Last edited by Mohammad Kamrul Hasan 1 year ago

Git & Gitlab

Steps to get started with GitLab

- ### Installing Git

  - To install `Git` , open the terminal and write the following commands:

```
$ sudo apt-get update

$ sudo apt-get install git
```

  - After installation, to verify that `Git` is successfully installed, write the following command:

```
$ git --version
```

- ### Configuring Git

  - Configure your Git username and email using the following commands:

```
$ git config --global user.name "your_username_here"

$ git config --global user.email "your_email_here"
```

- ### Starting with any project

  - ### Cloning the project

    - **Cloning with SSH (recommended)**

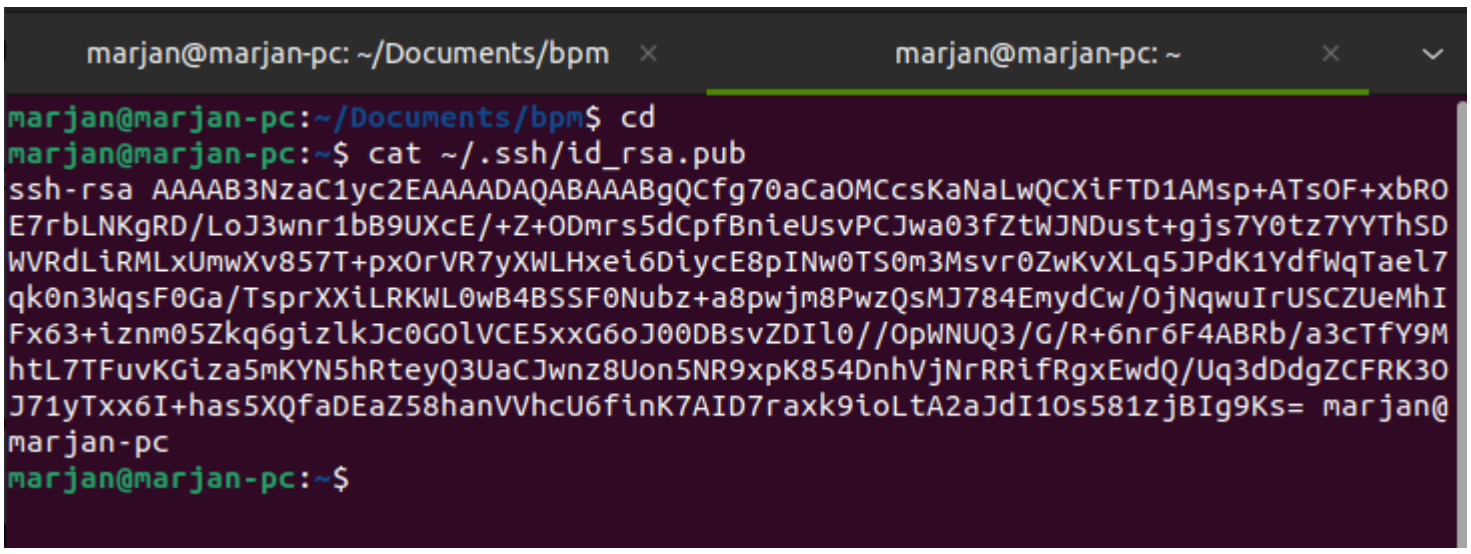
      - SSH stands for Secure Shell. The SSH protocol provides security and allows you to authenticate to the GitLab remote server without supplying your username or password each time. For a more detailed explanation of how the SSH protocol works, we advise you to read this: https://www.digitalocean.com/community/tutorials/understanding-the-ssh-encryption-and-connection-process

      - To clone with SSH, we need to generate an SSH key. When we generate an SSH key, we get a public key and a private key. Then, the public key is added to the GitLab server to use SSH key authentication for access control.

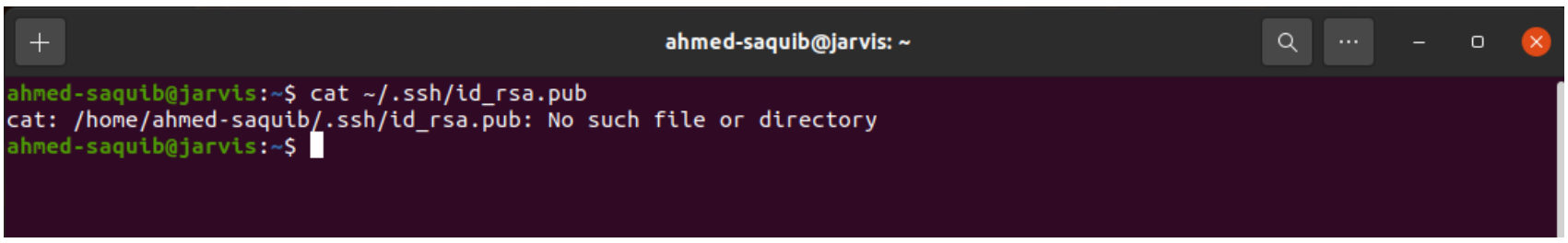
      - Before generating a new SSH key pair, let's check if your system already has one at the default location. Run the following command:

```
$ cat ~/.ssh/id_rsa.pub
```

- If you see a string starting with `ssh-rsa`, you already have an SSH key pair and you can skip the generating SSH key pair portion.



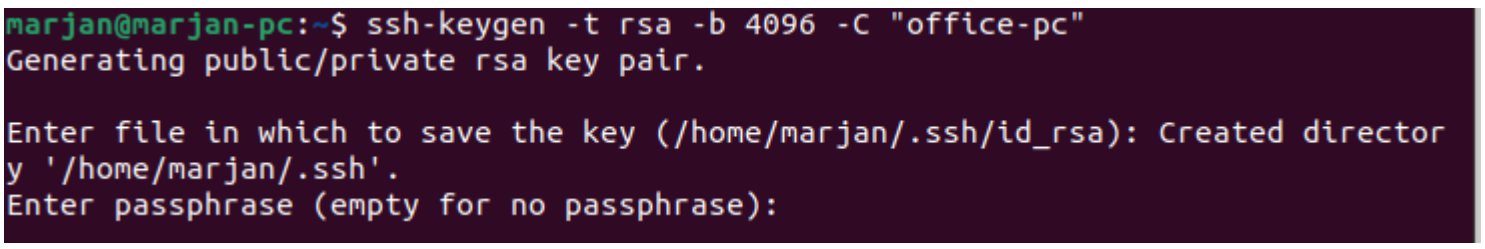
- In case your system doesn't have SSH key pair already generated, you will find the following result:



- To generate the SSH key pair, We will be using a tool called `ssh-keygen`. Open the terminal and run the following command:

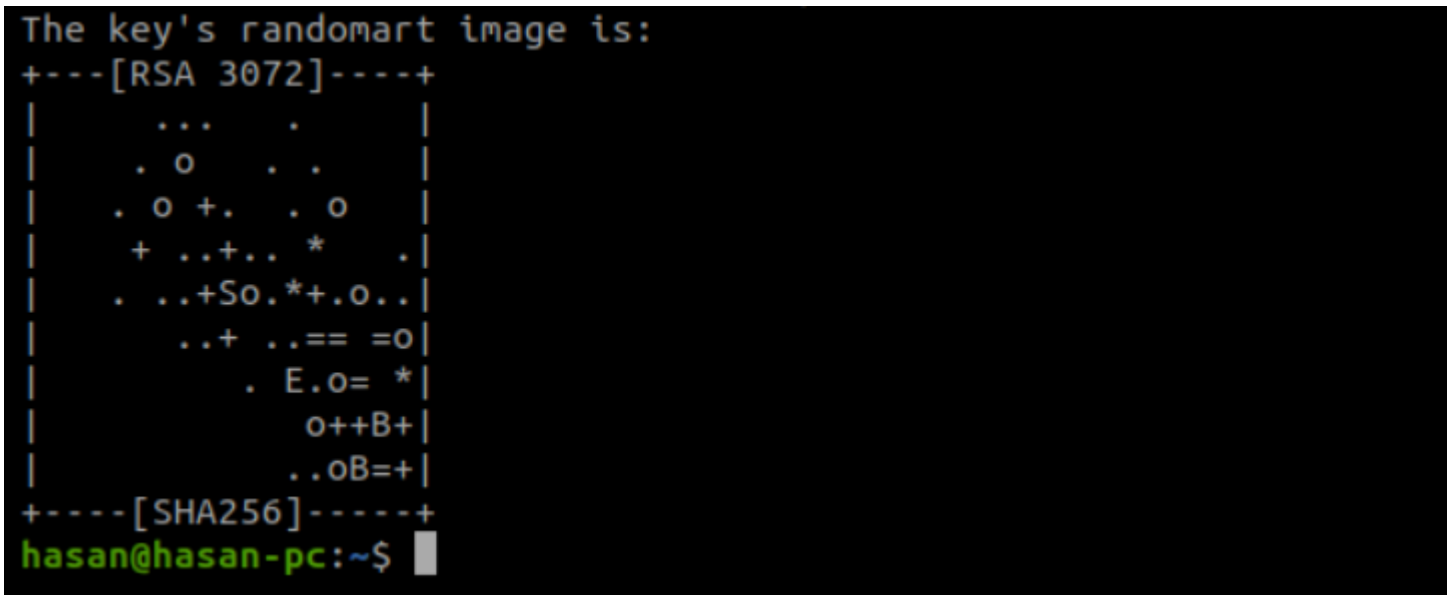
```
ssh-keygen -t rsa -b 4096 -C "office-pc"
```

- Then, you will be prompted to input a file path to save your SSH key pair to. Default path is `/home/marjan/.ssh`. Leave it as it is and hit the Enter key.



- Then you will be prompted to input a password to secure your SSH key pair.

- Finally, your SSH key pair has been generated.

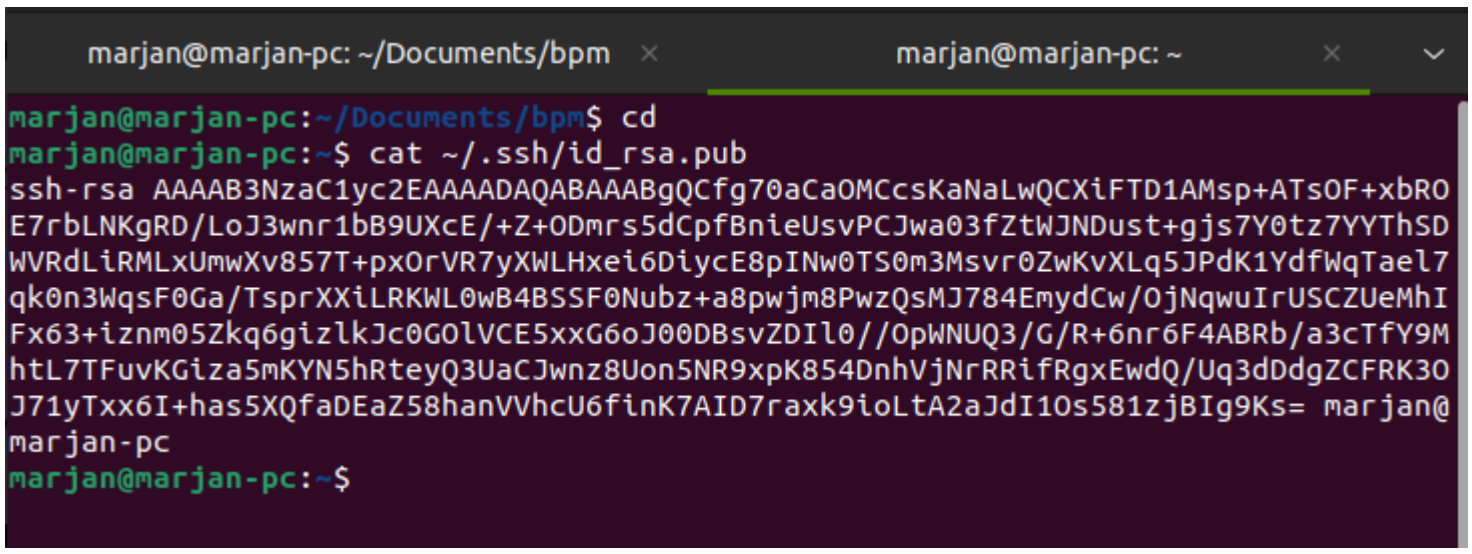


- The next step is to add your SSH public key to `GitLab`.

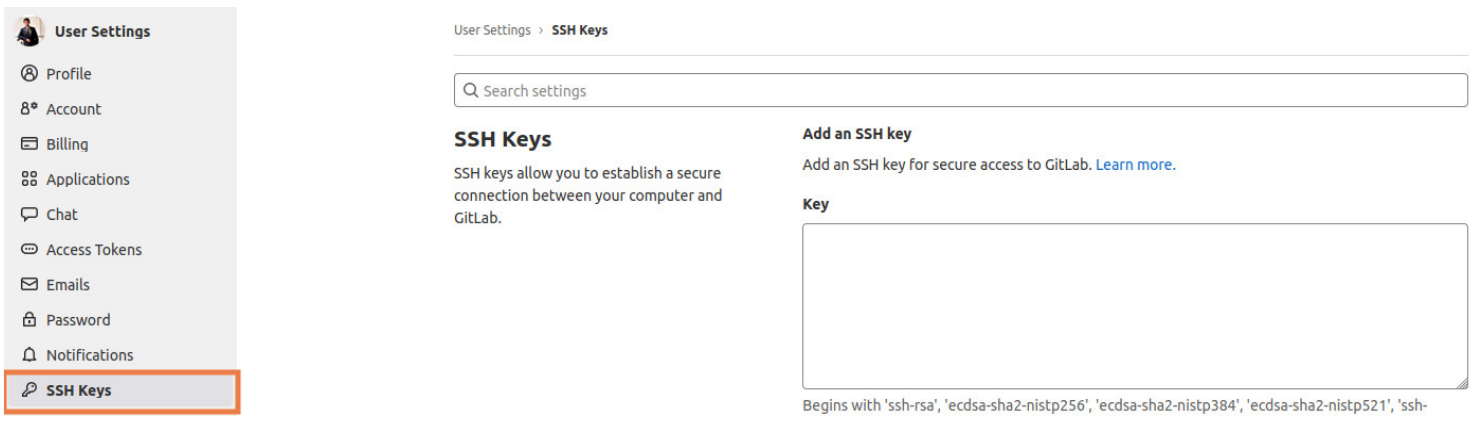
- To get the SSH public key, write the following command:

```
$ cat ~/.ssh/id_rsa.pub
```

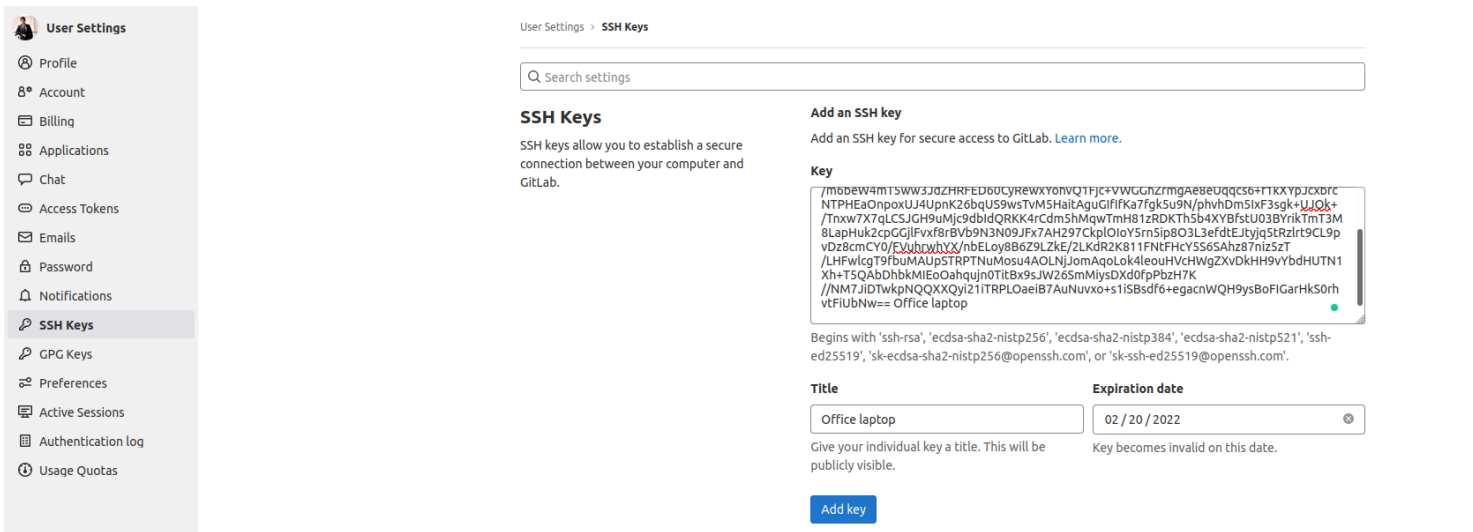
example:



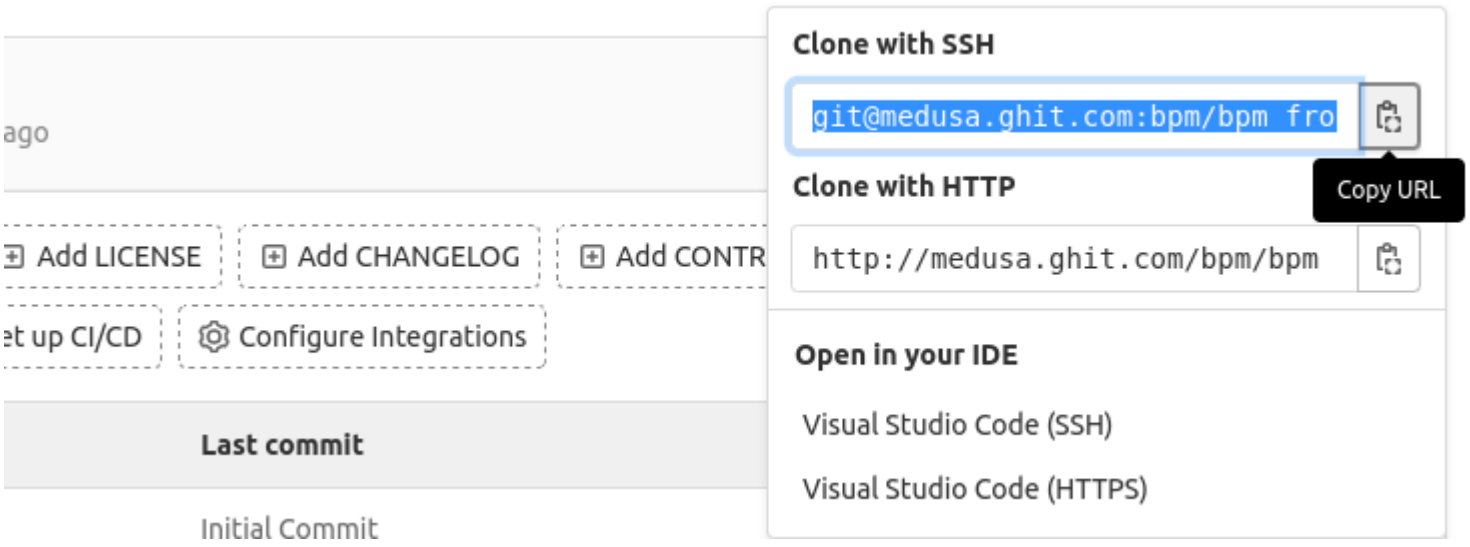
- Copy the SSH key. Then go to `edit profile` and click on the `SSH keys` tab on the left side of the menu.



- Paste the key and add an expiration date for that key.



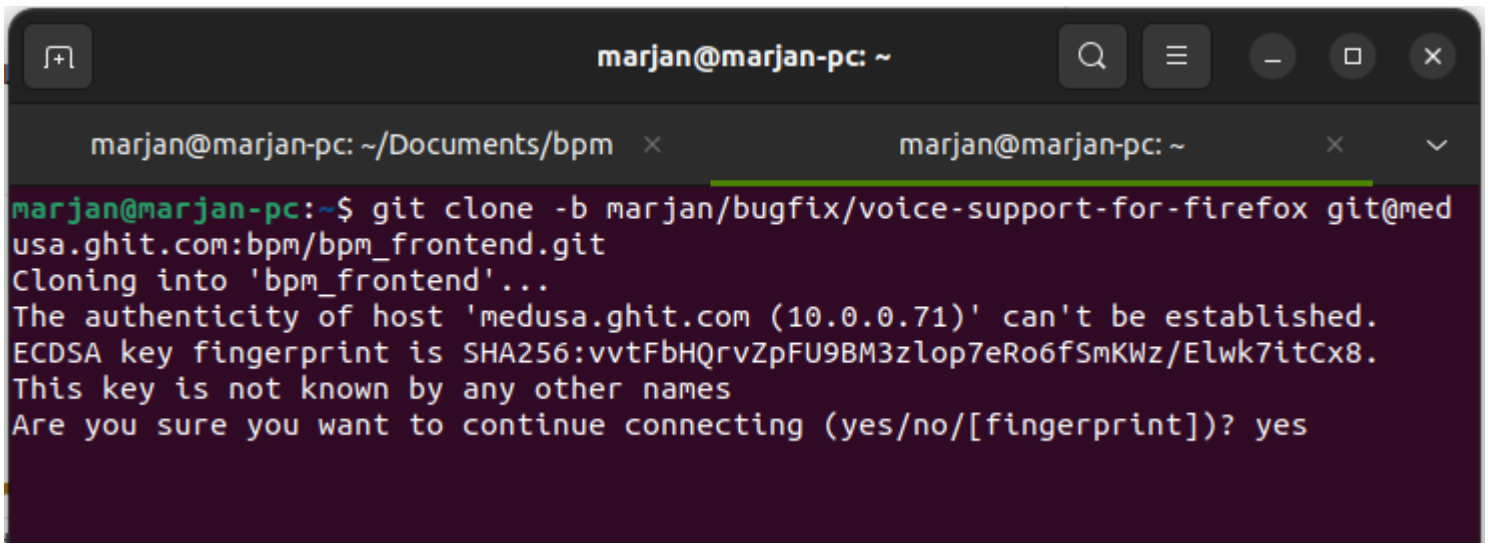
- Now, you have to open the project from https://pms.ghitbd.net/. And copy the URL:



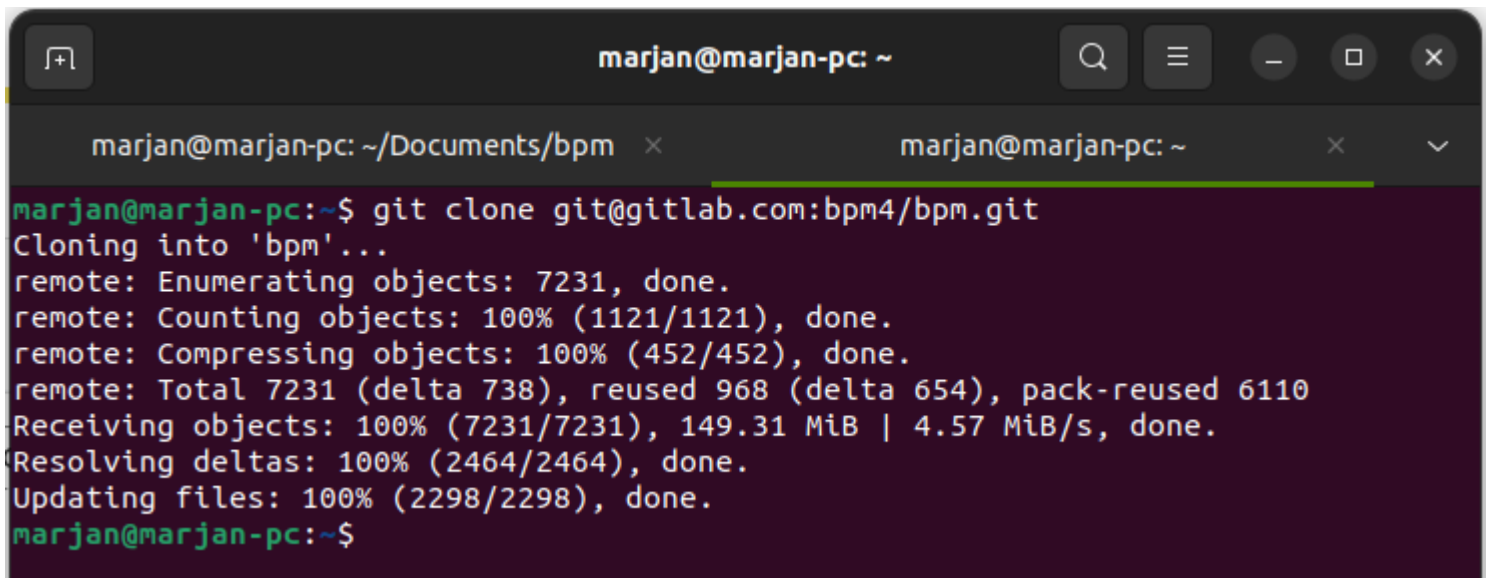
- After that, go to the directory where you want to clone the project. Open the terminal and write the following command:

```
$ git clone -b "your_branch_name" paste_the_URL_here
```

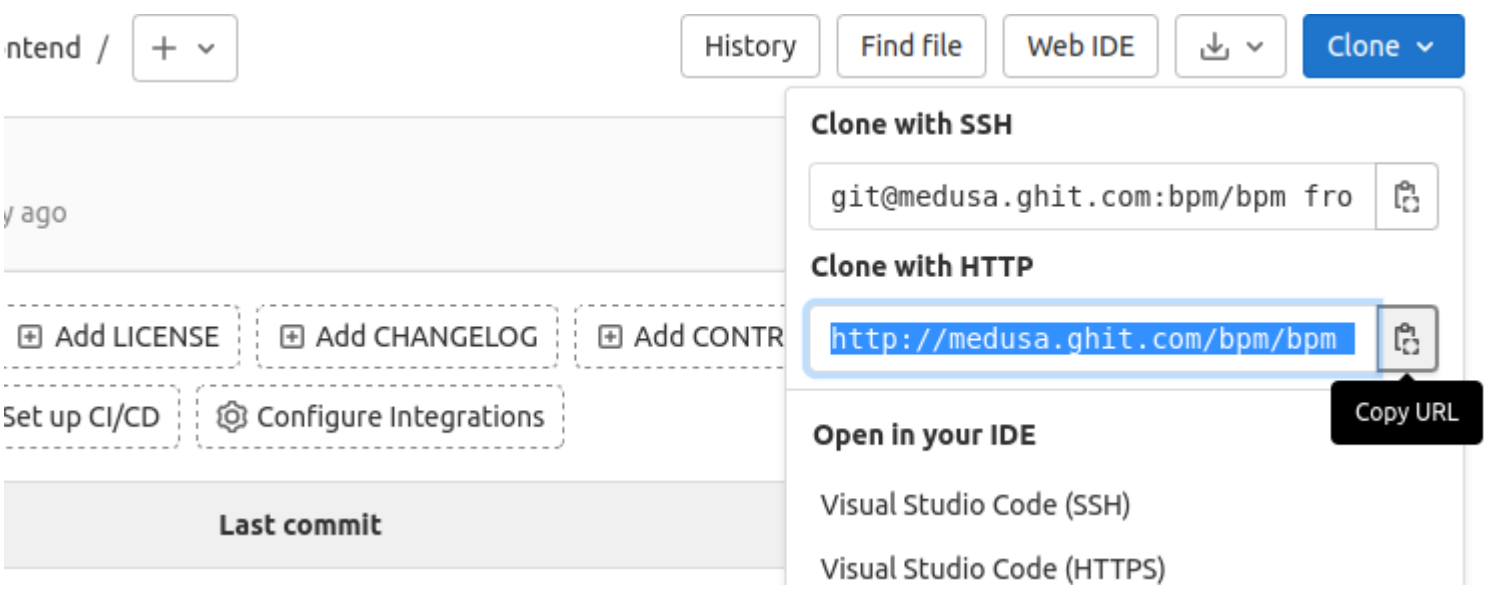
- After that, you will be asked if you want to continue connecting. type `yes` .



- Then one pop-up will come, asking you to enter the password which you have given while generating SSH key pair. After you give the password and press `Unlock` , You will find a new folder named after the project name.



- **Cloning with HTTPS**
  - open the project from https://pms.ghitbd.net/. Then copy the URL:

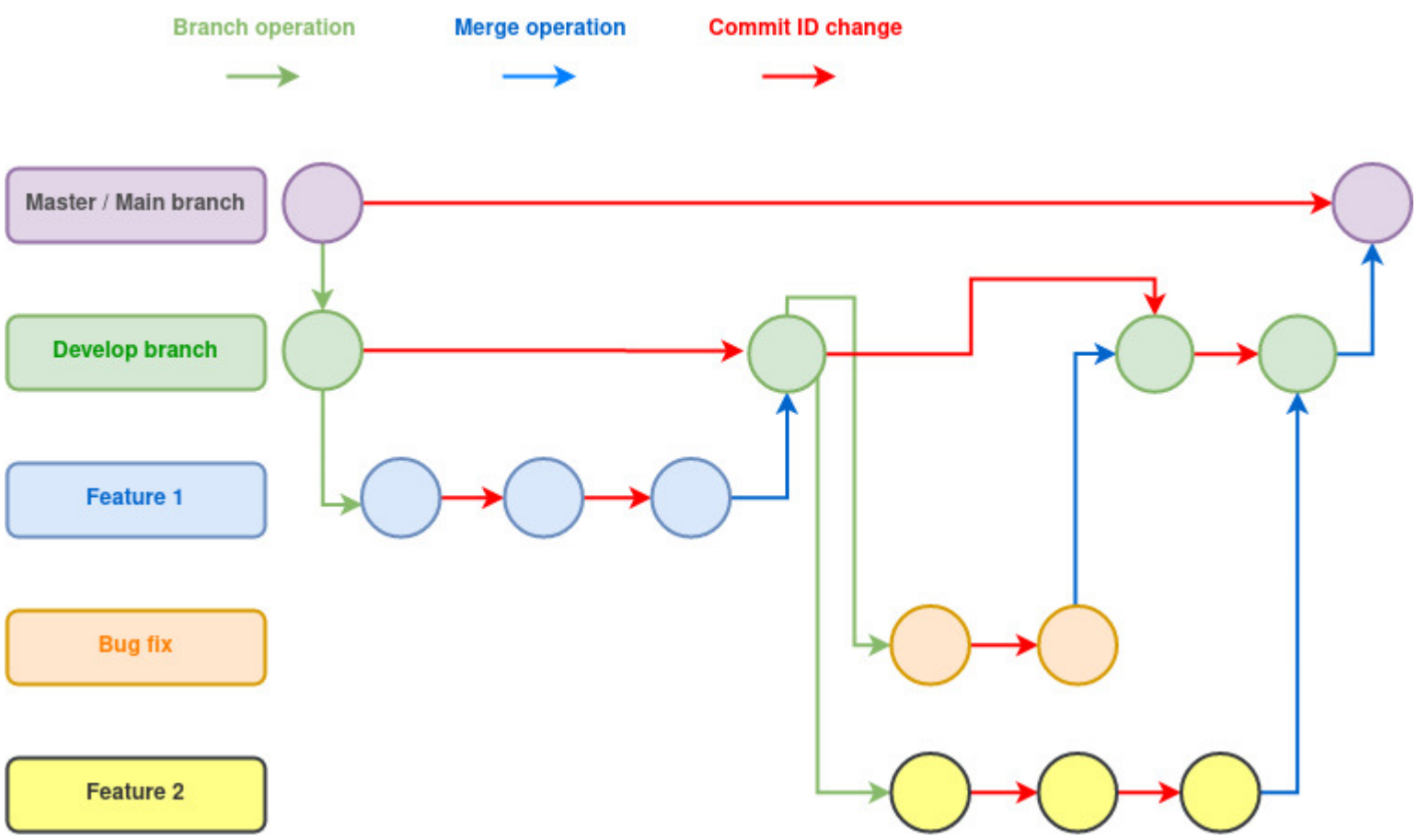


  - Go to the directory where you want to clone the project. Open the terminal. Make sure you are in the same directory from the terminal. Then write the following command:

```
$ git clone -b "your_branch_name" paste_the_URL_here
```

  - When it's complete, You will find a new folder named after the project name.

Branching & Merging Workflow



- ### Branching
  - Developers will not commit directly to the `main` / `develop` branch. Instead of committing directly to the `main` / `develop` branch developers will create a new branch under the `develop` branch and commit there.
  - During a sprint, development works will be merged into the `develop` branch
  - At the end of a sprint, the `develop` branch will be merged into the `main` branch, **ONLY** if there are no problems with the `develop` branch.
- ### Creating a new branch
  - To create a new branch go to the project folder. Make sure you are on the `develop` branch. To do that open the terminal and write the following command:

    ```
    $ git branch
    ```

  - In case you find yourself in another branch, just switch to `develop` branch using the following command:

    ```
    $ git checkout develop
    ```

  - Now, to create a branch under the `develop` branch use the following command:

    ```
    $ git checkout -b name/reason/branch_name develop
    # the above command creates a new branch and automatically switches to the new branch.
    ```

  - #### Branch naming strategy
    - developer-name = as for marjan
    - reason = issue/feature/docs/design/bugfix
    - branch_name = feel free to give a relevant name to your branch.

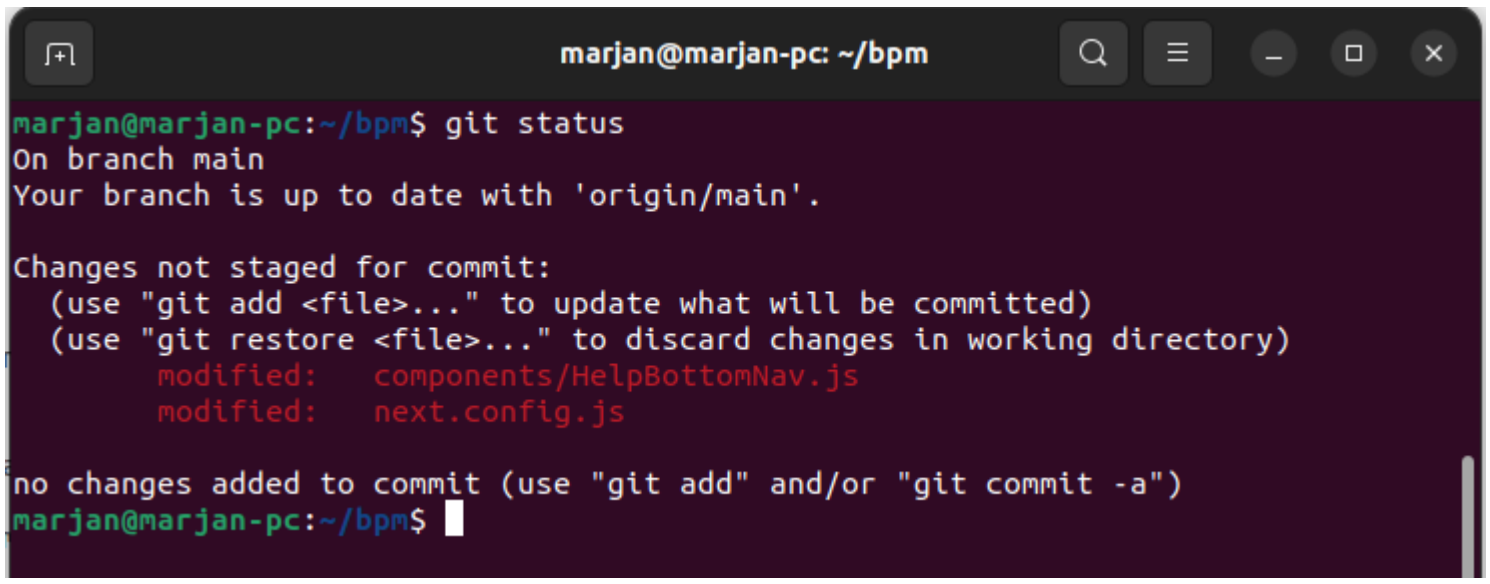
      ```
      developer-name/reason/branch-name
      ```

- ### Merging
  - To merge your codes, you need to create a merge request.
  - #### Checklist before creating a merge request
    - Analyze your codes with Code Quality Testing Tools.
    - Run unit tests.

    - When writing markdown files, limit each line to 120 characters.
    - Developers must do a spell check before creating the MR.
  - **Git add, commit & push steps**
    - Go to the project folder. Open the terminal and use the following commands:

      ```
      $ git status
      ```

      example:

    - Using the above command you will be able to find the modified/updated files. Then just simply use the following command to make the update/change inclusive in the next commit.

      ```
      $ git add give_file_path_here
      ```

    - Now, to save all the changes, along with a brief description about what changes have been made, use the following command:

      ```
      $ git commit -m 'add_commit_message_here'
      # you can add and commit your code as many times as ofter you like
      ```

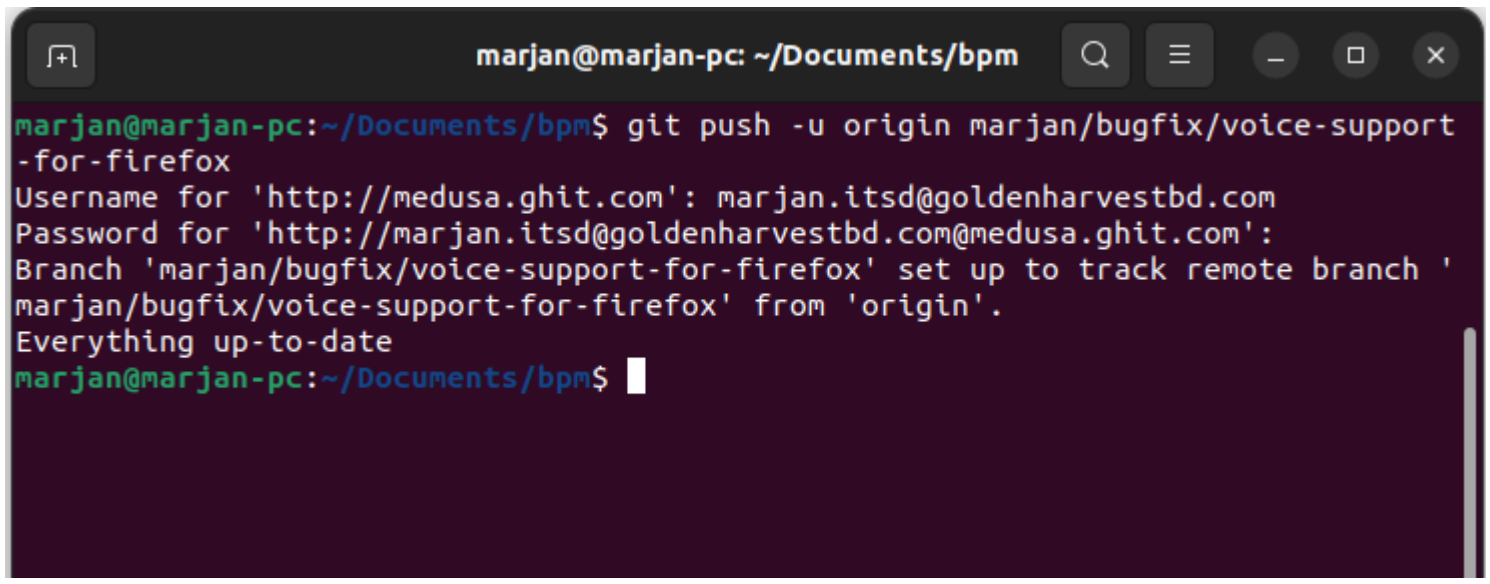
    - **Follow the Git Commit Guideline**
      - Commit **often**
      - Each commit should contain a small code change
      - A typical feature/bug-fix implementation might include many commits
      - Commit message guidelines:
        - [TheServerSide: How to write a Git commit message properly with examples]
        - [Chris Beams: How to Write a Git Commit Message]
    - To push your codes the first time, use the following command:

      ```
      $ git push -u origin branch_name
      ```

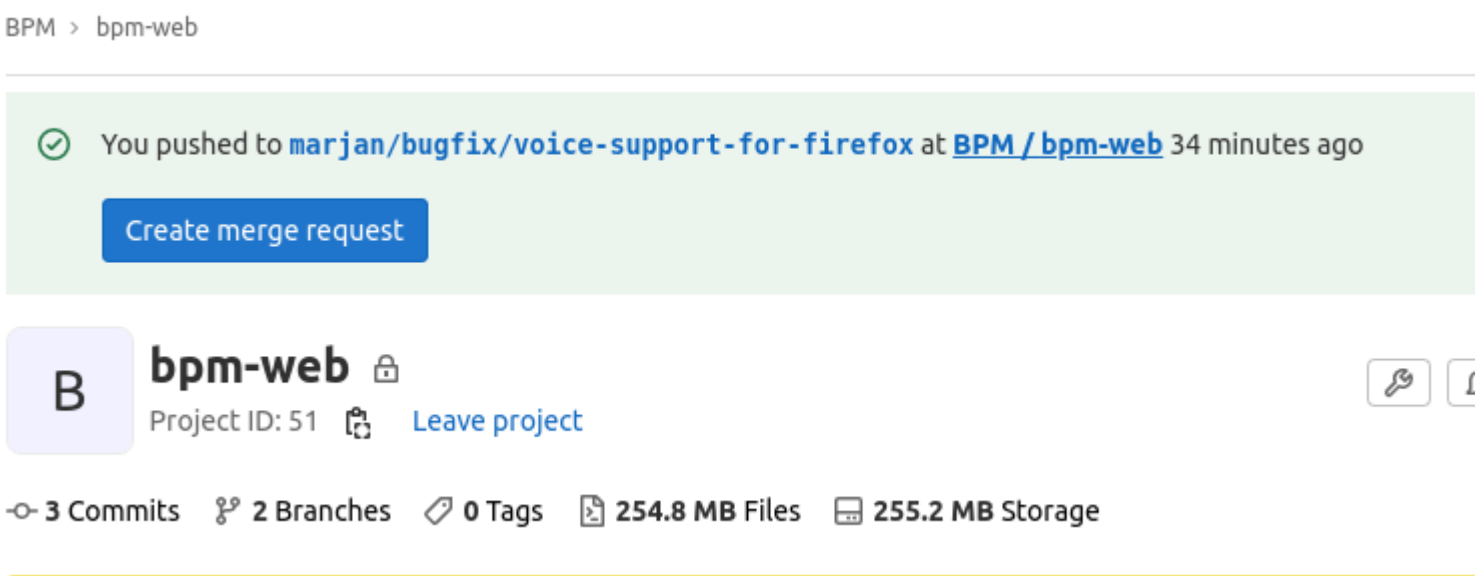
    - From next time when you need to push codes, just use `git push` :

      ```
      $ git push
      # don't need to use $ git push -u origin branch_name again.
      ```

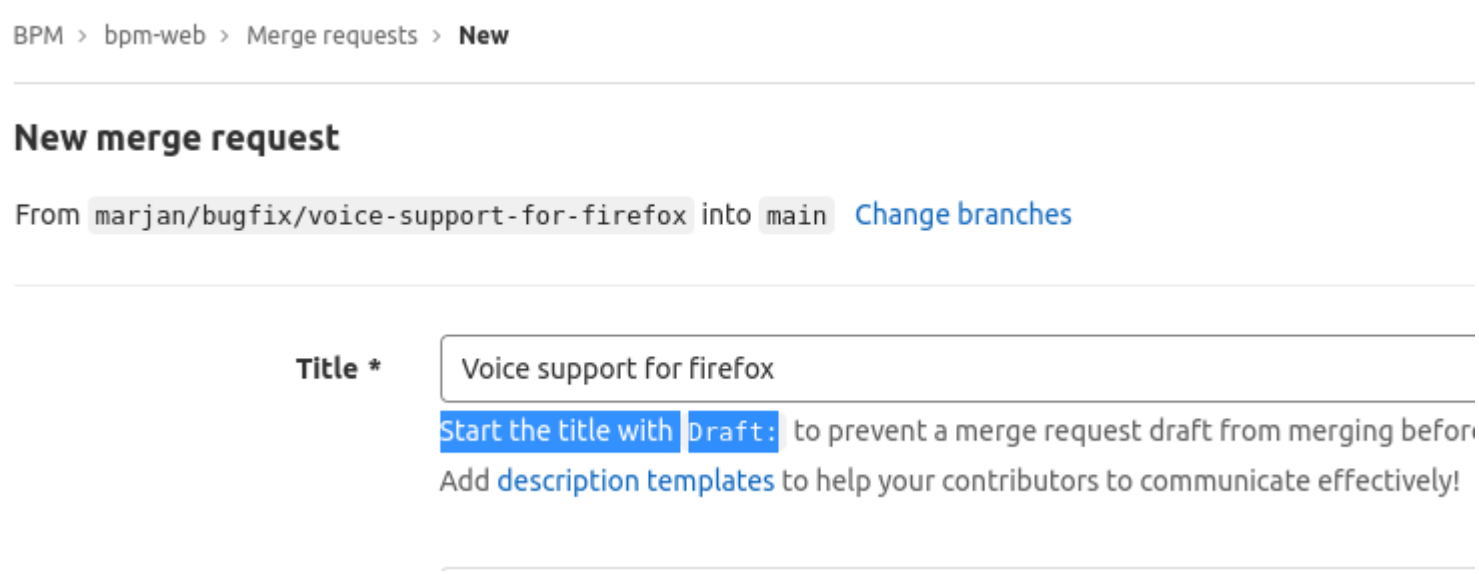
- **Creating a new Merge request**
  - After git push, you should find something like the following:



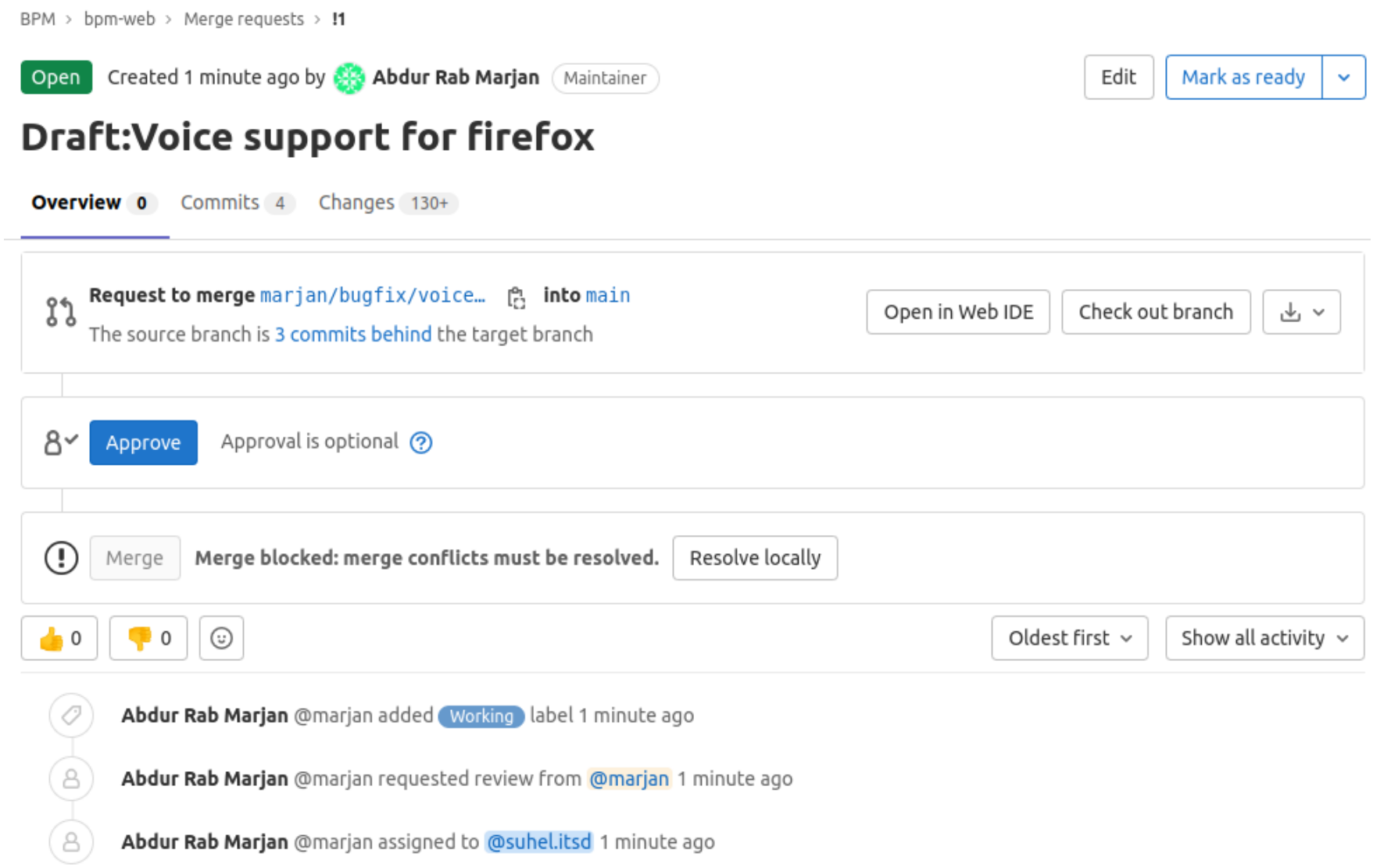
- If you can't find that, no worries simply visit https://pms.ghitbd.net/ and go to your project. You should find the alert box "You pushed to ... at ... minutes ago":



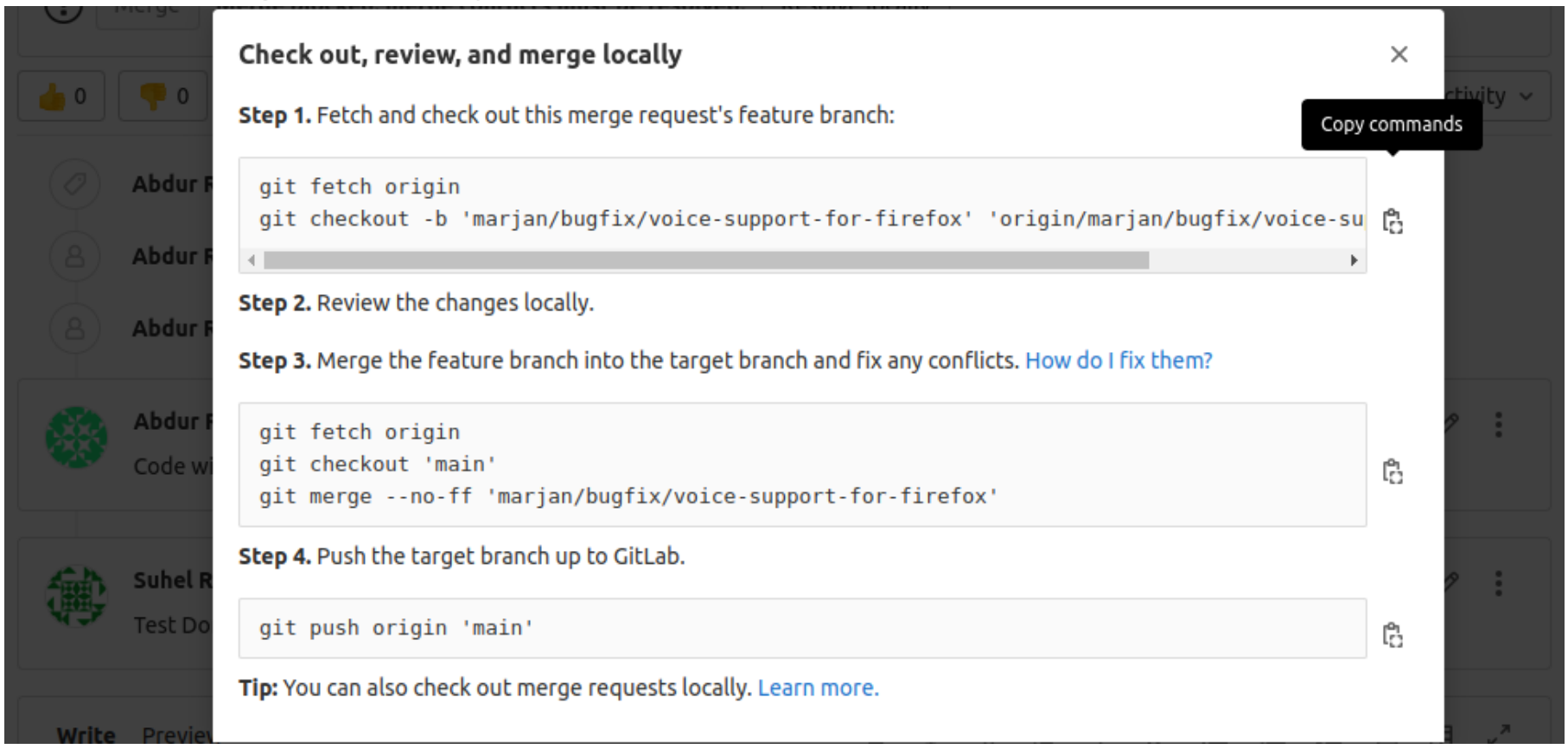
- Click on the button to create a merge request.
- Feel free to give a relevant title to your MR. For example:
  - Added yml file for ci pipeline
  - Removed maven wrapper files
  - Added test coverage, etc
- Add a clear description of the MR explaining its objective and how that objective is achieved.
- Under the Title field, you will find "Start the title with Draft:". **Click it!** This will create a Draft merge request.



- You should find the Assignee and Reviewer field below. Select them accordingly and click on the Create merge request button. Finally, your MR is ready for review.
- ### Checklist after creating a merge request
  - If the Git pipeline failed, MR will not be reviewed.
  - Inform the reviewer that the merge request (MR) is ready for review.
  - **Responding to MR response:**
    - Unsolved issues can be tracked using this button:



- Checkout, merge and review locally:



- **Replying to MR Comments:**
  - **Don’t agree to everything**.
  - Be polite.
  - Give a reason and an example.
  - If you agree, do the change, push it, and post a reply like
  - "Done", if the code change is small/obvious.
  - Otherwise, describe what you have done to resolve the comment. The description should help the reviewer to understand what code changes were done.
  - If you disagree, explain why on the MR page. It's always better to document it in words compared to discussing it over WhatsApp/Slack.
  - **Every MR comment must have a response**.
  - **Do not mark discussions as Resolved. The reviewer will do that, once they are happy with the fix.**

- **Reviewing a Merge request**

  Code Review Developer Guide

Git commands for developers

```
# To know which branch you are in.
$ git branch

# To pull to get the latest commits from the remote repository
$ git pull

# To create a new branch, use the command below-
$ git checkout -b branch-name

#To switch from one branch to another, use the command below-
$ git checkout branch-name

# push your code
$ git push

# pull in the new changes (code from other developers) on the develop branch
# to your local machine. This approach reduces the chance of merge conflicts
$ git fetch origin develop: develop
# this command will pull in the new changes on the remote develop branch to your machine

# merge the new code into your local branch.
$ git merge develop

# OR if you have a lot of whitespaces (formatting) changes you can abort the previous merge
$ git merge --abort
#  and then try
$ git merge -Xignore-space-change develop

# git pull from another branch to the current branch
$ git pull origin branch-name

# Deleting a remote branch
$ git push origin -d <branch>

# Deleting a local branch
$ git branch -d <branch>

# Record the current state of the working directory
$ git stash

## Clone from one repo and push to other repo

# Clone from gitlab bpm web repo
$ git clone https://gitlab.com/bpm4/bpm.git

# Create branch for bug fix
$ git checkout -b marjan/bugfix/voice-support-for-firefox

# Stage and commit all file
$ git add .
$ git commit -m "Bugfix git test"

# Set new repo url for push to pms bpm web repo
$ git remote set-url origin https://pms.ghitbd.net/bpm/bpm_frontend.git

# Before push first pull or fetch (It will reduce merge conflict issue)
$ git pull
$ git push

# Push new medusa repo with already created branch
$ git push --set-upstream origin marjan/bugfix/voice-support-for-firefox
```

Resources

- Git-cheat-sheet: https://about.gitlab.com/images/press/git-cheat-sheet.pdf