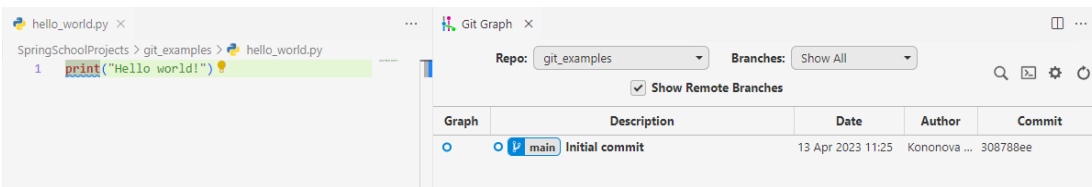


Git Examples

On the graph, **HEAD** position is highlighted in boldface

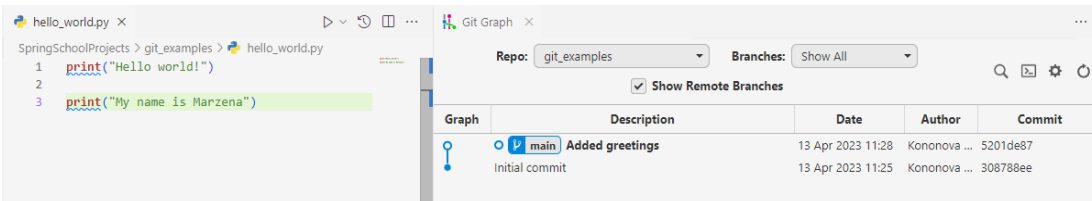
Creating local repo

```
git init
git status
git add hello_world.py
git commit -m "Initial commit"
```



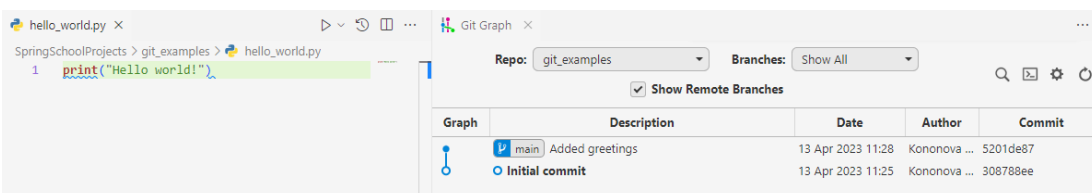
Modifying files and committing modifications

```
git add hello_world.py
git commit -m "Added greetings"
```

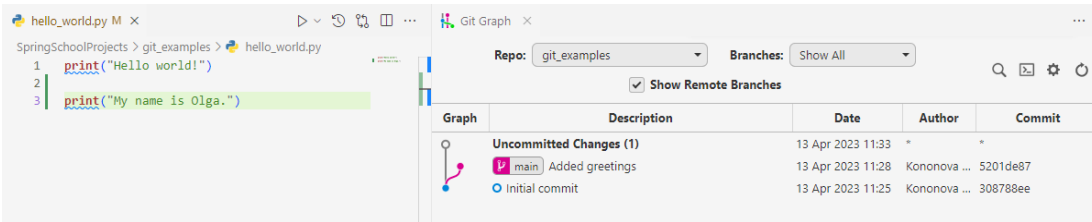


Rolling back a commit

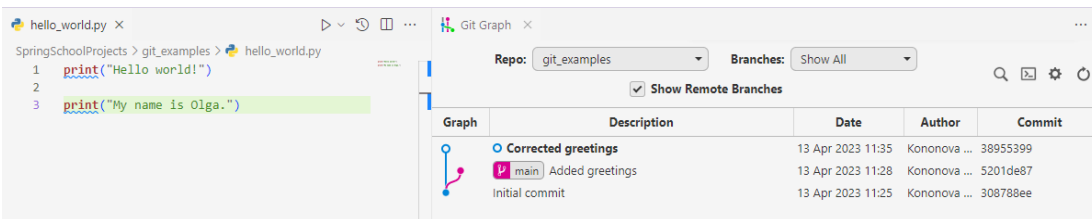
```
git checkout main^
```



Adding new changes to the files: note that `main` still points to the commit with the wrong name while the `HEAD` is pointing to new added changes not committed yet



```
git add hello_world.py
git commit -m "Corrected greetings"
```

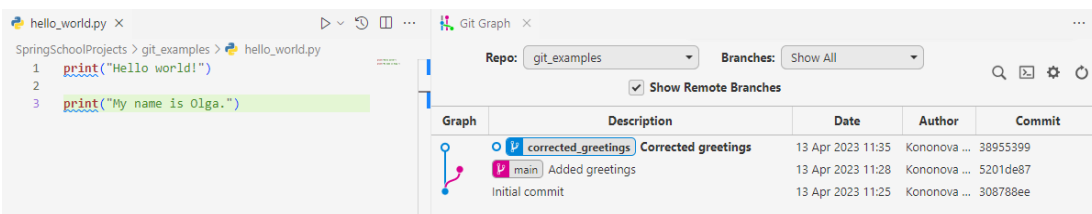


Now, the `HEAD` points to the latest commit ("Corrected greetings") which is outside of our `main` branch. So, at this moment your commit "Corrected greetings" doesn't belong to any branch. It's called **detached HEAD**:

```
git branch
* (HEAD detached from 308788e)
  main
```

We need to attach it to a new branch:

```
git checkout -b corrected_greetings
```



Now, all the changes you've made to your code (old and new) are nicely arranged in branches and can be accessed again whenever you need it:

```
git checkout main # old stuff
git checkout corrected_changes # new stuff
```

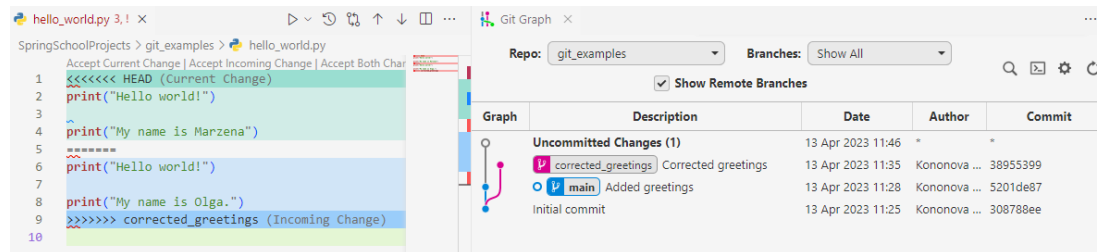
If you are using IDE, switching branches automatically updates your code.

Merging a branch into main

Let's now merge our fix (i.e. corrected greetings) into a `main` branch and keep working from there

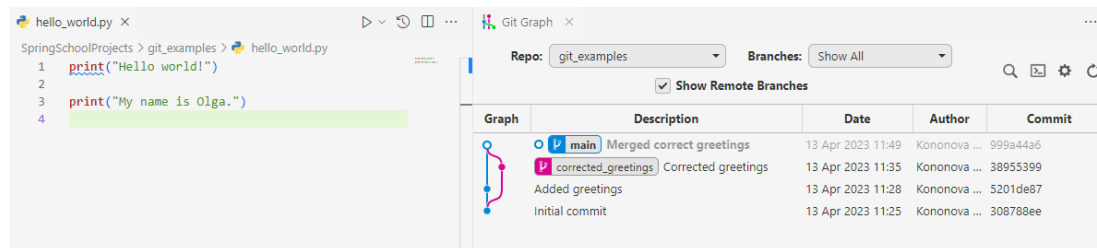
```
git merge corrected_greetings
Auto-merging hello_world.py
CONFLICT (content): Merge conflict in hello_world.py
Automatic merge failed; fix conflicts and then commit the result.
```

Oh no! There is a conflict!



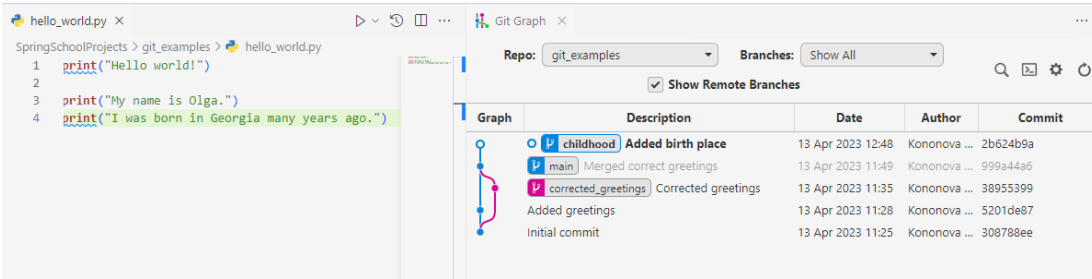
In this situation we go to our conflicting file and manually fix everything and commit new changes.

```
git add hello_world.py
git commit -m "Merged greetings"
```



Creating and merging branches

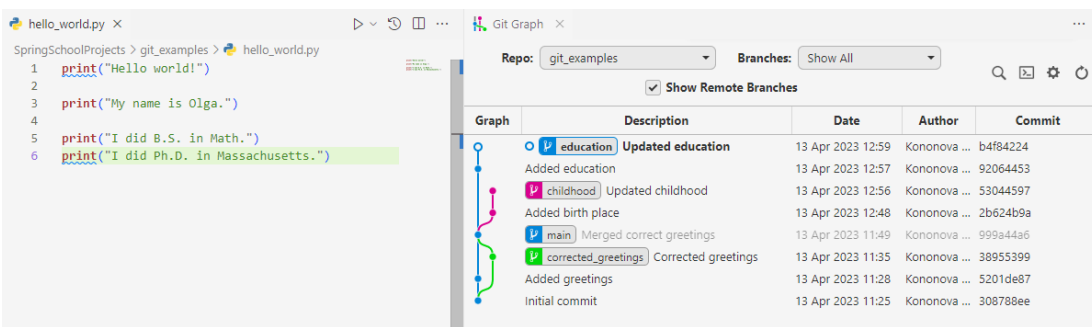
```
git checkout -b childhood
git add hello_world.py
git commit -m "Added birth place"
git branch
* childhood
  corrected_greetings
  main
```



Going back to `main`

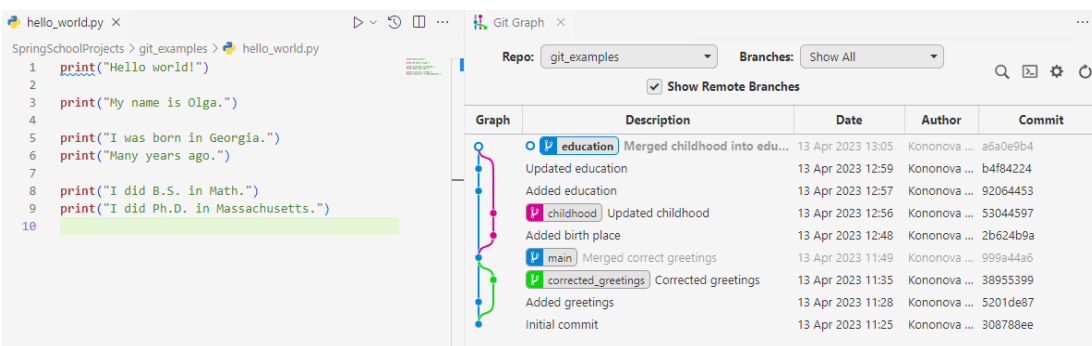
```
git checkout -b main
```

Created another branch `education`. Made changes and added to `education` branch



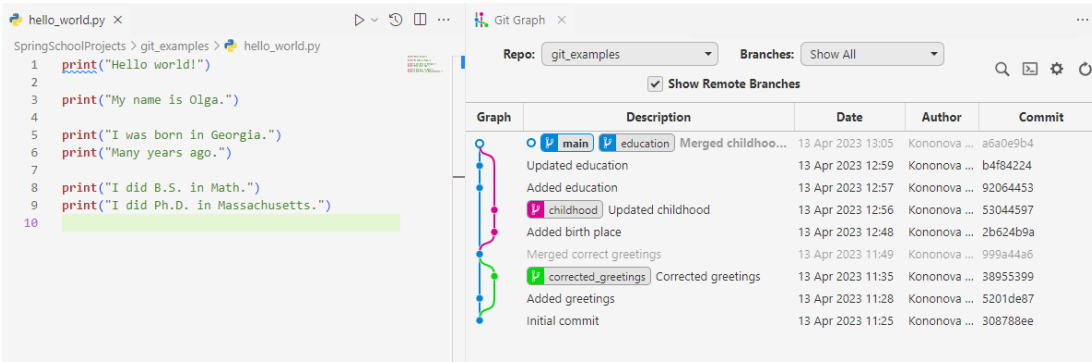
Merging `childhood` into `education`, fixing the conflict (if any) and making a new commit:

```
git checkout -b education
git merge childhood
```



Merging `education` into `main`:

```
git checkout -b main
git merge education
```



Attaching remote repo and pushing changes

Create empty repo in GitHub. If you already committed locally the last changes, skip the lines 2 and 3.

```
git remote add origin <URL>
git add .
git commit -m "Initial commit"
git push origin main
```

or any other branch...

```
git push origin education
```

Updated bio
Kononova Olya CHST authored 9 minutes ago

3462751b

main spring_school_git_examples / +

History Find file Web IDE Clone

Name	Last commit	Last update
hello_world.py	Updated bio	9 minutes ago

Overview Active Stale All

Filter by branch name

Delete merged branches New branch

Active branches

main default protected
3462751b · Updated bio · 10 minutes ago

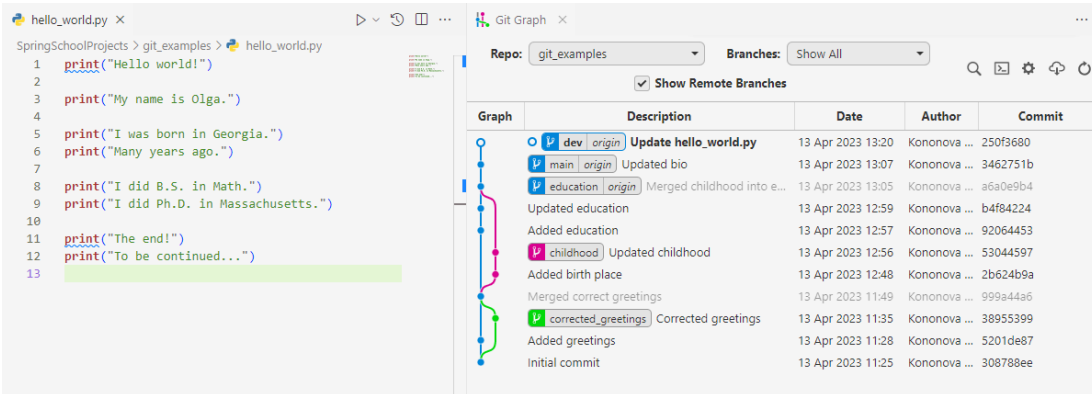
education merged
a6a0e9b4 · Merged childhood into education · 12 minutes ago

10 Merge request Compare

Pulling remote branch

1. Create new branch in GitHub repo (`dev` branch here)
2. Make changes in the new branch
3. Pull the new branch locally

```
git fetch origin <remote_branch>:<local_branch>
git checkout <local_branch>
```



The screenshot shows a code editor with a file named `hello_world.py` and a Git Graph view. The code in `hello_world.py` is as follows:

```
1 print("Hello world!")
2
3 print("My name is Olga.")
4
5 print("I was born in Georgia.")
6 print("Many years ago.")
7
8 print("I did B.S. in Math.")
9 print("I did Ph.D. in Massachusetts.")
10
11 print("The end!")
12 print("To be continued...")
13
```

The Git Graph view shows the repository `git_examples` with the following branches and commits:

Graph	Description	Date	Author	Commit
<code>dev</code> <code>origin</code>	Update hello_world.py	13 Apr 2023 13:20	Kononova ...	250f3680
<code>main</code> <code>origin</code>	Updated bio	13 Apr 2023 13:07	Kononova ...	3462751b
<code>education</code> <code>origin</code>	Merged childhood into e...	13 Apr 2023 13:05	Kononova ...	a6a0e9b4
	Updated education	13 Apr 2023 12:59	Kononova ...	b4f84224
	Added education	13 Apr 2023 12:57	Kononova ...	92064453
<code>childhood</code>	Updated childhood	13 Apr 2023 12:56	Kononova ...	53044597
	Added birth place	13 Apr 2023 12:48	Kononova ...	2b624b9a
	Merged correct greetings	13 Apr 2023 11:49	Kononova ...	999a44a6
<code>corrected_greetings</code>	Corrected greetings	13 Apr 2023 11:35	Kononova ...	38955399
	Added greetings	13 Apr 2023 11:28	Kononova ...	5201de87
	Initial commit	13 Apr 2023 11:25	Kononova ...	308788ee