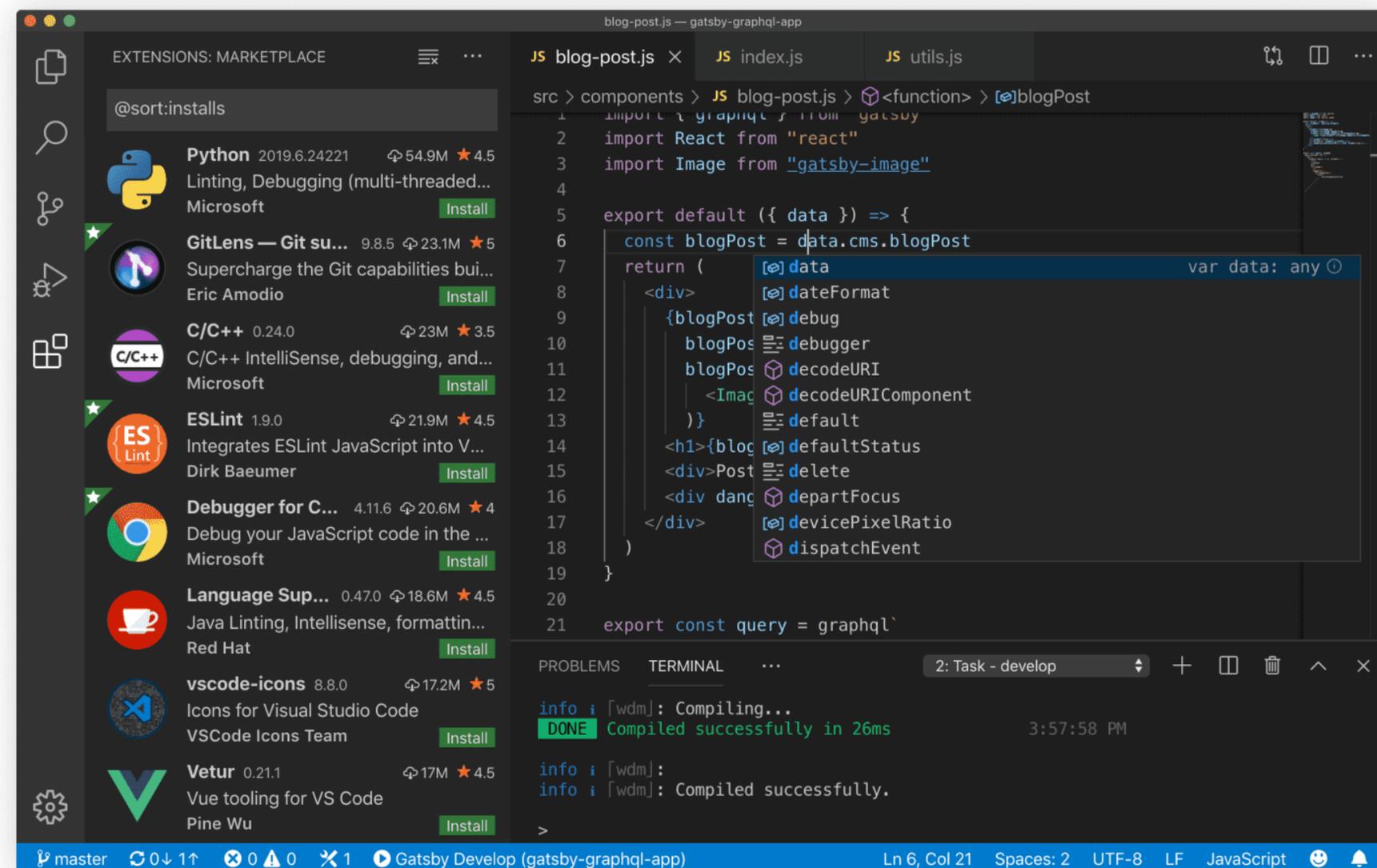# Visual Studio Code Tutorial

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DESY

- Not really an IDE (Integrated Development Environment) by definition but still a very powerful text editor.

- Supports a lot of languages:
  - C++
  - Python
  - LaTeX
  - ...

- Can work locally or remotely.

- https://code.visualstudio.com

~/.ssh/config

```
Host *
  AddKeysToAgent yes
  ConnectTimeout 15
  ForwardAgent yes
  ForwardX11Trusted yes
  ServerAliveInterval 300
  TCPKeepAlive yes
  UseKeychain yes
  XAuthLocation /opt/X11/bin/xauth
```

- `ConnectTimeout` / `ServerAliveInterval` / `TCPKeepAlive` — help with unstable connections

- `AddKeysToAgent` — not for NAF, but if you use SSH keys, this ensures they are added to the SSH agent

- `ForwardAgent` — forwards SSH agent so you do not need your private keys on the NAF (e.g. for GitLab/GitHub)

- `ForwardX11Trusted` — automatic X11 forwarding for remote windows e.g. for ROOT

- `UseKeychain` / `XAuthLocation` — macOS specifics

```
Host naf*
  ControlMaster auto
  ControlPersist 60m
  ControlPath ~/.ssh/sessions/
%i@%l_%r@%h:%p

  GSSAPIAuthentication yes
  GSSAPIDelegateCredentials yes
```

- Multiplexing is a method to keep one connection to the same server when you open multiple sessions.
  - ControlPath can be anywhere in your local laptop/PC (usually in ~/.ssh).
  - On network filesystems like AFS it is recommended to put in under /tmp.
  - ControlPersist will persist the connection for the value (e.g. 60 min).
- GSSAPIAuthentication is used to enable Kerberos authentication.

- Store Kerberos password in the Keychain:
  `kinit --keychain tadej@DESY.DE`

  - The argument is only needed when you need to store/update the password.

- Sometimes you may need to add a key to the Keychain and SSH agent manually:
  `ssh-add --apple-use-keychain ~/.ssh/id_ed25519`

- It is useful to add a short alias hostname to `~/.ssh/config` to streamline your experience.

  - Will use `naf-vscode` in this tutorial.

```
Host naf-vscode
    HostName naf-atlas.desy.de
```

- Edit VS Code settings before you start:

  - Open your default profile
    (if you do not use profiles yet
    you should!).

  - Go to the Settings and on the top right
    click the file icon with an arrow
    — Open Settings (JSON).

  - Put the settings on the right in.

  - Important: You should set the remote installation
    path to DUST and NOT use the default AFS location.

```
"remote.SSH.enableAgentForwarding": true,
"remote.SSH.enableDynamicForwarding": false,
"remote.SSH.lockfilesInTmp": true,
"remote.SSH.serverInstallPath": {
    "naf-vscode": "/nfs/dust/atlas/user/
tadej/infrastructure/naf-vscode",
},
```

- Install the Remote Development extension pack if you do not have it yet
  `https://marketplace.visualstudio.com/items?itemName=ms-vscode-remote.vscode-remote-extensionpack`

- A connection icon will appear in the bottom-left corner.

- Click on it, select "Connect to host" and then the previously defined `naf-vscode`.

  - Note that initial installation may take a while.

- The bottom-right corner always indicates if you are using the remote connection.
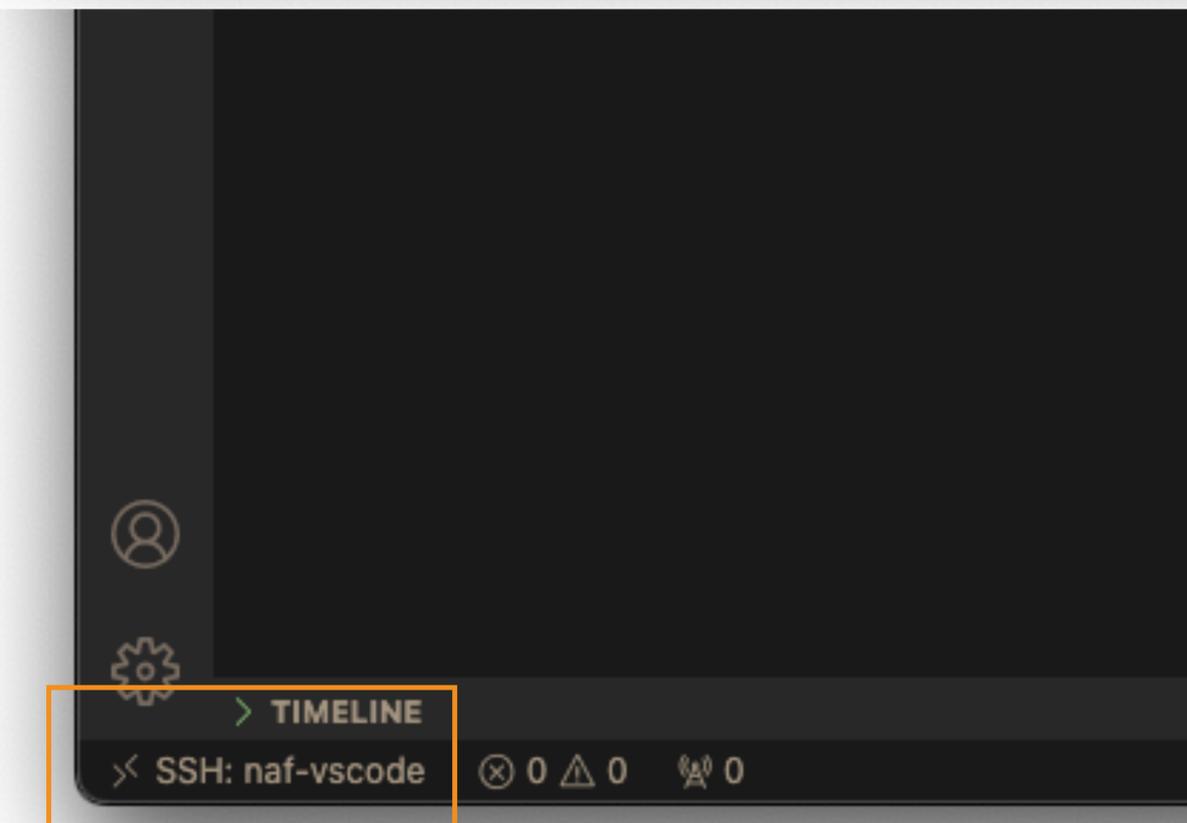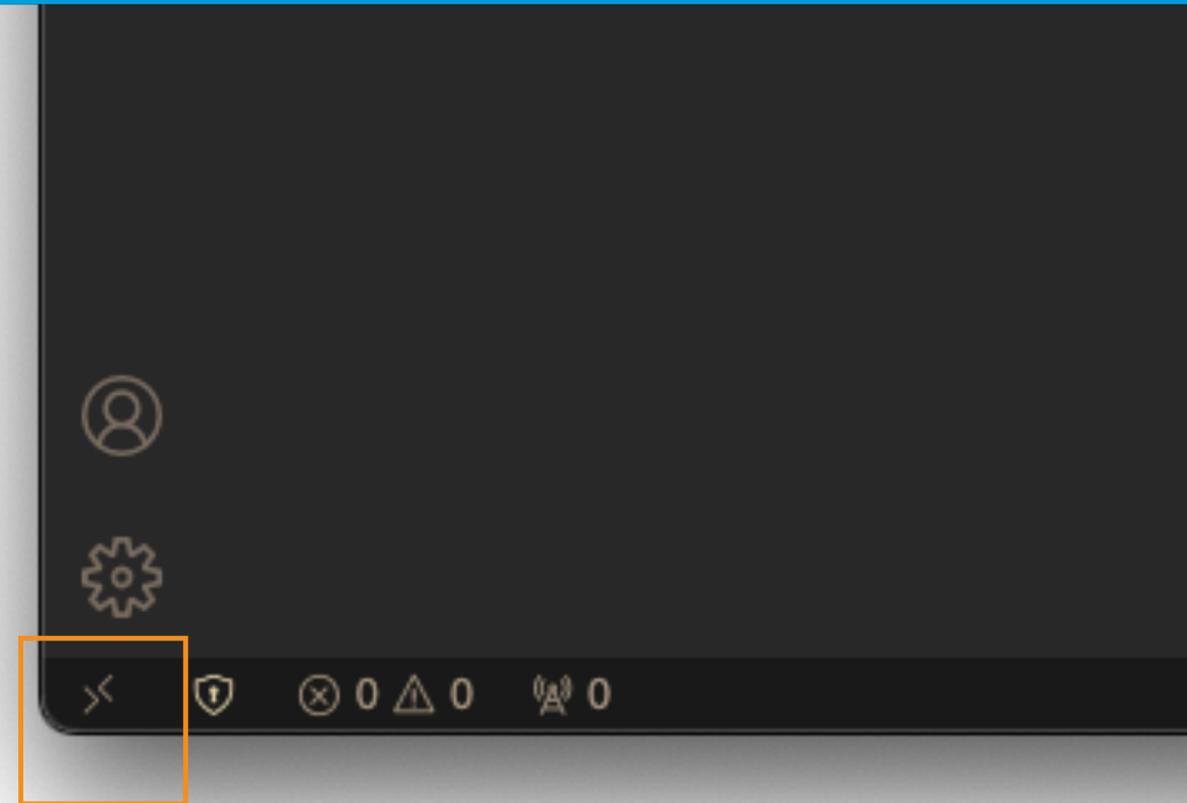
- Could not connect to server.
  - Try first if you can ssh directly.
  - Use "Kill remote VS Code Server on Host…"
    - Hint: you can access the command prompt using Ctrl/Cmd+Shift+P.
  - If nothing works, login to the node you assume you're connecting to (due to load balancer it is sometimes hard). Then use `ps ux | grep vsc` to get the list of processes (probably) used by VS Code and force kill them with `kill -9 <pid>`.
- AFS is not working.
  - Manually run `aklog` in the VS Code terminal.
- VS Code seems behaving strange.
  - Use "Reload Window" command and if this does not help, follow the above "Could not connect to server" steps.

- A complex topic that we do not have time to go into detail today.

    - Documented for Athena under https://atlassoftwaredocs.web.cern.ch/guides/vscode/, but needs updating/extending for more general usage — will do it in the next days.

- Will rather do demo instead.

    - Example: TNAnalysis (analysis histogramming code that we use).

    - https://gitlab.cern.ch/tadej/TNAnalysis