VSCODE/GRACE SETUP GUIDE
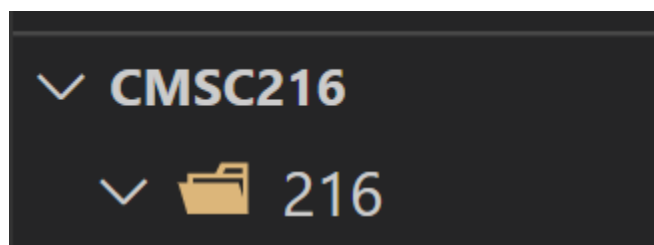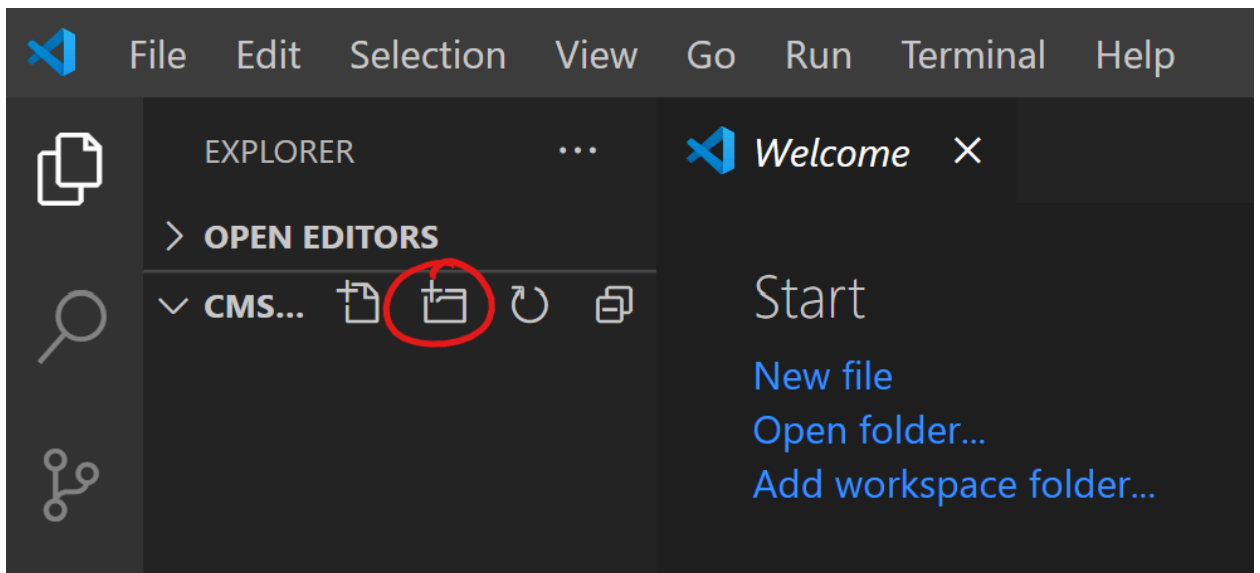
Video Tutorial:
▶ VS Code SFTP Extension for CMSC216

Setting up VSCode

Initial Setup

1. Download VSCode for your system
2. Download SFTP by Natizyskunk for VSCode; this package sets up a connection between local file system and grace server
3. Open up Code and go to "File -> Open folder…" **or** hit: Ctrl+K, Ctrl+O
4. Make an empty folder for your CMSC216 workspace, and open it.
5. Now that you have a workspace, make a folder in the workspace and name it 216.
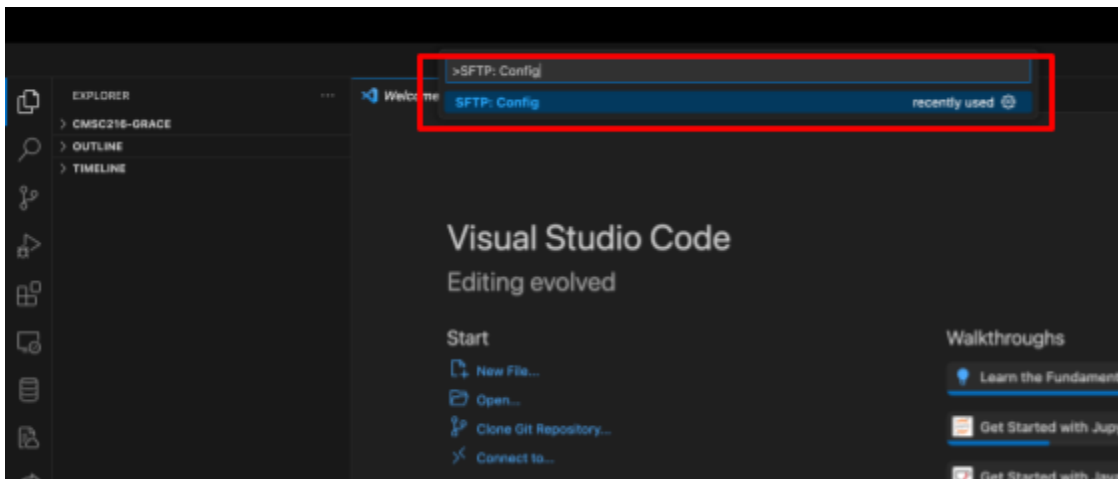
Connecting your machine to grace

1. Connect into grace using ssh
   a. On MacOS/Linux, use your terminal
   b. On Windows, use MobaXterm
2. On Grace, navigate to the folder where you store all your **216** files
   It is highly recommended that you make a **216** folder in grace within your home (root) directory to save all your labs, hw, projects, etc.
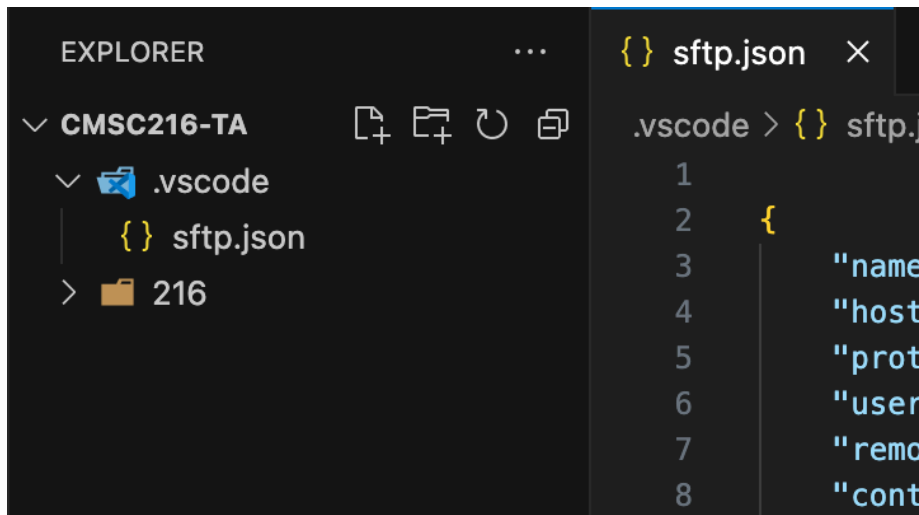3. Print your directory with the `pwd` command:

```Unset
grace3:~/216: pwd
/afs/glue.umd.edu/home/glue/e/c/eckshn/home/216  <- COPY THIS LINE
```

6. Press **CTRL + Shift + P** in VSCode to opens up the VSCode command prompt
7. Type in SFTP and find "SFTP: Config"
   a. Running this command creates a folder called `.vscode`
   b. A configuration file called `sftp.json` will appear in that folder

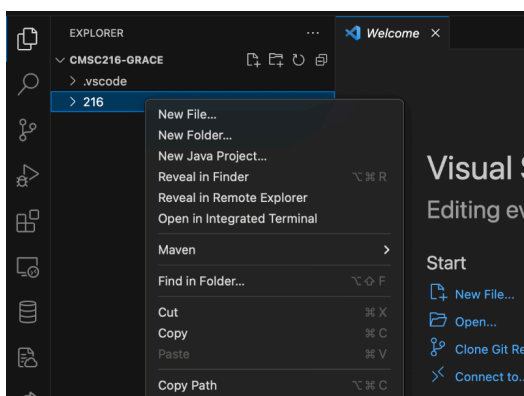8. Inside the .vscode folder, open up the sftp.json folder.

9. Replace the contents of the file with the below:

```javascript
JavaScript
{
    "name": "216",
    "host": "grace.umd.edu",
    "protocol": "sftp",
    "username": "DIRECTORY_ID",
    "remotePath": "PASTE_PATH_HERE (See Step 3)",
    "context": "216/",
    "uploadOnSave": true,
    "interactiveAuth": true,
    "downloadOnOpen": false,
    "syncOption": {
        "delete": true,
        "ignoreExisting": false,
        "skipCreate": false,
        "update": false
    }
}
```

Synchronizing Files between Local / Remote Machines

Downloading from Grace -> Local
1. Right click on 216
2. Click on "Sync Remote -> Local"
   a. Syncs the folder with grace
3. Prompted to sign into grace

Uploading from Local -> Grace
1. Right click on 216
2. Click on "Sync Local -> Remote"
   a. Syncs local folder to grace
3. Prompted to sign into grace

NOTE: ALWAYS MAKE SURE TO CHECK IF YOUR FILES ARE SYNCED PROPERLY!!!

IMPORTANT NOTES ON SYNCING
- On typing `make`, compiled programs are not seen locally, only on Grace
- On typing `make test`, test results files are only available on Grace, not locally
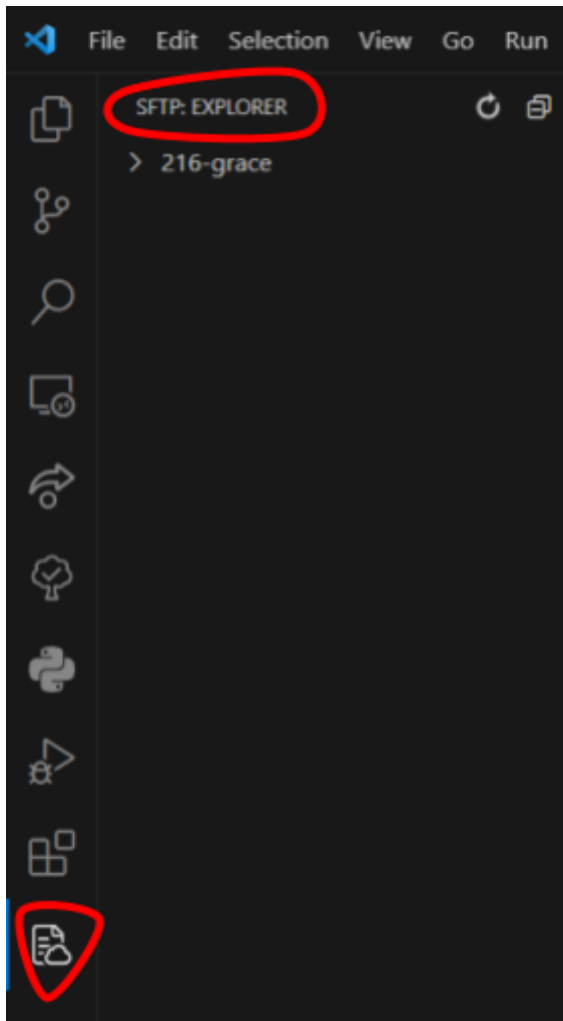- On typing `make zip`, the zip file created is on grace but not local

To see the above results locally on vscode, make sure to do **"Sync Remote -> Local"**

You should now be set up! (see below for additional notes)
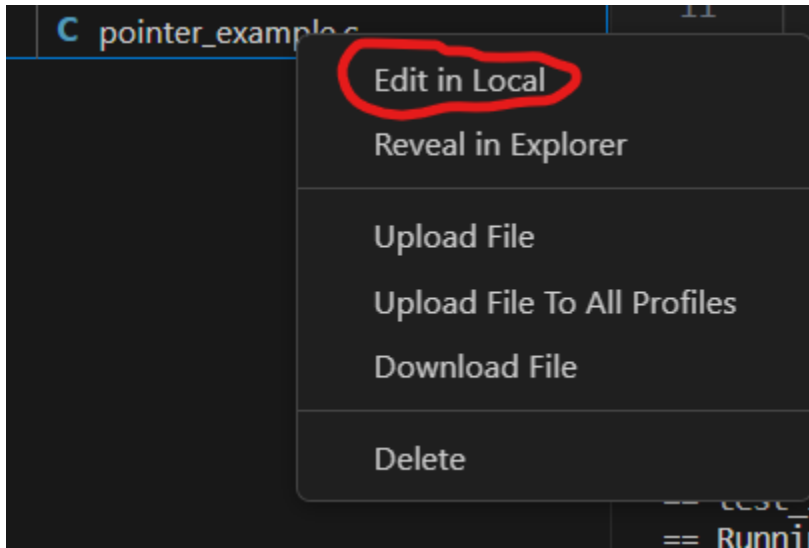
Optional: SFTP Explorer

After connecting to SFTP, you may use SFTP Explorer to access your files as well.
1. Click the button on the sidebar that looks like a document with a cloud in front

2. You should now see a folder that corresponds to the "name" argument in the sftp.json file set up above (in the sftp example above it'll be "216")
3. Open the folder and it should prompt you to sign in
    a. Proceed with signing in and DUO push
4. You should now see the contents of the directory specified in the "remotePath" section of the sftp file
5. To open a file, double click on it in the sidebar
    a. NOTE: THIS WILL OPEN IT AS READ ONLY

6. To edit a file, right click on it in the sidebar and select "Edit in Local"

7. This should open an editable file that, when you save, will save to the grace server
8. Important notes
   a. In order to test code, you will need to use another terminal (like MobaXterm, Xquartz, or an embedded terminal through VSCode) to run commands on
   b. You can update your files with the refresh button

   c. E.g. if I run "make test", the results and .o files will show up on grace as well as on the sidebar

Potential Errors

- If you encounter something like: [sftp] All configured authentication methods failed
  - Make sure the following option is in your sftp.json file

```
Unset
"interactiveAuth": true
```

- Config not found error
  - Make sure to put a folder that you can access into the **name** and **context** portions of the JSON file. For example, I put "/216" but I lost access to that folder as its been a while since I took the class. Instead, I put "context": "216-spring-2024" and created a folder called 216-spring-2024 in the home directory of Grace. Then, I tried to sync remote to local on VSCode and it worked! :0