



School of Science and Technology

SOFT20111 - Software Engineering

Portfolio 5 - Merging : Theory and Practice

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# Version Control

A Version Control System, also known as a Revision Control System, is a system that tracks and records changes made to a file or a directory. These recorded changes can be accessed at a later time for reference purposes.

Most of the version control system currently available provides a transparent control over the repository. This means that all changes made by any users which has access to the said repository will be recorded, along with the reasons with the modification. This way, there will not be any arguments between who has the latest copy of a certain project as version control system only shows the latest version of a file. If you are doing a project in a team, a good version control system, in this case, GitHub, which is a web-based version control system that hosts repositories online, is a suitable choice.

There are several basic functions that a version control system provides. First there is the committing. Committing (check in) means updating in the version control system to let the system know about your changes and then store them in the repository. If the changes made are local, and not committed, other collaborators of the same project will not have access to them and of course, the version control system will not have any record of the changes.

Next, check out is where you copy a repository to create a local working repository. This allows you to make the necessary modifications to the files in the copied repository before committing them to the original repository.

When a few people are working on a project together, sometimes there will be conflicts, for example two person made changes and committed them almost at the same time. In cases like this, the version control system will provide a way to view the difference between the conflicting versions, allowing you to make a choice. You can either edit the files manually to merge the options, or allow one revision to win over the other.

This is an example of using version control with a collaborator.

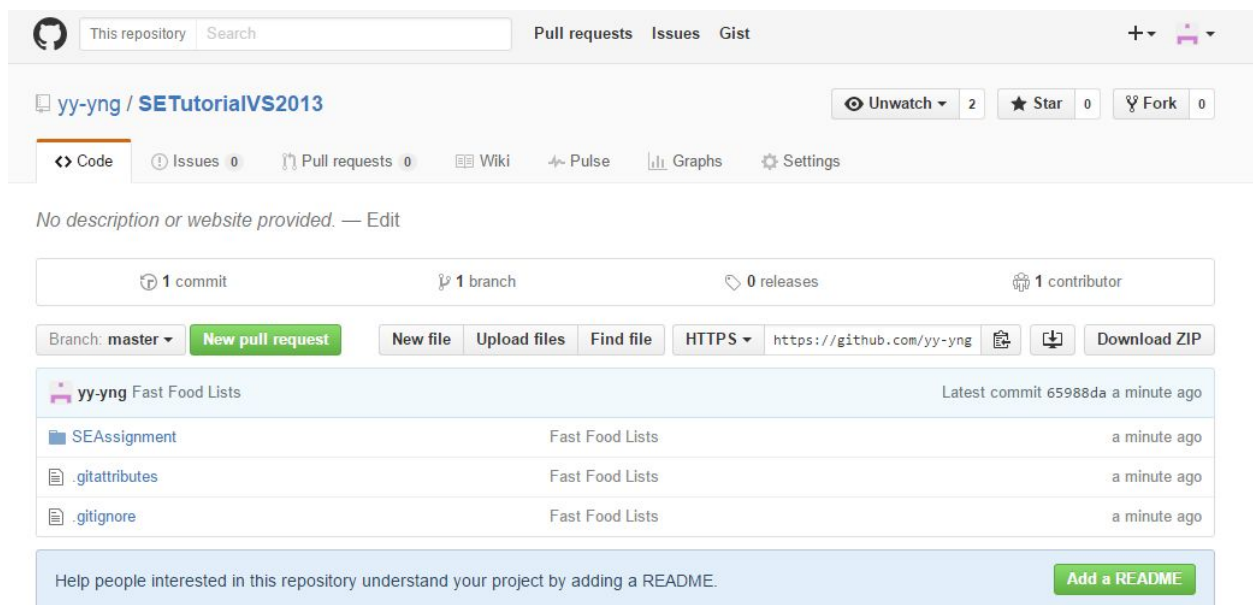
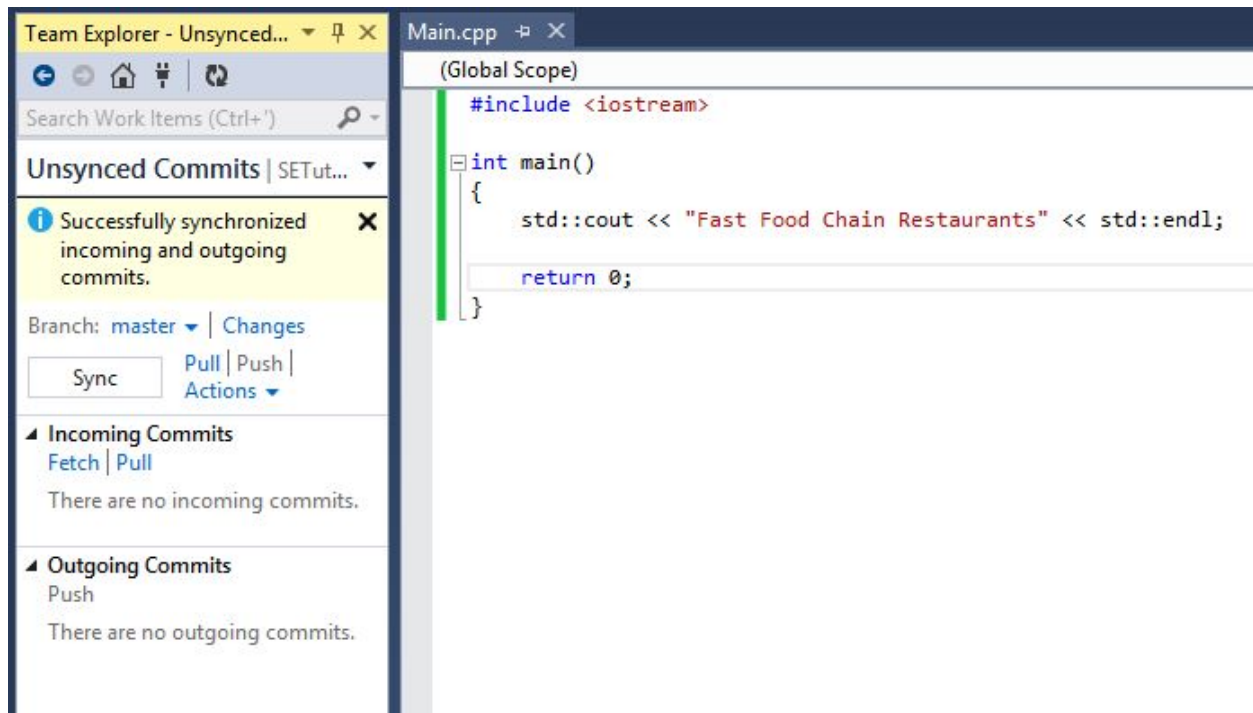


Figure 1 and Figure 2 shows the first commit to the repository.

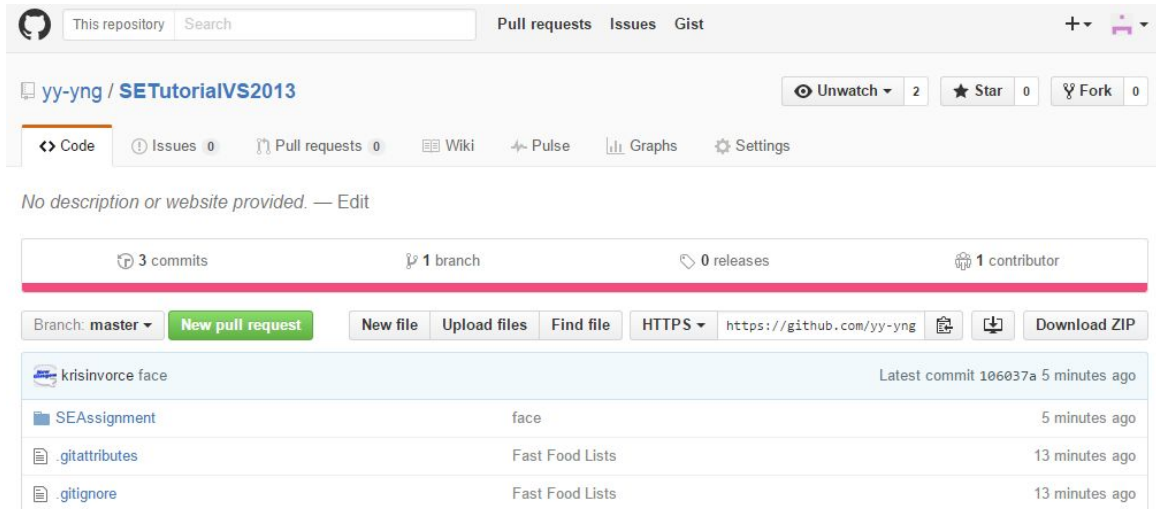


Figure 3 shows latest commit by the collaborator.

When user try to commit another version of the same file before fetching the latest version from GitHub, a message showing conflict has happened will appear and users can choose to keep the current version, the latest version by the collaborator or merge both versions.

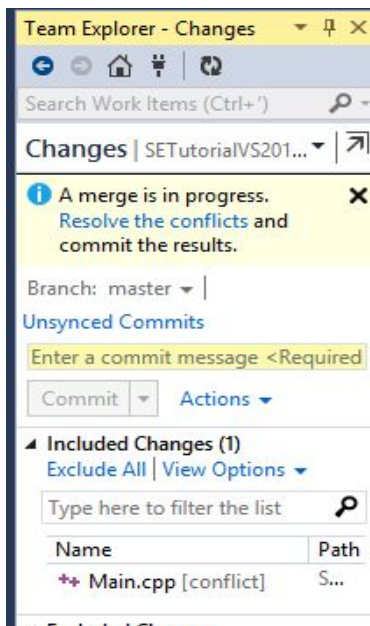


Figure 4 shows that merging is process.

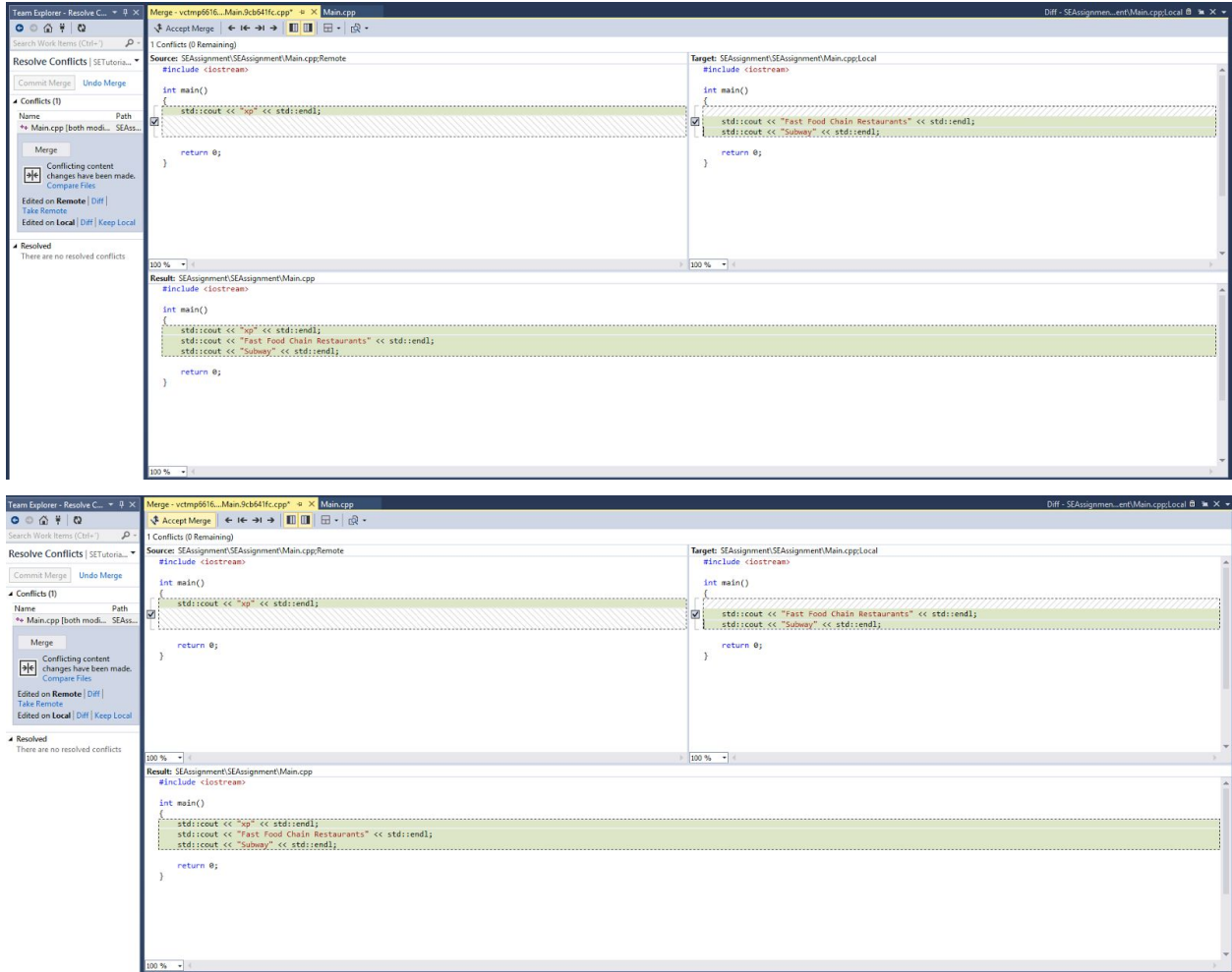


Figure 5 and 6 shows the difference between versions and also the merged version. When the user accepts one of these version, it will appear in the resolved conflicts list.

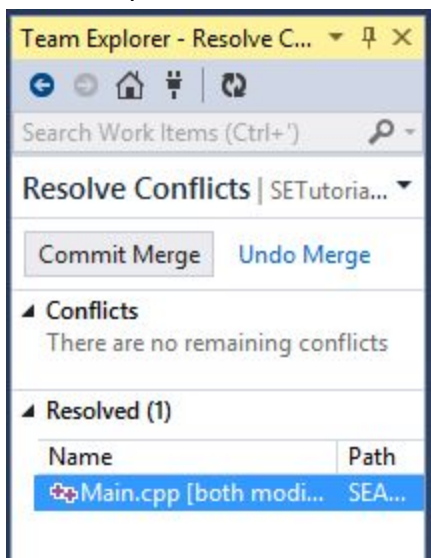


Figure 7 shows the resolved conflict list.

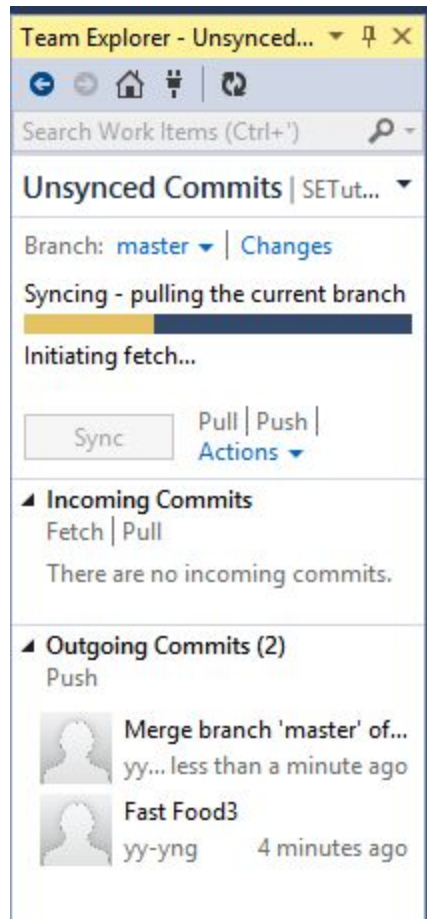


Figure 8 shows the syncing (committing) of the merged version

The image displays two screenshots of a GitHub repository page for the user 'yy-yng' and the repository 'SETutorialVS2013'.

**Top Screenshot (Repository Overview):**

- Repository name: yy-yng / SETutorialVS2013
- Buttons: Unwatch (2), Star (0), Fork (0)
- Navigation: Code, Issues (0), Pull requests (0), Wiki, Pulse, Graphs, Settings
- Description: No description or website provided. — Edit
- Statistics: 5 commits, 1 branch, 0 releases, 1 contributor
- Branch: master
- Buttons: New pull request, New file, Upload files, Find file, HTTPS, https://github.com/yy-yng, Download ZIP
- Recent merges:
  - yy-yng Merge branch 'master' of https://github.com/yy-yng/SETutorialVS2013.git (Latest commit 763ee4d 2 minutes ago)
  - SEAssignment Merge branch 'master' of https://github.com/yy-yng/SETutorialVS2013.git (2 minutes ago)
  - .gitattributes Fast Food Lists (14 minutes ago)
  - .gitignore Fast Food Lists (14 minutes ago)

**Bottom Screenshot (File View):**

- Repository name: yy-yng / SETutorialVS2013
- Buttons: Unwatch (2), Star (0), Fork (0)
- Navigation: Code, Issues (0), Pull requests (0), Wiki, Pulse, Graphs, Settings
- Branch: master
- Path: SETutorialVS2013 / SEAssignment / SEAssignment / Main.cpp
- Buttons: Find file, Copy path
- Recent merges:
  - yy-yng Merge branch 'master' of https://github.com/yy-yng/SETutorialVS2013.git (763ee4d 3 minutes ago)
- Contributors: 1 contributor
- File details: 10 lines (8 sloc), 175 Bytes
- Buttons: Raw, Blame, History
- Code content:

```
1 #include <iostream>
2
3 int main()
4 {
5     std::cout << "Fast Food Chain Restaurants" << std::endl;
6     std::cout << "Subway" << std::endl;
7     std::cout << "xp" << std::endl;
8
9     return 0;
10 }
```

Figure 8 and 9 shows the latest update to the repository, which is the merged version of the main.cpp.