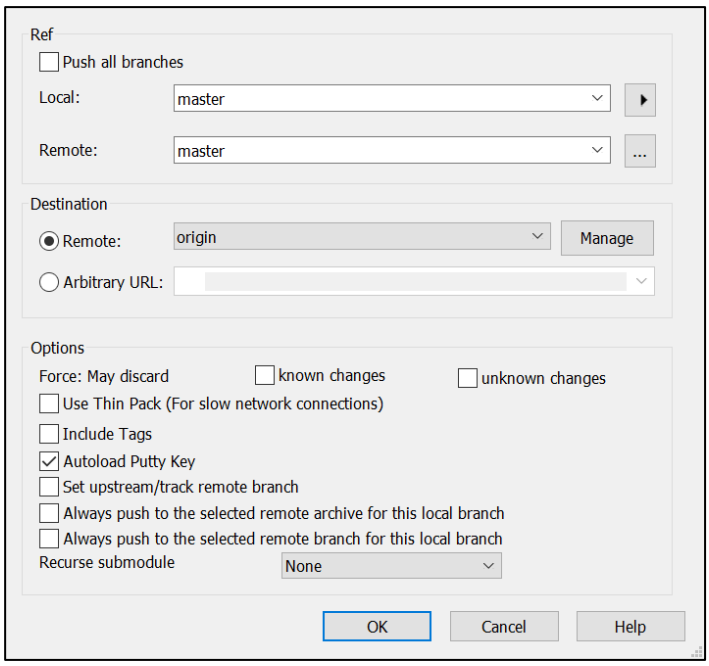
- On your **TortoiseGit** clone create "**test.txt**" file and add line: **"Creating with Tortoise…"**
- On your **GitBash** clone create "**test.txt**" file and add line: **"Creating with Bash…"**

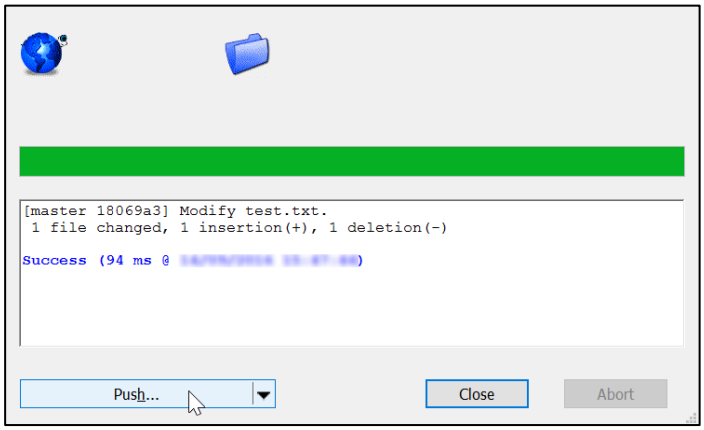
5. Upload Changes

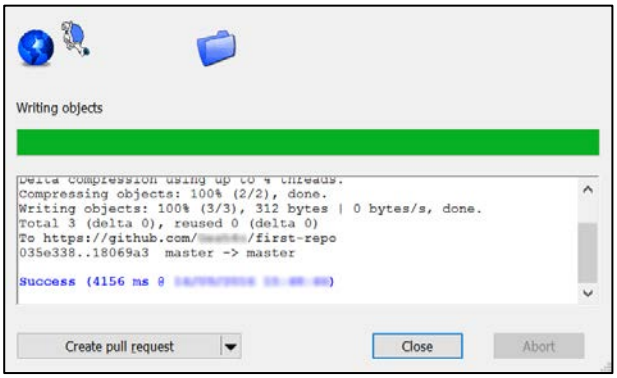
Upload Your Changes from **TortoiseGit** Clone. You can use TortoiseGit's "**Git Commit…**":











6. Update Bash Clone

- Open your Git clone directory and open **GitBash** console. Run the following commands:
  - Add all modified files to **staging** area
    - "**git add .**"
  - **Commit** your changes and a give commit message.
    - **"git commit -m "Update test.txt.""**
  - **Update** your local repository
    - "**git pull**"

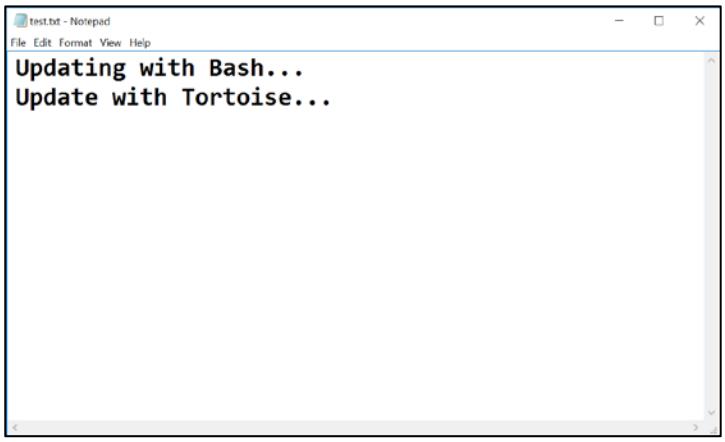
```
MINGW64:/c/[illegible]/Desktop/Repositories/GitBash/first-repo

[illegible]@DESKTOP-FNOG4KM MINGW64 ~/Desktop/Repositories/GitBash/first-repo (master)
$ git add .

[illegible]@DESKTOP-FNOG4KM MINGW64 ~/Desktop/Repositories/GitBash/first-repo (master)
$ git commit -m "Update text.txt."
[master 07a8e1e] Update text.txt.
 1 file changed, 1 insertion(+), 1 deletion(-)

[illegible]@DESKTOP-FNOG4KM MINGW64 ~/Desktop/Repositories/GitBash/first-repo (master)
$ git pull
remote: Counting objects: 3, done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
From https://github.com/[illegible]/first-repo
   940194a..fdb74be  master     -> origin/master
Auto-merging test.txt
CONFLICT (content): Merge conflict in test.txt
Automatic merge failed; fix conflicts and then commit the result.

[illegible]@DESKTOP-FNOG4KM MINGW64 ~/Desktop/Repositories/GitBash/first-repo (master|MERGING)
$ |
```

7. Merge Conflict

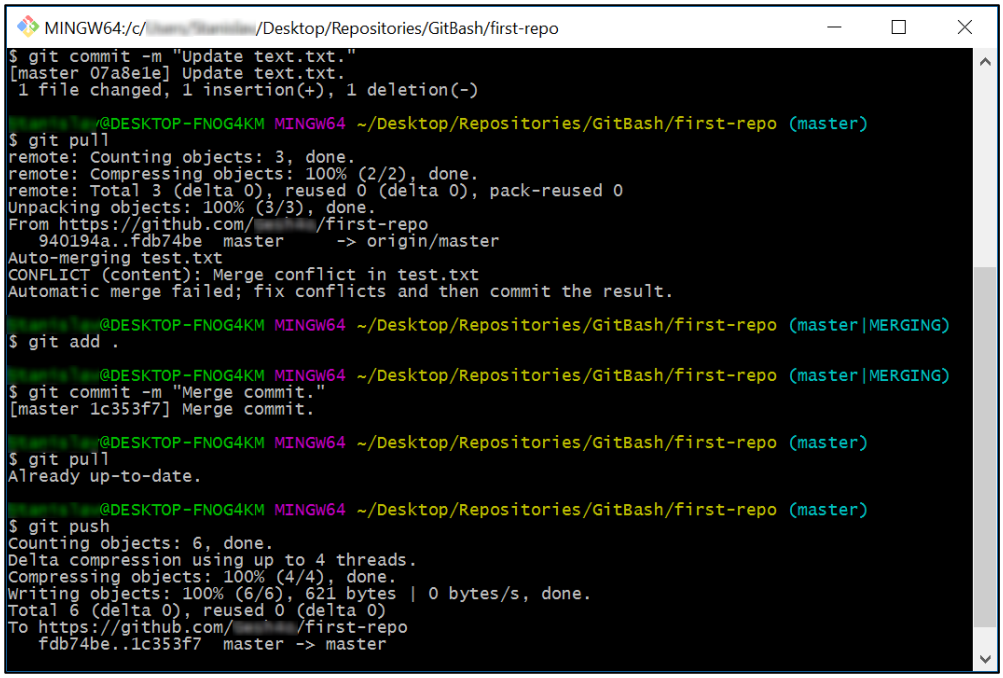
Now you have merge conflict which you have to resolve

- **Open** the **test.txt** file in your **GitBash** clone, it should look like this:

- Remove the HEAD, ======, <<<<<<, >>>>>>> symbols and save the file.



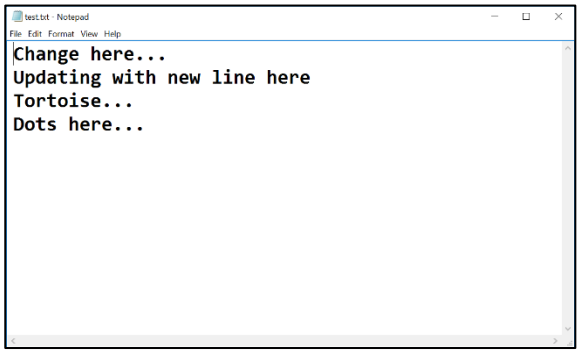
- Now that you have resolved the **conflict - stage** the modified file, **commit** again and **sync** with the remote repository.



8. Merge Changes and Push to GitHub

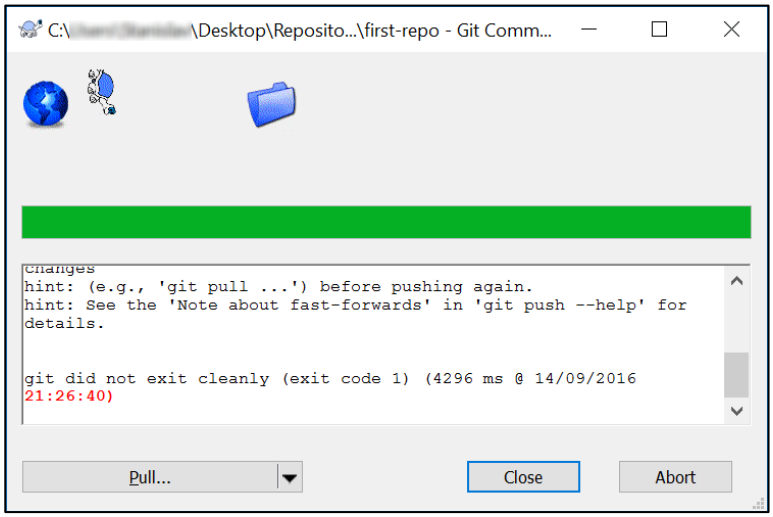
You have updated the content of your remote repository, now try to update your TortoiseGit clone

- Make additional changes to test.txt and **commit** them.

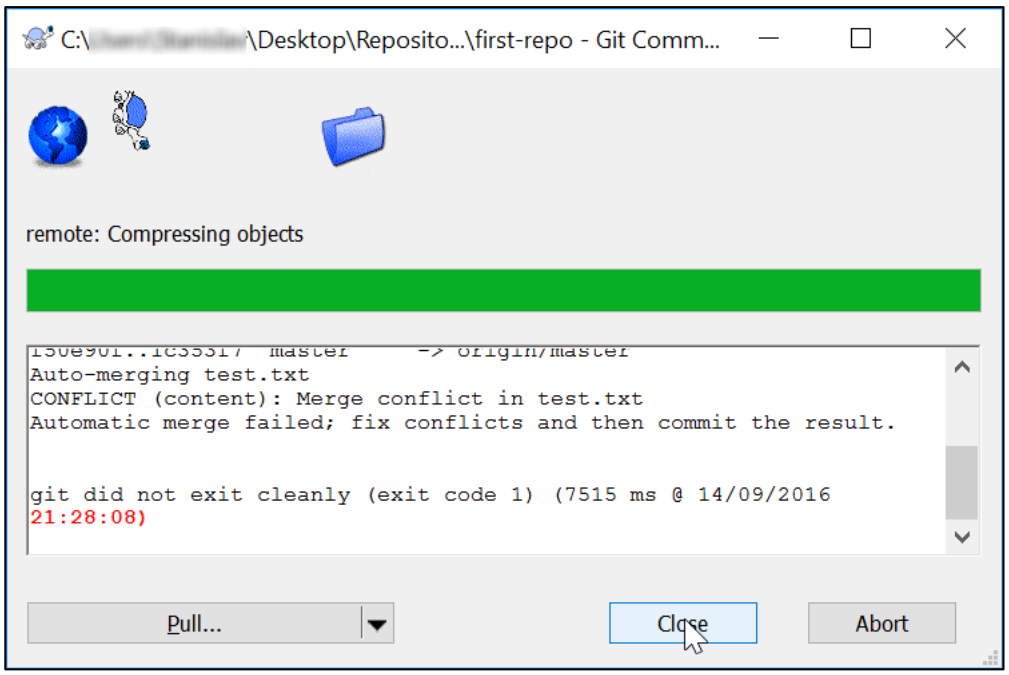


***Note** that if you make changes too simple TortoiseGit may **automatically** merge them.

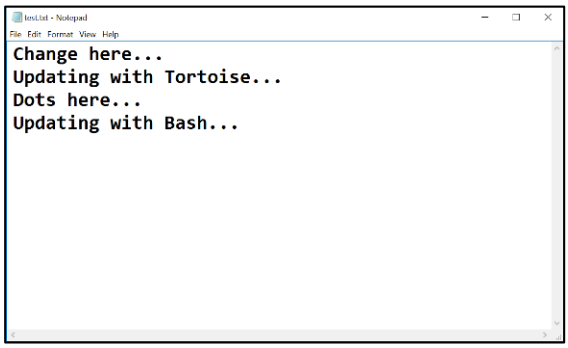
- Now try to **push**. It turns out that we have our **remote** repository **updated** (the merge commit) and we do not have these changes on our **local** repository.

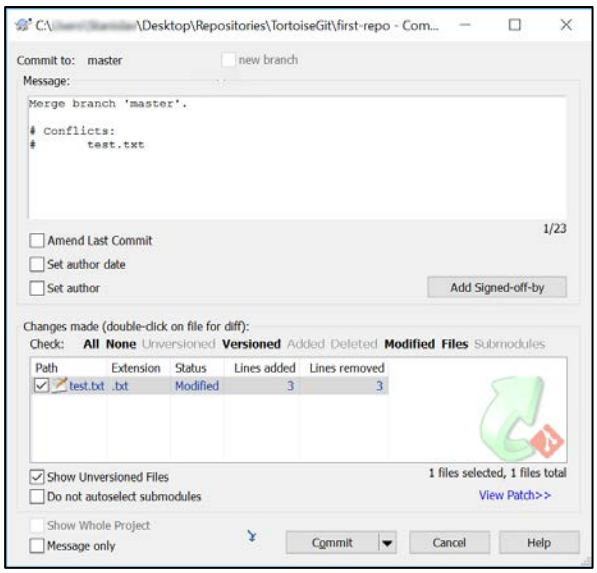


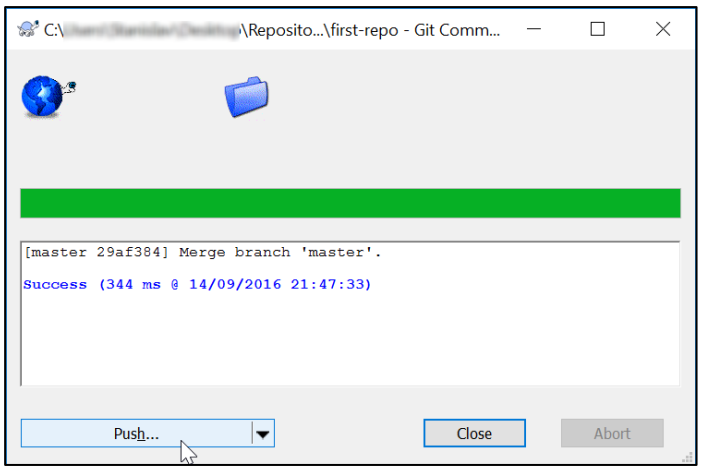
- So we have to **pull** new changes:

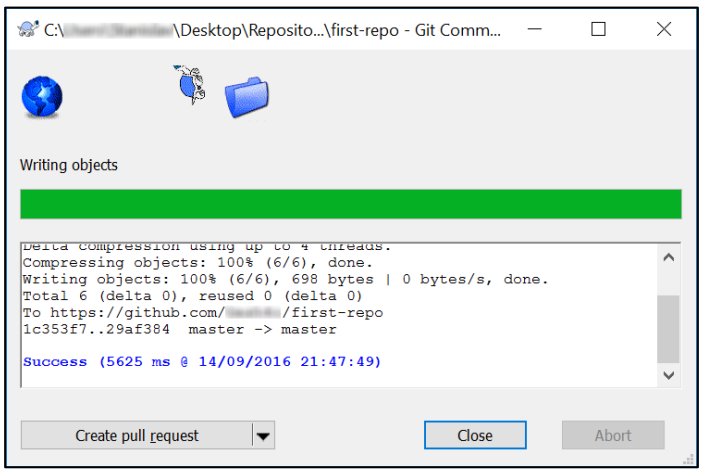


- Note that message: "Automatic merge failed; fix conflicts…". We have another conflict and we have to resolve it like we did earlier but small difference:
  - Go on the **test.txt** file. You should **open** the **file** and **remove** the same **symbols** that we have previously removed. Then right click on the file - choose **TortoiseGit** -> **Resolve…** and click it. A dialog window should open. Then you click "**Ok**" in order to try to **resolve** the conflict.









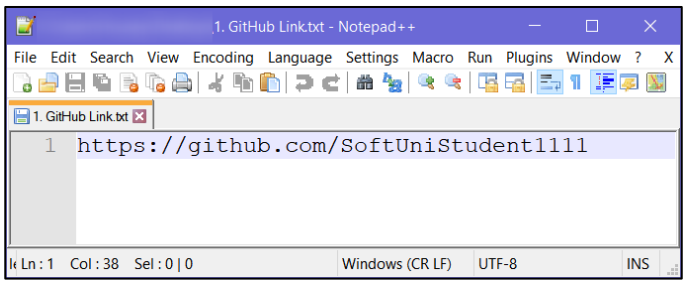
- Now our file is **clean** and we are ready for our final **commit**!

III. Meet Your Colleagues

It's time to meet a couple of **colleagues** at **SoftUni**. For this exercise, you must submit a **zip** file with all the solutions from the **problems below**.

1. GitHub Profile Link

Create a new **text document**, called "**`1. GitHub Link.txt`**", and put a **link** to your **GitHub profile** inside it. The file should look something like this:



2. GitHub Repository Screenshot

Take a **screenshot** of your **GitHub repository**, using something like snipping tool, then save the file as "**`2. GitHub Repo.jpg`**".

3. Meet Some Colleagues

First and foremost, look around the hall and try to **make acquaintances** with your fellow students. After you meet someone, **note down** the following information about them in a **text document**:

- What is their **name**?
- Where are they **from**?
- What **hobbies/pastimes** do they enjoy?
- Why did they pick **SoftUni**?

Try to do this with **at least 3** students and also exchange **contact information** with them.

Hopefully you made a couple new friends from this exercise. ☺

4. Upload Homework to SoftUni

Put all of the text files and screenshots you created in a **zip file** and **send it as homework** on the **SoftUni** site.

IV. Teamwork

Work into **teams** of (about) 5 students in class

- Online students work alone or form own teams.
- Each team selects a "**team leader**".

The team leader **creates a repository** in GitHub e.g. "**test-repo**":

5. Add a File to GitHub

Team members add a few files:

1. Clone the "**test-repo**" into your computer (if not cloned yet)
2. Create a new file into your working directory
    - Name the new file **"<your_name>.txt"**
    - Put some text in it the file, e.g. "*My name is …*"
3. Commit the **new file** to your **local repository**.
4. Sync the changes to **upload your file to the remote repo**.
5. Browse the repo from https://github.com/user/repo to check whether your file is successfully uploaded in GitHub.

6. Create a Git Conflict & Merge

- All team members create a common file **"config.txt"**
- Each team member adds some settings in **"config.txt"**, e.g.:
    - `name = Peter`
    - `size = 100`
    - `email = peter@dir.bg`
- Each team member **commits** his local changes.

- Each team member **syncs** his changes.
    - The first member will succeed without **conflicts**.
    - The others will have a **conflict** to be merged.
    - **Resolve** the conflict:
        - **Edit** the merged changes + **commit** and **sync** again.