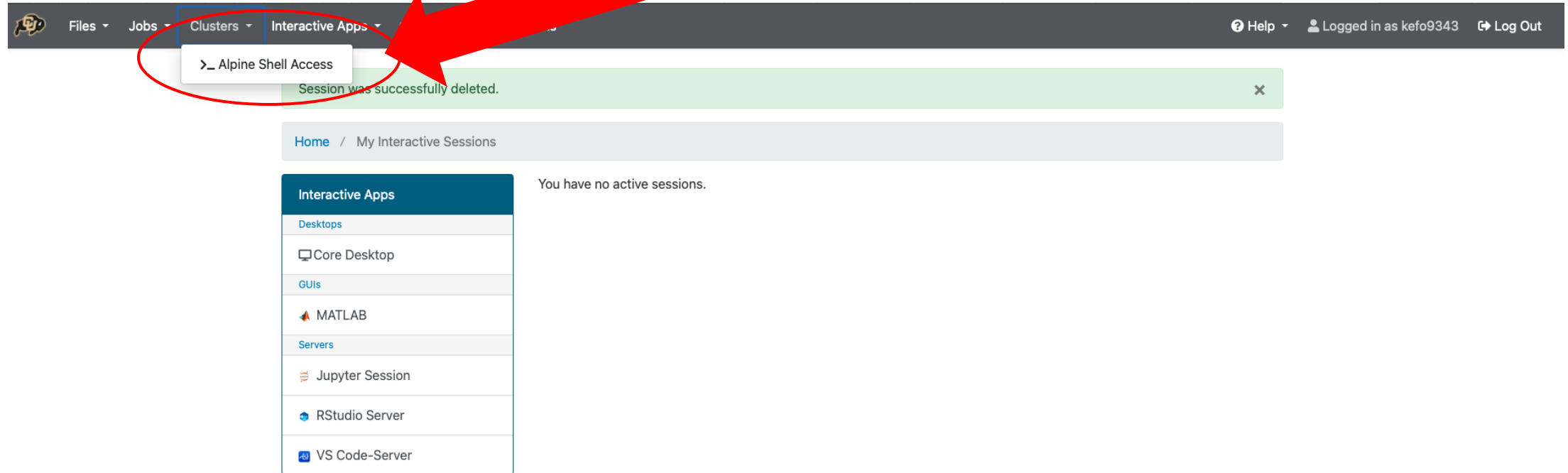
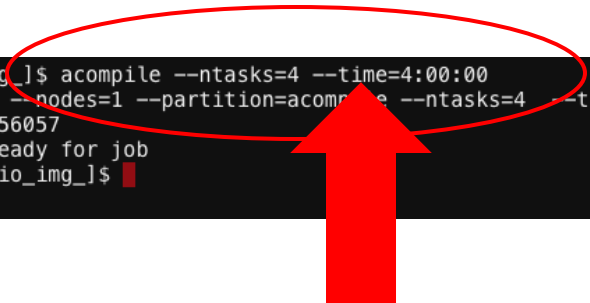


Make sure to log into the Alpine shell



The screenshot shows a web application interface. At the top is a dark navigation bar with a logo on the left and links for 'Files', 'Jobs', 'Clusters', 'Interactive Apps', and 'Help'. On the right of the bar, it says 'Logged in as kefo9343' and 'Log Out'. A red circle highlights the 'Clusters' dropdown menu, which has opened to show an option labeled '>_ Alpine Shell Access'. A large red arrow points from the text 'Make sure to log into the Alpine shell' to this option. Below the navigation bar, a green message bar states 'Session was successfully deleted.' with a close button. The main content area has a breadcrumb 'Home / My Interactive Sessions'. On the left, there is a sidebar titled 'Interactive Apps' with categories: 'Desktops' (containing 'Core Desktop'), 'GUIs' (containing 'MATLAB'), and 'Servers' (containing 'Jupyter Session', 'RStudio Server', and 'VS Code-Server'). The main panel on the right displays the message 'You have no active sessions.'

```
[kefo0001_amc@login-ci1 rstudio_img_1]$ acompile --ntasks=4 --time=4:00:00
acompile: submitting job... salloc --nodes=1 --partition=acompile --ntasks=4 --time=4:00:00 --qos=compile --job-name=acompile --bell --oversubscribe srun --pty /bin/bash
salloc: Granted job allocation 11056057
salloc: Nodes c3cpu-a2-u32-1 are ready for job
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img_1]$
```




Go to a compute node with: `acompile --ntasks=4 --time=4:00:00`

```
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img]$ export ALPINE_SCRATCH=/gpfs/alpine1/scratch/$USER  
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img]$ export APPTAINER_TMPDIR=$ALPINE_SCRATCH/apptainer/tmp  
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img]$ export APPTAINER_CACHEDIR=$ALPINE_SCRATCH/apptainer/cache  
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img]$ mkdir -pv $APPTAINER_CACHEDIR $APPTAINER_TMPDIR
```



```
export ALPINE_SCRATCH=/gpfs/alpine1/scratch/$USER  
export APPTAINER_TMPDIR=$ALPINE_SCRATCH/apptainer/tmp  
export APPTAINER_CACHEDIR=$ALPINE_SCRATCH/apptainer/cache  
mkdir -pv $APPTAINER_CACHEDIR $APPTAINER_TMPDIR
```

```
Host: login-ci1.rc.int.colorado.edu Themes: Cobalt2
[kefo0001_amc@c3cpu-a2-u32-1 backup_from_kentaro]$ cp -v /projects/$USER/.rstudioserver/rstudio-4.4.1/rstudio-server-4.4.1_overlay.img /projects/$USER/rstudio-server-4.4.1_overlay_backup_.img
'/projects/kefo0001_amc/.rstudioserver/rstudio-4.4.1/rstudio-server-4.4.1_overlay.img' -> '/projects/kefo0001_amc/rstudio-server-4.4.1_overlay_backup_.img'
```



Make a copy of your Rstudio container image with the following command:

```
cp -v /projects/$USER/.rstudioserver/rstudio-4.4.1/rstudio-server-4.4.1_overlay.img /projects/$USER/rstudio-server-4.4.1_overlay_backup_.img
```

```
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img]$ export r_app_version="4.4.1"  
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img]$ apptainer -d shell --bind /projects,/scratch/al  
r-${r_app_version}_overlay.img /curc/sw/containers/open_ondemand/rstudio-server-${r_app_ver
```



```
export r_app_version="4.4.1"  
apptainer -d shell --bind /projects,/scratch/alpine,$CURC_CONTAINER_DIR_OOD --fakeroot --overlay  
/projects/$USER/.rstudioserver/rstudio-${r_app_version}/rstudio-server-${r_app_version}_overlay.img  
/curc/sw/containers/open_ondemand/rstudio-server-${r_app_version}.sif
```

```
Apptainer> apt-get -y update
Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:2 http://archive.ubuntu.com/ubuntu jammy InRelease
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Fetched 384 kB in 1s (268 kB/s)
Reading package lists... Done
Apptainer> █
```



apt-get -y update

```
Apptainer> apt install -y libhdf5-dev
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
libhdf5-dev is already the newest version (1.10.7+repack-4ubuntu2).
The following package was automatically installed and is no longer required:
  libcurl3-nss
Use 'apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 52 not upgraded.
Apptainer>
```



apt install -y libhdf5-dev

```
Apptainer> apt install -y patch
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
patch is already the newest version (2.7.6-7build2).
The following package was automatically installed and is no longer required:
  libcurl3-nss
Use 'apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 52 not upgraded.
```

apt install -y patch


```
Apptainer> R

R version 4.4.1 (2024-06-14) -- "Race for Your Life"
Copyright (C) 2024 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu

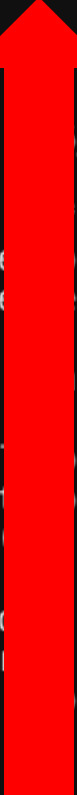
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

  Natural language support but running in an English locale

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

>
```



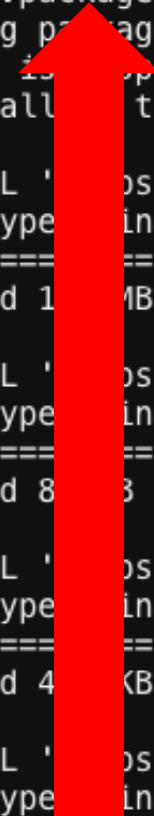
We call the R command

```
[> .libPaths("/projects/kefo9343/Rstudio_libs/4.4.1")
[> .libPaths( c( .libPaths(), "/usr/local/lib/R/library" ) )
[> .libPaths( c( .libPaths(), "/usr/local/lib/R/site-library" ) )
[> .libPaths()
[1] "/projects/kefo9343/Rstudio_libs/4.4.1"
[2] "/usr/local/lib/R/library"
[3] "/usr/local/lib/R/site-library"
```



We change the order of the lib Paths so that “/projects/\$USER” comes first. Please run the following and confirm the order as shown on the screen. Replace “username” from below with your actual Alpine username:

```
.libPaths("/projects/username/Rstudio_libs/4.4.1")
.libPaths( c( .libPaths(), "/usr/local/lib/R/library" ) )
.libPaths( c( .libPaths(), "/usr/local/lib/R/site-library" ) )
```



```
> install.packages("hdf5r")
Installing package into '/usr/local/lib/R/site-library'
(as 'lib' is unspecified)
also installing the dependencies 'bit', 'R6', 'bit64'

trying URL 'https://p3m.dev/cran/__linux__/jammy/latest/src/contrib/bit_4.5.0.1.tar.gz'
Content type: 'application/octet-stream' length 1178130 bytes (1.1 MB)
=====
downloaded 1.1 MB

trying URL 'https://p3m.dev/cran/__linux__/jammy/latest/src/contrib/R6_2.5.1.tar.gz'
Content type: 'application/octet-stream' length 83250 bytes (81 KB)
=====
downloaded 81 KB

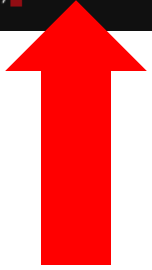
trying URL 'https://p3m.dev/cran/__linux__/jammy/latest/src/contrib/bit64_4.5.2.tar.gz'
Content type: 'application/octet-stream' length 493558 bytes (481 KB)
=====
downloaded 481 KB

trying URL 'https://p3m.dev/cran/__linux__/jammy/latest/src/contrib/hdf5r_1.3.11.tar.gz'
Content type: 'application/octet-stream' length 1919177 bytes (1.8 MB)
```

`install.packages("hdf5r")`

```
TIFY_SOURCE=2 -g -c Wrapper_manual_H5T.c -o Wrapper_manual_H5T.o
gcc -shared -L/usr/local/lib/R/lib -L/usr/local/lib -o hdf5r.so const_export.o datatype_export.o Wrapper_auto_H5A.o Wrapper_auto_H5.o Wrapper_auto_H5D.o Wrapper_auto_H5DS.o Wrapper_auto_H5E.o Wrapper_auto_H5F.o
Wrapper_auto_H5G.o Wrapper_auto_H5I.o Wrapper_auto_H5IM.o Wrapper_auto_H5L.o Wrapper_auto_H5LT.o Wrapper_auto_H5O.o Wrapper_auto_H5P.o Wrapper_auto_H5R.o Wrapper_auto_H5S.o Wrapper_auto_H5TB.o Wrapper_auto_H5T
.o Wrapper_auto_H5Z.o Wrapper_auto_H5FDcore.o Wrapper_auto_H5FDfamily.o Wrapper_auto_H5FDlog.o Wrapper_auto_H5FDsec2.o Wrapper_auto_H5FDstdio.o convert.o hdf5r_init.o H5Error.o H5ls.o Wrapper_manual_H5T.o -L/us
r/lib/x86_64-linux-gnu/hdf5/serial -lcrypto -lcurl -lpthread -lsz -lz -ldl -lm -L. -lhdf5_hl -lhdf5 -lz -lm -L/usr/local/lib/R/lib -lR
installing to /usr/local/lib/R/site-library/00LOCK-hdf5r/00new/hdf5r/libs
** R
** inst
** byte-compile and prepare package for lazy loading
** help
*** installing help indices
** building package indices
** installing vignettes
** testing if installed package can be loaded from temporary location
** checking absolute paths in shared objects and dynamic libraries
** testing if installed package can be loaded from final location
** testing if installed package keeps a record of temporary installation path
* DONE (hdf5r)


The downloaded source packages are in
  '/projects/kefo0001_amc/.rstudioserver/rstudio-4.4.1/tmp_data/RtmpygrMHr/downloaded_packages'
> q()
```



Confirm that the package installed properly and then exit R with the following:

`q()`

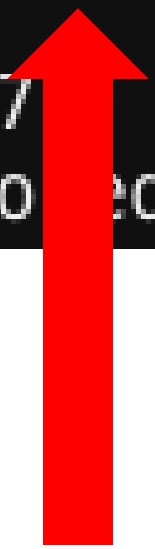
```
Apptainer> exit
exit
DEBUG [U=0 618432] CleanupContainer() Cleanup container
DEBUG [U=0 618432] umount() Umount /var/lib/apptainer/mnt/session/final
DEBUG [U=0 618432] stop() Waiting for fuse-overlayfs pid 3618617 to exit
DEBUG [U=0 618432] umount() Umount /var/lib/apptainer/mnt/session/rootfs
DEBUG [U=0 618432] stop() Waiting for squashfuse_ll pid 3618477 to exit
DEBUG [U=0 618432] umount() Sync of /var/lib/apptainer/mnt/session/overlay-images/0 succeeded
DEBUG [U=0 618432] umount() Umount /var/lib/apptainer/mnt/session/overlay-images/0
DEBUG [U=0 618432] stop() Waiting for fuse2fs pid 3618483 to exit
DEBUG [U=0 618432] Master() Child exited with exit status 0
```



Make sure to exit the apptainer container by running:

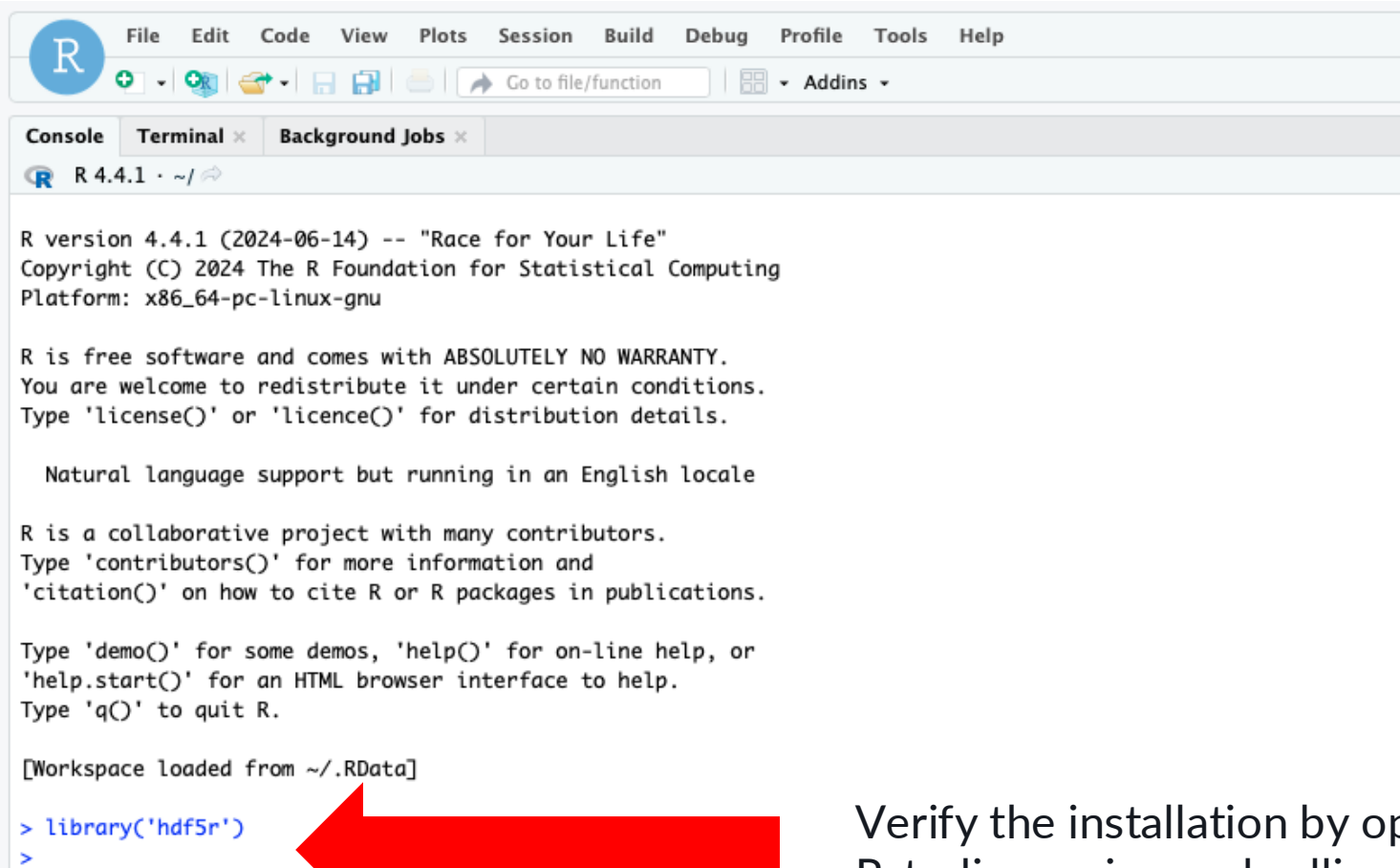
exit

```
[kefo0001_amc@c3cpu-a2-u32-1 rstudio_img_]$ exit  
exit  
salloc: Relinquishing job allocation 11056057  
salloc: Job allocation 11056057 has been revoked.
```



exit the acompile session by running:

exit



The screenshot shows the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. Below the menu bar is a toolbar with icons for creating a new file, opening a file, saving, and other functions. The console window is active, showing the R startup sequence for version 4.4.1. The text in the console includes the R version, copyright information, platform details, and instructions for using R. At the bottom of the console, the command `library('hdf5r')` has been entered, and a red arrow points to it from the right.

```
R 4.4.1 · ~/
```

R version 4.4.1 (2024-06-14) -- "Race for Your Life"
Copyright (C) 2024 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu

R is free software and comes with ABSOLUTELY NO WARRANTY.
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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

[Workspace loaded from ~/.RData]

```
> library('hdf5r')  
>
```

Verify the installation by opening an Rstudio session and calling hdf5r:

library('hdf5r')