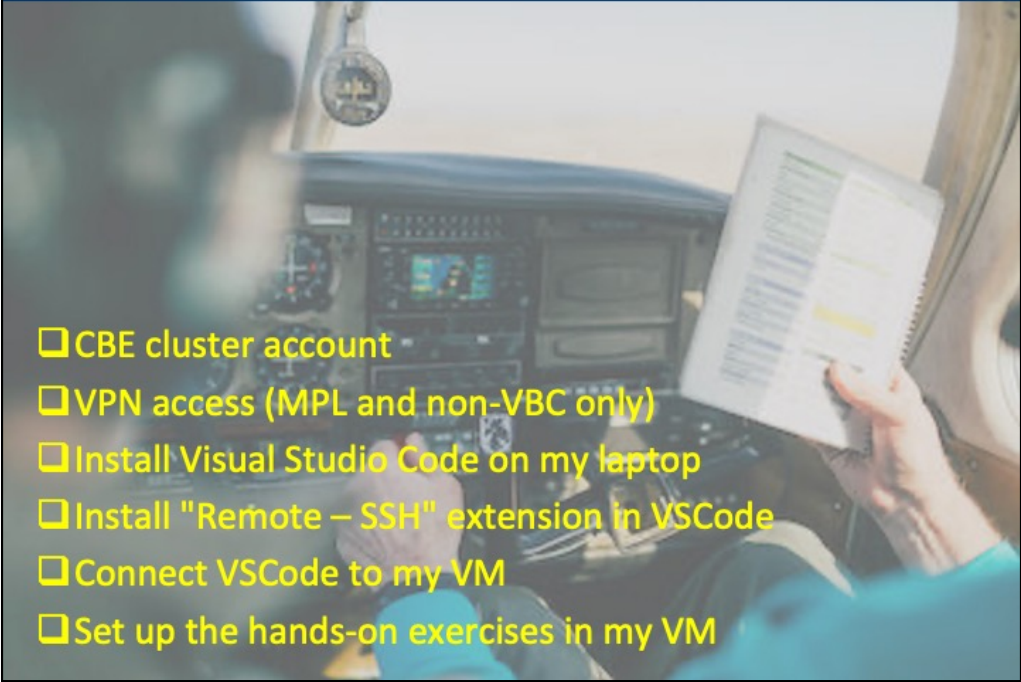
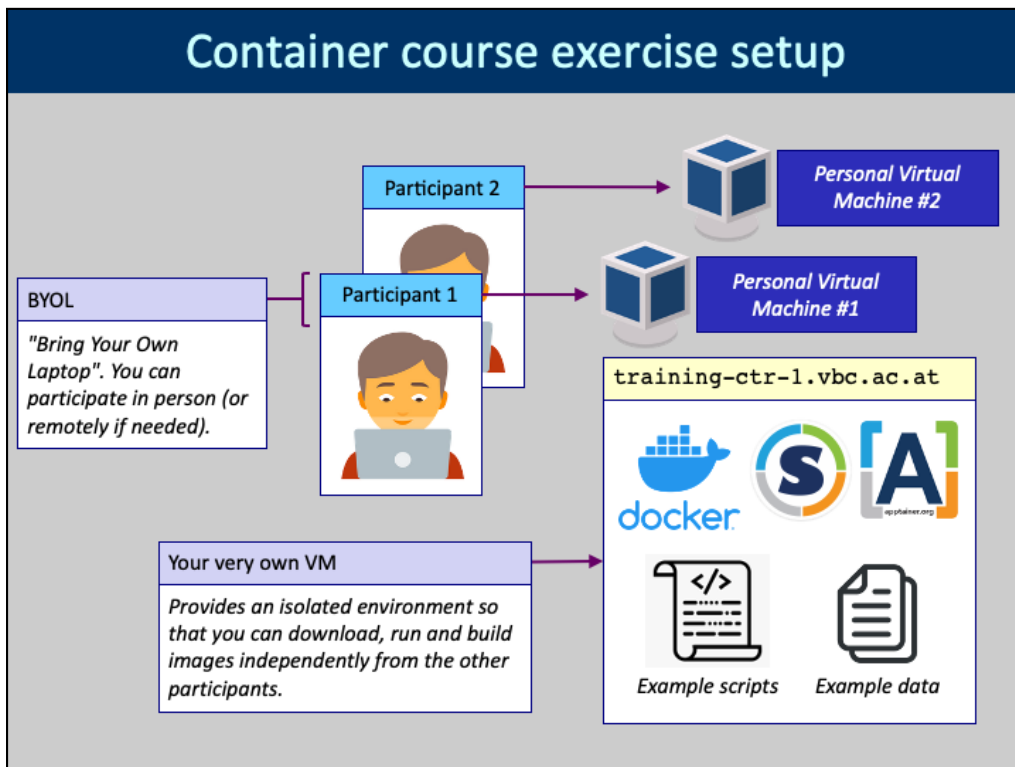


Container course setup checklist

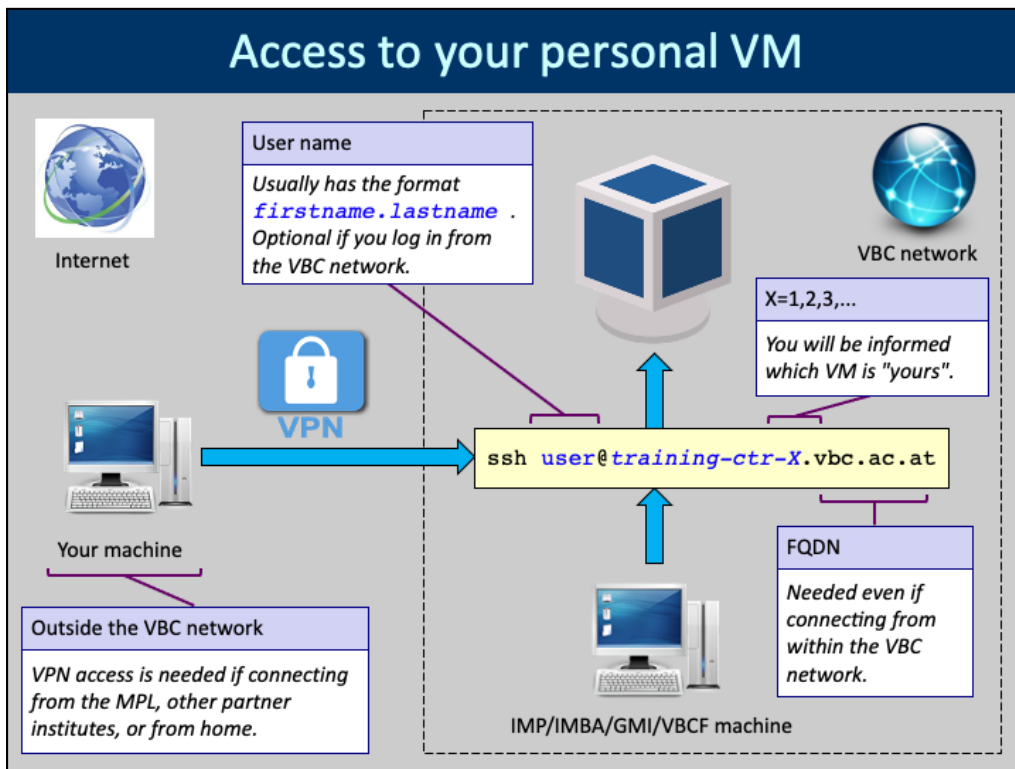
- 
- A person is shown from the chest up, wearing a blue shirt, sitting in the cockpit of an aircraft. They are holding a white checklist or document in their left hand. The cockpit instruments and controls are visible in the background.
- CBE cluster account
 - VPN access (MPL and non-VBC only)
 - Install Visual Studio Code on my laptop
 - Install "Remote – SSH" extension in VSCode
 - Connect VSCode to my VM
 - Set up the hands-on exercises in my VM

Make sure you have completed all steps before the course. The following slides explain the tasks in detail.



Each participant gets his/her "personal" virtual machine (VM) assigned before the course. This is necessary because you will download, run and build your own Docker and APTAINER container images. If all participants did this in the same machine, then total chaos would result :-)

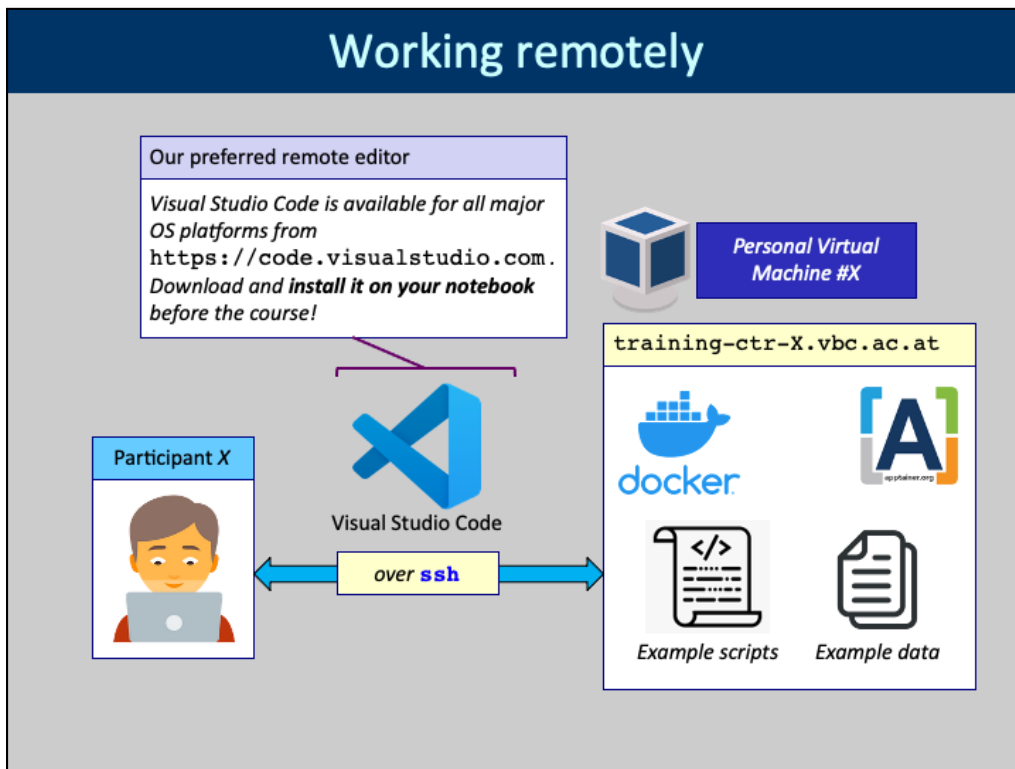
The VMs are prepared by the IT department and they contain the necessary software and the example scripts and data.



The training VM-s are usually named `training-ctr-X.vbc.ac.at` where X is a number 1,2,3, etc., but the naming scheme may change slightly between courses. You will get notified before the course which VM is assigned to you. Log in to the machine using SSH and with the same credentials you have on the VBC cluster "CBE". The "fully qualified domain name" (FQDN) of the training VM is needed even if you connect from the VBC internal network.

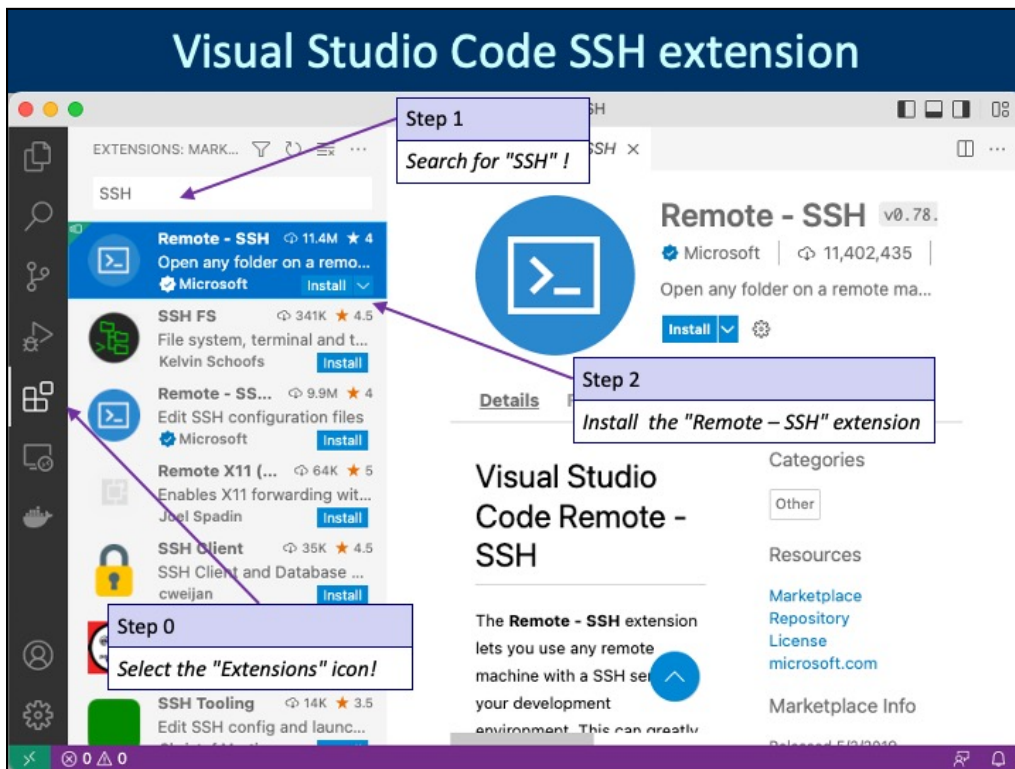
If you cannot log in then maybe you have a very old password. Change it at

<https://account.activedirectory.windowsazure.com/ChangePassword.aspx> !

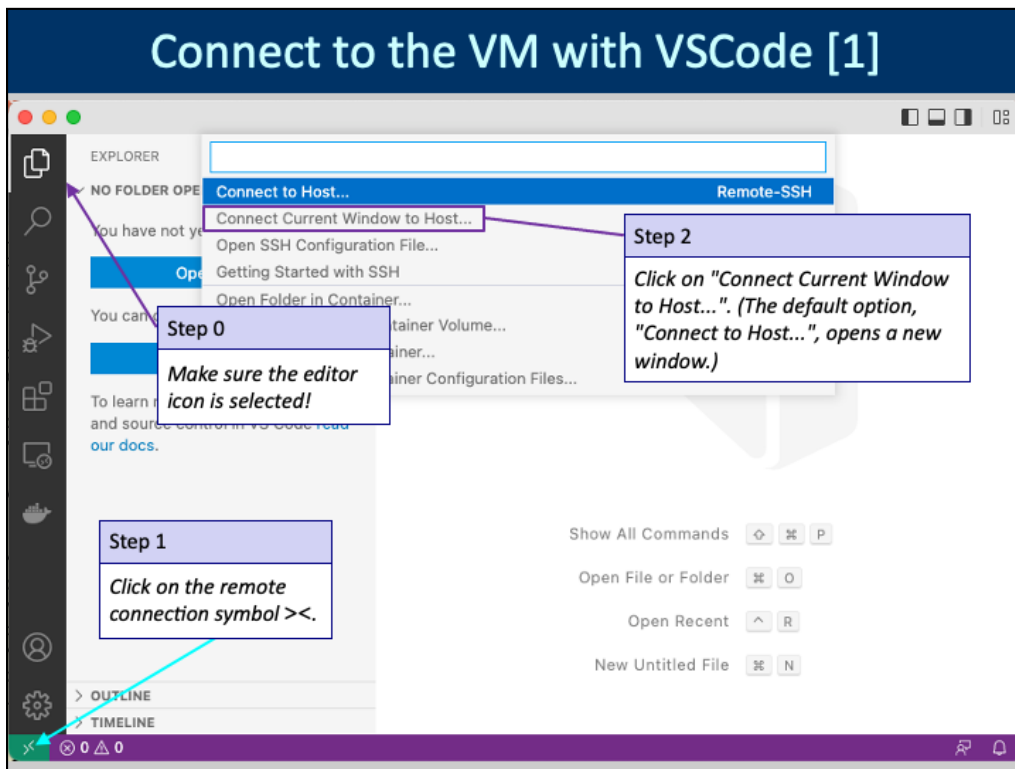


You will use Microsoft's Visual Studio Code ("VSCoDe") to edit Dockerfile-s and Apptainer (Singularity) recipe files remotely. VSCoDe also provides a remote terminal which you will use to run Docker and Apptainer commands on your personal VM. VSCoDe is available freely for all major platforms from <https://code.visualstudio.com>.

Install VSCoDe on the laptop that you will bring to the course.



Visual Studio Code needs the "Remote – SSH" extension to connect to remote servers using the SSH protocol. You can install the extension by selecting the Extensions icon on the left margin, then searching for SSH-related extensions, and then installing the "Remote – SSH" extension.



Now click on the topmost icon on the left hand side to set VS Code to "editor mode". Then click on the remote connection symbol and then select the "Connect Current Window to Host..." option from the dropdown that appears on the top.

Connect to the VM with VSCode [2]

The screenshot shows the VS Code SSH connection interface. At the top, there is a header "Connect to the VM with VSCode [2]". Below it, a search bar prompts "Select configured SSH host or enter user@host". A list of hosts is shown, with "andras.aszodi@training-ctr-0.vbc.ac.at" selected. Below the list are options to "Add New SSH Host..." and "Configure SSH Hosts...". A callout box labeled "Step 3" points to the selected host, stating: "Type the name of the VM assigned to you in the remote host field." Below this, a password prompt says "Enter password for \$andras.aszodi@training-ctr-0.vbc.ac.at" with a masked input field. A callout box labeled "Step 4" points to the password field, stating: "Enter your cluster password when prompted."


Type your CBE cluster user name and the full name of the VM assigned to you in the host input field. Then enter your CBE cluster password when prompted.

Connecting to the remote VM may take a bit longer for the first time because VS Code needs to configure a few things for itself.

UNIX terminal in VSCode

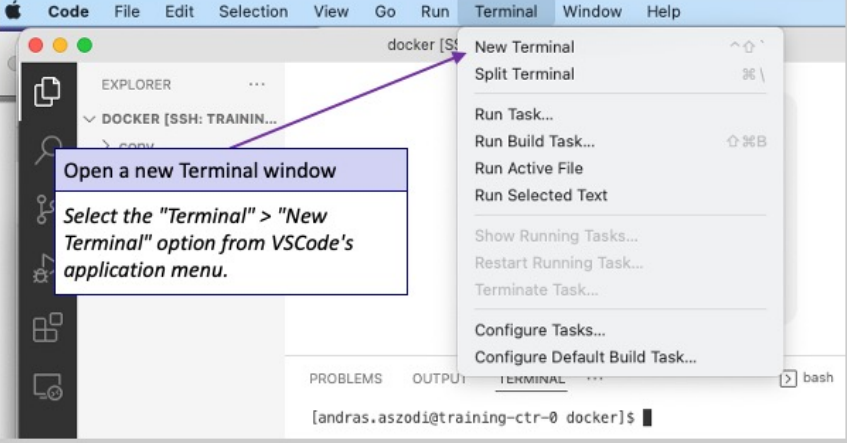
The Terminal window

You can find it at the bottom of the VSCode interface. If it is not shown, then use the keys `Ctrl-`` ("control-backtick") to make it visible.



Open a new Terminal window

Select the "Terminal" > "New Terminal" option from VSCode's application menu.



VSCode usually shows a Terminal window at the bottom of its GUI after logging in remotely. If it is not there, you get open it with the `Ctrl-`` ("control-backtick") key combination. Do not confuse the backtick ``` with the "single quotation mark" which is `'`. (Yes, this keyboard shortcut is an unfortunate choice.)

You can also open a new Terminal from the VSCode menu as shown on the slide.

Set up the hands-on exercises

Run the course setup script

```
/tmp/ctr_examples/filesetup.sh $HOME
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[andras.aszodi@training-ctr-0 ~]$ /tmp/ctr_examples/filesetup.sh $HOME
```

Copy the training setup

Run this script in the Terminal. It will create your training environment.

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[andras.aszodi@training-ctr-0 ~]$ tree -d .
```

```
.
├── apptainer
│   ├── conv
│   ├── multovl
│   └── sandboxes
├── data
├── docker
│   ├── convctx
│   ├── hictx
│   ├── multovl
│   └── devboost
```

Check the setup

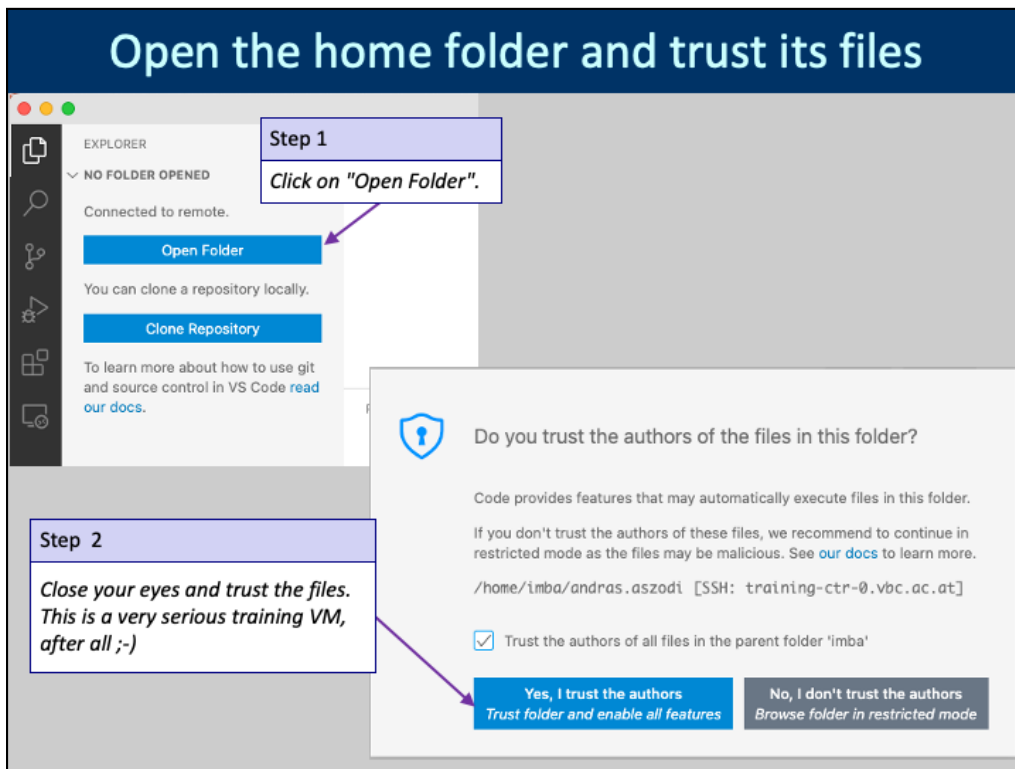
```
tree -d .
```

```
10 directories
[andras.aszodi@training-ctr-0 ~]$
```

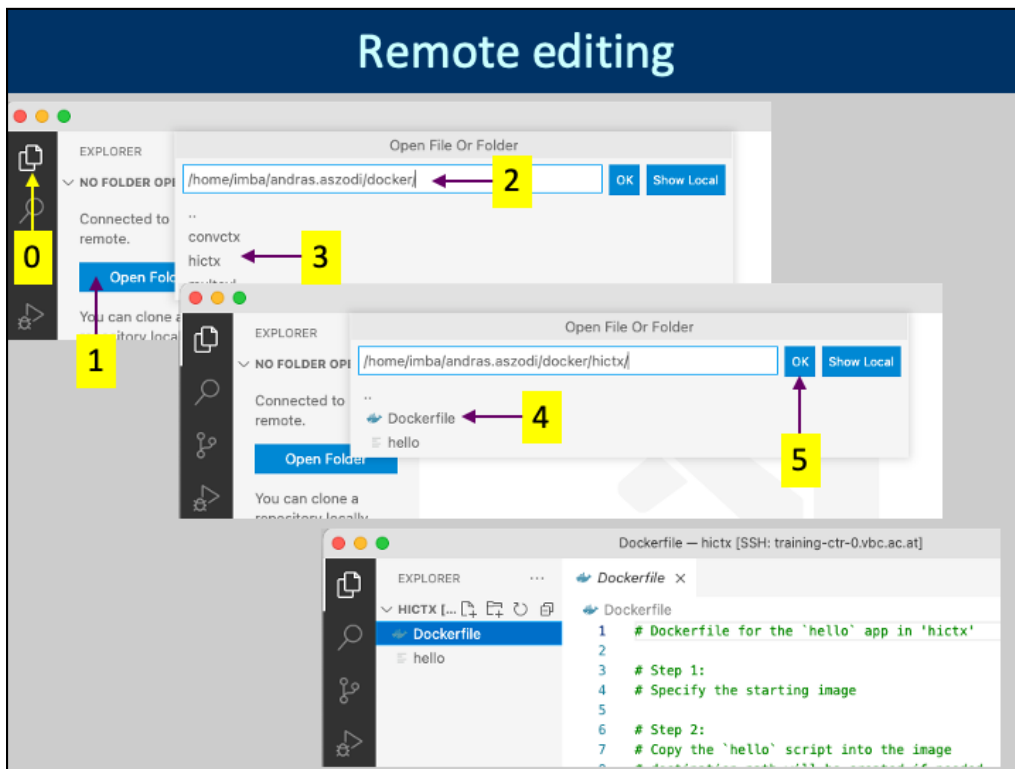
So much stuff...!

We won't use the "multovl" directories, they are for a more advanced course.

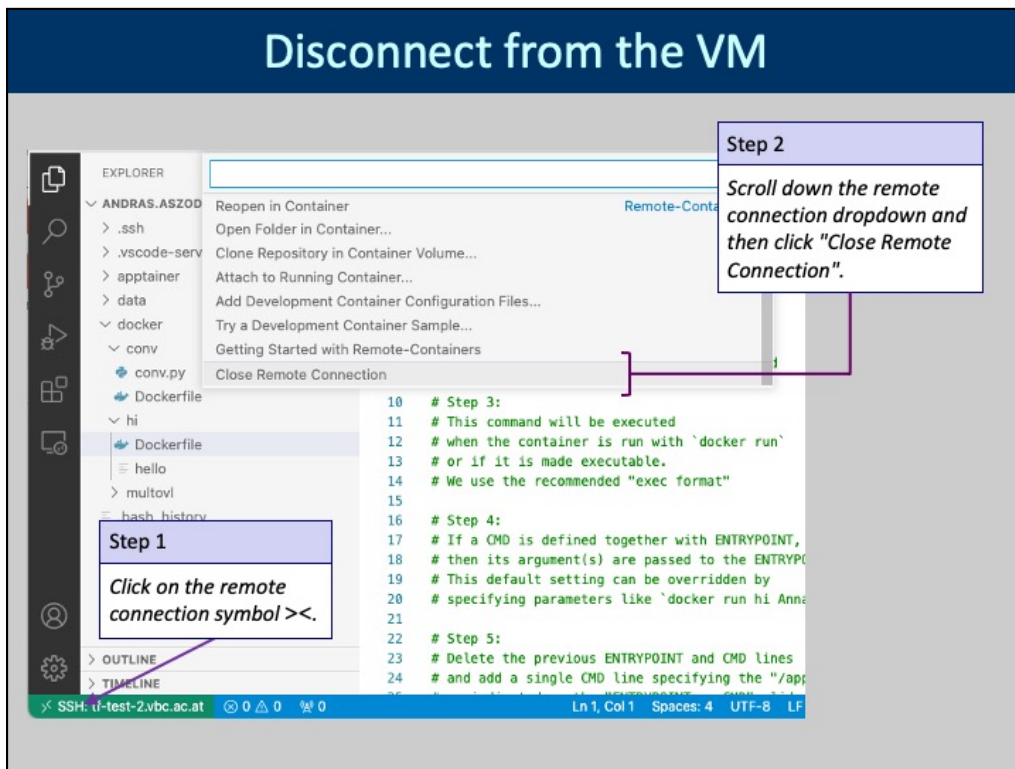
Once you are in the remote terminal, please run the course setup script as indicated. The script copies all data, example files etc. needed for the Docker and Apptainer hands-on exercises. (It also copies some more stuff which we won't use in this course.)



The purpose of this little security theater is a bit unclear to me. Just trust the files and be done with it 😊

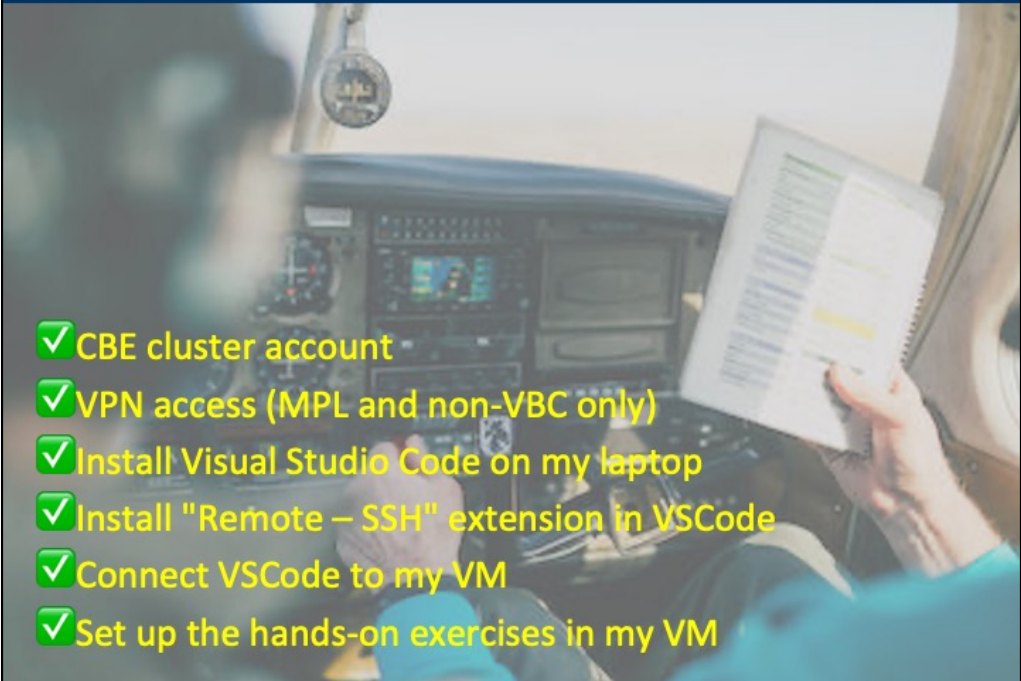


Once you are connected to the remote VM, you can edit the files there exactly as if they were accessed locally. Try out on your local machine to get a feeling for it!



When the course is over, please disconnect VS Code from your VM. Note that the remote connection drop-down can be quite long and the "Close Remote Connection" option is at the very bottom of it. You need to scroll down to see it!

Review the course setup checklist

- 
- A photograph of a person in a cockpit, viewed from behind, holding a checklist. The cockpit is filled with various instruments and screens. The person is wearing a blue shirt. The checklist is a spiral-bound notebook with a white cover and a checklist on the page.
- ✓ CBE cluster account
 - ✓ VPN access (MPL and non-VBC only)
 - ✓ Install Visual Studio Code on my laptop
 - ✓ Install "Remote – SSH" extension in VSCode
 - ✓ Connect VSCode to my VM
 - ✓ Set up the hands-on exercises in my VM

You are all set now to learn about containers!