QBIO305 | WINTER SEMESTER 2026/27

RAMSES login & RStudio Server

Step-by-step access guide for Mac and Windows

SET UP ONCE

VPN • TOTP • SSH key

USE EACH PRACTICAL

SSH • srun • RStudio

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Study resources, guides and interactive apps

tahirali-biomics.github.io

Student-account workflow tested on RAMSES · November 2026

START HERE

Set up once. Start RStudio each practical.

1 ONE-TIME SETUP

Connect to the university VPN (when off campus).
Register Cisco Duo and your RAMSES course authenticator.

2 GENERATE & REGISTER KEY

Create an SSH key on your laptop. Upload only the public (.pub) file to the RAMSES portal.

3 EACH PRACTICAL

Log in to RAMSES, request a compute node with Slurm, and start the QBio305 RStudio launcher.

4 OPEN RSTUDIO

Keep Terminal 1 running; create an SSH tunnel in Terminal 2; open localhost in your laptop browser.

No package installation is needed. The shared course launcher loads the validated R environment.

IMPORTANT: Replace qbixd035 with YOUR assigned RAMSES username wherever it appears.

VPN + Cisco Duo | Access from outside campus

Use your personal University of Cologne login for VPN — NOT your RAMSES course account.

1 INSTALL

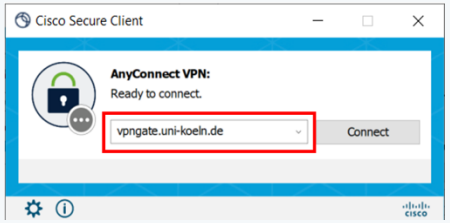
Download Cisco Secure Client from ITCC and install it.

Official ITCC VPN guide

2 CONNECT

Open Cisco Secure Client. Enter:

vpngate.uni-koeln.de



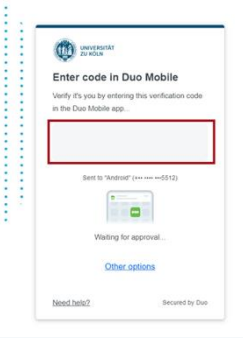
3 SIGN IN

University Shibboleth sign-in uses your personal university credentials.



4 VERIFY

Open Duo Mobile. Approve the 4-digit Duo Push code shown on your login.



Scan for Duo App guide

CAUTION — Avoid repeated failed login attempts
Multiple failed VPN/Duo authentication attempts may temporarily lock your account. Stop retrying and contact ITCC if access is blocked.

Alternative: Duo Mobile can also provide a 6-digit passcode. On campus, VPN is normally unnecessary.

Set up your RAMSES course verification code

The RAMSES course authenticator is separate from the university VPN’s Duo Mobile.

1 OPEN AUTHENTICATOR

Install or open Google Authenticator on your phone.

2 ADD YOUR COURSE ACCOUNT

Tap + → Scan a QR code. Scan the setup QR provided privately with your course credentials.

3 USE THE CURRENT CODE

Enter the current six-digit TOTP code in the RAMSES portal, and when SSH shows “Verification code:”.

WHICH LOGIN USES WHICH CODE?

University VPN

Personal university account + Cisco Duo

RAMSES portal + SSH

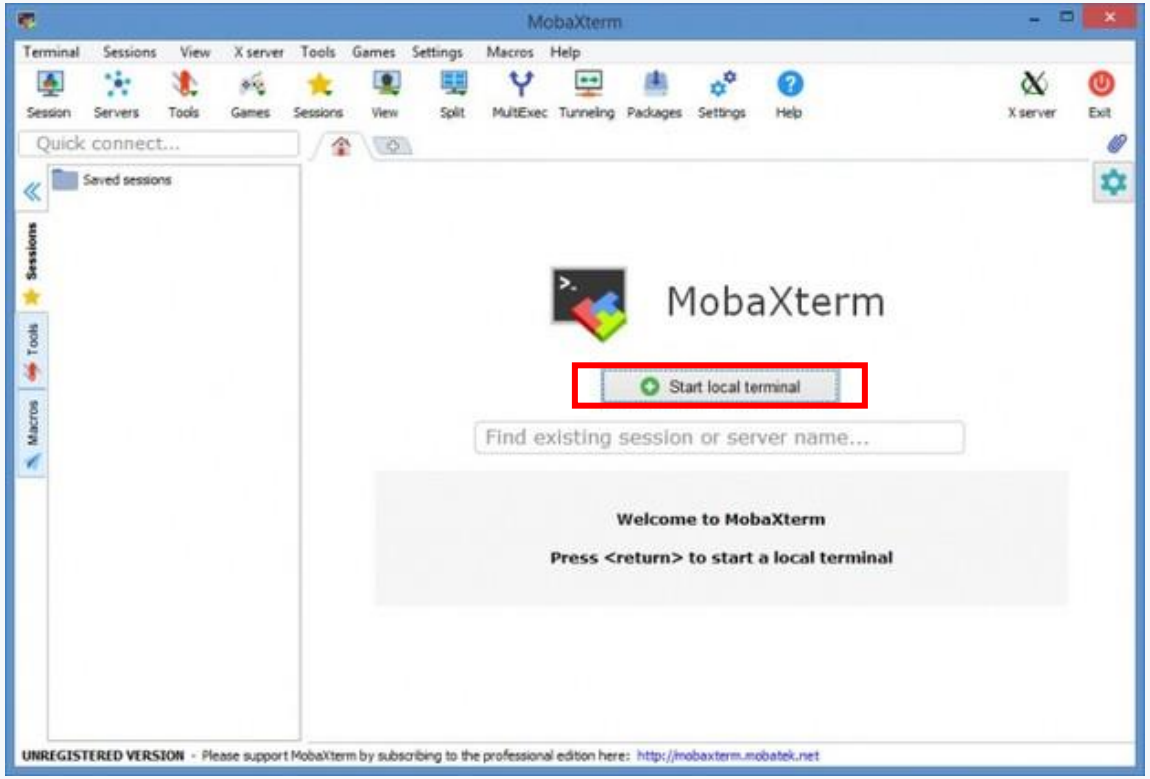
Assigned course account + Google Authenticator 6-digit code

Expected SSH prompt for this course: (qbixd035@ramses4...) Verification code: → enter the current code.

SECURITY: Never share course QR setup codes, one-time codes, passwords, or SSH private keys.

Windows: Install MobaXterm once

Mac users do not need MobaXterm; they open the built-in Terminal app.



1 DOWNLOAD

Get the MobaXterm Home Edition Installer from the official site.

2 INSTALL

Unzip the download, run the .msi installer, and open MobaXterm.

3 OPEN LOCAL TERMINAL

Select “Start local terminal”. This is where you will create your SSH key.

[Official MobaXterm website]

Windows: make sure the MobaXterm home directory is persistent before creating the key; the key must survive reopening MobaXterm.

Generate your SSH key — Mac & Windows

Mac → Terminal | Windows → MobaXterm → Start local terminal | Same commands on both.

ENTER THESE FOUR COMMANDS IN ORDER

```
mkdir -p ~/.ssh
chmod 700 ~/.ssh
ssh-keygen -t ed25519 -C "qbixd035" -f ~/.ssh/ramses_qbixd035
cat ~/.ssh/ramses_qbixd035.pub
```

When ssh-keygen asks for a passphrase, Pressing Enter twice creates a key without a passphrase.
If a key already exists, do NOT overwrite it; ask for assistance.

IMPORTANT: Replace qbixd035 with YOUR assigned RAMSES username wherever it appears.

Which SSH key should you upload?

The two files are created together, but have very different purposes.

PUBLIC KEY · SHARE WITH PORTAL

ramses_qbixd035.pub

Copy the full line beginning ssh-ed25519 and paste it into the RAMSES website.

PRIVATE KEY · KEEP ON YOUR LAPTOP

ramses_qbixd035

Use this file for your SSH connections. NEVER upload or send it to anyone.

TO DISPLAY THE PUBLIC KEY (MAC TERMINAL / MOBAXTERM LOCAL TERMINAL)

```
cat ~/.ssh/ramses_qbixd035.pub
```

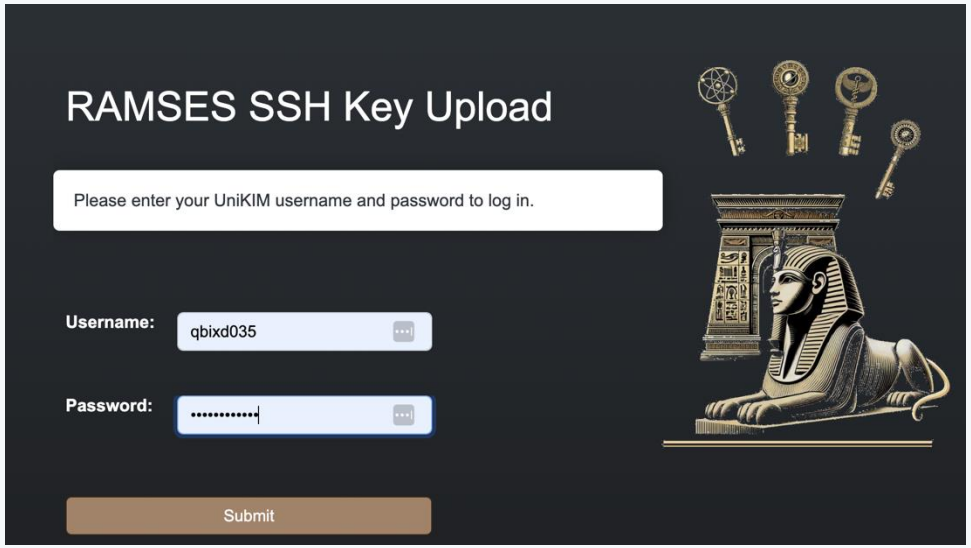
IMPORTANT: Replace qbixd035 with YOUR assigned RAMSES username wherever it appears.

Log in to the RAMSES key-upload portal

Connect the university VPN first if you are accessing the portal from outside campus.

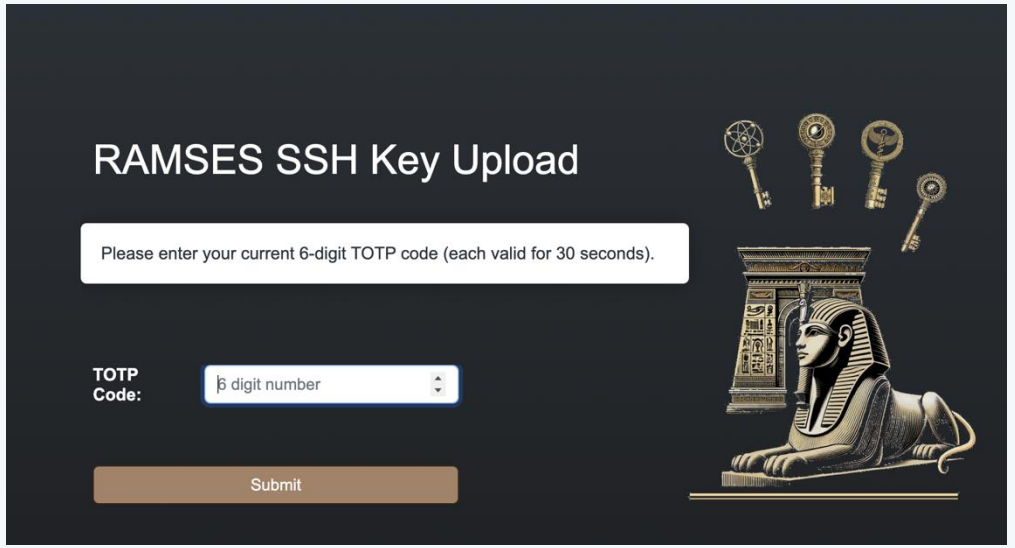
https://ramses-umc.itcc.uni-koeln.de/web-sshkey/login

1 · Sign in



Use your assigned RAMSES course username and password.

2 · Enter six-digit TOTP



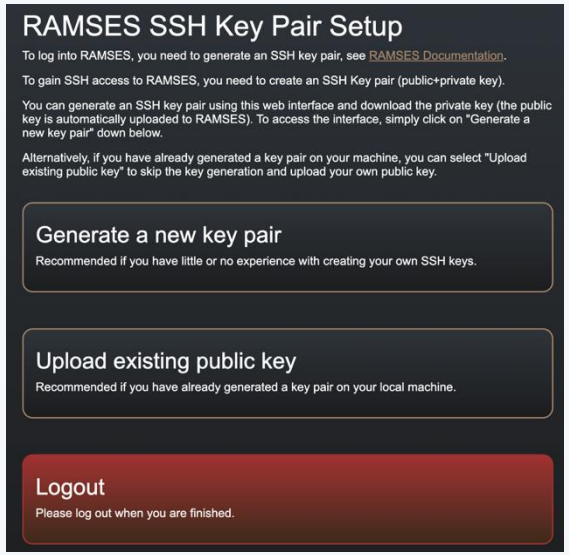
Use Google Authenticator, not the VPN Duo code.

IMPORTANT: Replace qbixd035 with YOUR assigned RAMSES username wherever it appears.

Select, paste, submit — then confirm

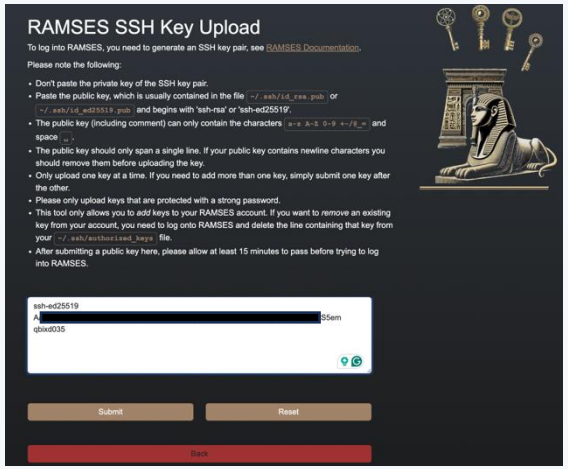
Keep the entire public key on ONE line when pasting; never paste the private key.

1 · Upload existing key



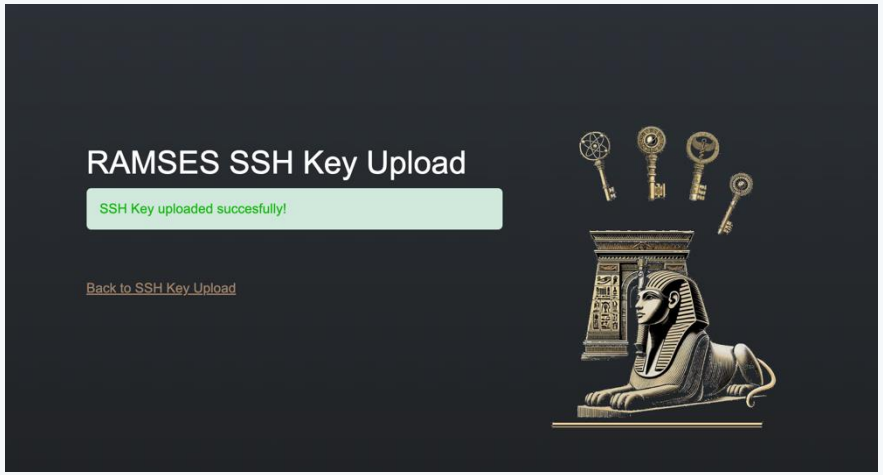
Choose “Upload existing public key”.

2 · Paste .pub and Submit



Paste the public key as a single line.

3 · Confirm success



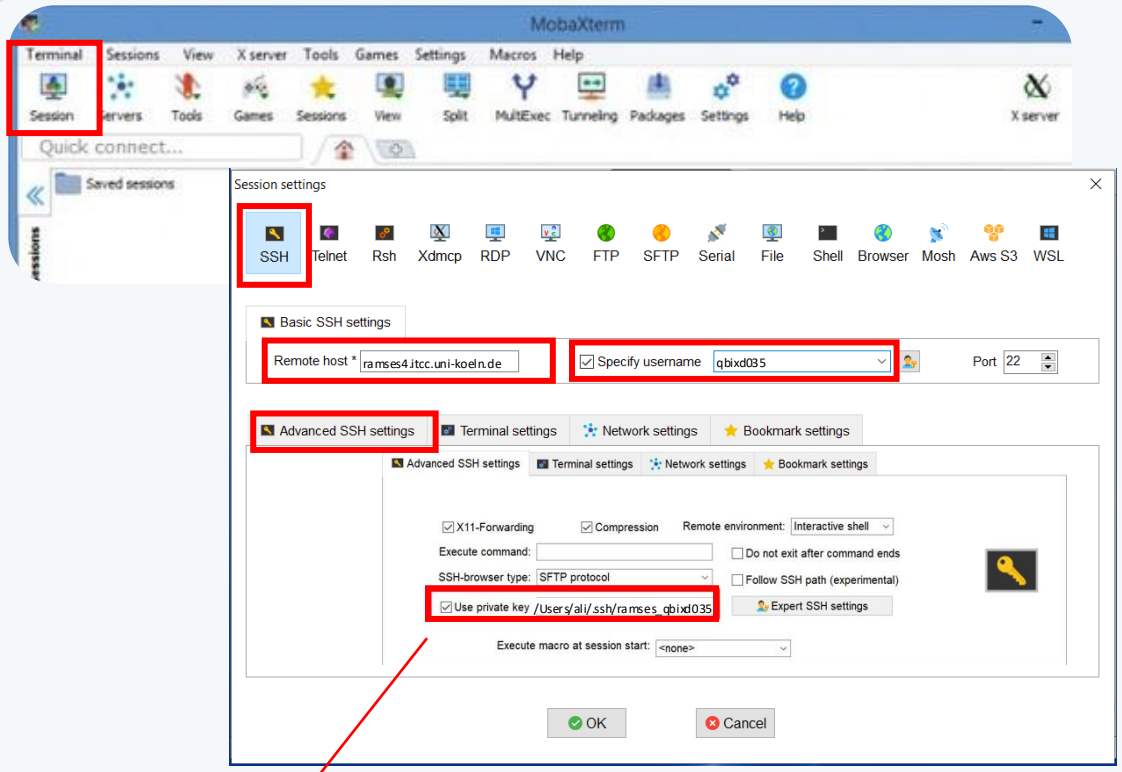
Look for “SSH Key uploaded successfully!”

The portal may require around 15 minutes before the newly registered key works for SSH login.

IMPORTANT: Replace qbixd035 with YOUR assigned RAMSES username wherever it appears.

Windows: Connect using MobaXterm

MobaXterm → Session → SSH; the screenshots illustrate the settings panels.



1 HOST

Remote host: ramses4.itcc.uni-koeln.de

2 USERNAME

Set “Specify username” to your assigned RAMSES account (example: qbixd035).

3 PRIVATE KEY

Advanced SSH settings → “Use private key”. Browse to ramses_qbixd035 (no .pub).

4 CONNECT + VERIFY

Click OK. When “Verification code:” appears, enter the Google Authenticator code.

IMPORTANT: Replace qbixd035 with YOUR username. Screenshot key paths are illustrative; use YOUR actual private-key file.

Mac: Log in to RAMSES from Terminal

Use the private key that you generated on your Mac (never the .pub file).

COPY / ENTER THIS ONE-LINE COMMAND (EXAMPLE)

```
ssh -i ~/.ssh/ramses_qbixd035 -o IdentitiesOnly=yes qbixd035@ramses4.itcc.uni-koeln.de
```

After pressing Enter, you should see a verification prompt:

EXAMPLE OF A SUCCESSFUL RAMSES LOGIN

```
(qbixd035@ramses4.itcc.uni-koeln.de) Verification code:
Last login: ...
[qbixd035@ramses4 ~]$
```

Enter the current 6-digit Google Authenticator code when prompted. The last line is your RAMSES shell.

IMPORTANT: Replace qbixd035 with YOUR assigned RAMSES username wherever it appears.

Request a compute node; check your job

Run these commands INSIDE RAMSES (Terminal 1), after a successful SSH login.

1 · ALLOCATE RESOURCES (ONE LINE — NO BACKSLASHES)

```
srun --partition=interactive --time=02:00:00 --ntasks=1 --cpus-per-task=4 --mem=16G --pty bash
```

Wait for "job ... has been allocated resources" and the prompt to change from [qbixd035@ramses4 ~]$ to a compute node, for example [qbixd035@ramses15229 ~]$.

2 · CHECK YOUR SLURM JOB (OPTIONAL DIAGNOSTIC)

```
squeue -u qbixd035
```

Example status: JOBID 7513400 ST=R (running) NODELIST=ramses15229

IMPORTANT: Replace qbixd035 with YOUR username. Enter srun as ONE continuous line to avoid shell errors.

Start QBio305 RStudio on the compute node

Run the launcher AFTER Slurm places you on the allocated node — not on ramses4.

INSIDE COMPUTE NODE · TERMINAL 1

```
bash -l /scratch/QBIO_WS27/bin/qbio-rstudio
```

The launcher prints the information required for your SSH tunnel:

EXAMPLE ONLY · RESULTS FROM QBIXD035 COURSE-ACCOUNT TEST

```
Starting QBio305 RStudio on ramses15229
R environment: /scratch/QBIO_WS27/envs/qbio_popgen_ws27
Running on node ramses15229 ... PORT=8787
Access with "localhost:8787" on your local pc browser
```

Record YOUR compute-node name and YOUR RStudio port. Keep this terminal running.

IMPORTANT: Replace qbixd035 with YOUR assigned RAMSES username wherever it appears.

Know where each step is running

Keep the first two windows open for the entire RStudio session.

TERMINAL 1	TERMINAL 2	BROWSER
RAMSES connection	**Local SSH tunnel**	**RStudio interface**
SSH → srun → qbio-rstudio	ssh -N -L ...	http://localhost:8790
Runs on RAMSES / compute node	Runs on YOUR Mac / Windows laptop	Opens on the SAME laptop

Never try to open a remote node's RStudio address directly on the internet. Always use the authenticated SSH tunnel.

Mac: Open a SECOND Terminal for the tunnel

Keep Terminal 1 (RAMSES + RStudio server) running. Run this on your Mac laptop.

COPY THIS ONE-LINE SSH COMMAND **(Ensure to copy/paste this line as one continuous command**

```
ssh -i ~/.ssh/ramses_qbixd035 -o IdentitiesOnly=yes -o ExitOnForwardFailure=yes -N -L
8790:ramses15229:8787 qbixd035@ramses1.itcc.uni-koeln.de
```

8790 = laptop's local port **ramses15229 = example node** **8787 = example RStudio port**

EXAMPLE OF PROMPT FOR VERIFICATION CODE

(qbixd035@ramses1.itcc.uni-koeln.de) Verification code:

When "Verification code:" appears, enter Google Authenticator's current six-digit code. The terminal may then show NO output — this is normal; keep it open.

IMPORTANT: Replace qbixd035 with YOUR username AND replace ramses15229:8787 with the values printed by YOUR launcher.

Windows: Open a NEW local MobaXterm tab

Keep the first MobaXterm RAMSES tab running. Create a SECOND “Start local terminal” tab.

IN MOBAXTERM LOCAL BASH TERMINAL (NOT WINDOWS POWERSHELL) **(Ensure to copy/paste this line as one continuous command**

```
ssh -i ~/.ssh/ramses_qbixd035 -o IdentitiesOnly=yes -o ExitOnForwardFailure=yes -N -L
8790:ramses15229:8787 qbixd035@ramses1.itcc.uni-koeln.de
```

1 SECOND LOCAL TAB

The new tab must run on your Windows laptop within MobaXterm, not inside the remote RAMSES session.

2 VERIFY THE TUNNEL

Enter the 6-digit course code when asked. Keep the new tab open, even if no more output appears.

Same command as Mac: use the private key you generated in MobaXterm. The server is reached via ramses1.itcc.uni-koeln.de.

IMPORTANT: Replace qbixd035 with YOUR username AND replace ramses15229:8787 with your own node and port.

Open RStudio in your laptop browser

The SSH tunnel and browser must be running on the SAME laptop.

http://localhost:8790

Use the LOCAL port you chose in the SSH tunnel — here, 8790.

IN THE RSTUDIO CONSOLE, TEST THE COURSE ENVIRONMENT

```
R.home()
library(vcfR)
library(adegenet)
library(PopGenome)
getwd()
```

If these commands work, your QBio305 R environment is ready. Do not install or update shared packages yourself.

Troubleshooting & safe logout

Use Google Authenticator for RAMSES. Do not repeatedly retry failed authentication, and do not change the central RStudio environment.

SSH: Permission denied	Check username, private key (no .pub), and whether the public key was uploaded.
Verification code fails	 CAUTION: Repeated failed VPN or RAMSES authentication attempts may result in account lockout. Stop retrying and contact ITCC or your instructor
srun command fails	Type the srun command on ONE line (no trailing backslash/spaces). Then try again.
No interactive node	Run squeue -u qbixd035 to check status (R = running). An allocation can be queued.
Browser cannot open localhost	Keep both terminals open. Check local port 8790, your node and RStudio remote port.
RStudio session fails / job expired	Tell the instructor; if Slurm expired, request a new node and restart the launcher.

FINISH: Save your work → Quit RStudio → Ctrl+C in tunnel + RStudio terminals → exit compute node.

ITCC VPN | RAMSES key portal | Duo help | MobaXterm