

# SHETH L.U.J AND SIR M.V. COLLEGE

The screenshot shows two instances of the RStudio IDE running on a Windows operating system. Both instances have the same title bar: "prac3 - RStudio". The left instance shows the console output for the first package installation:

```
R > source("~/active-rstudio-document", echo = TRUE)
> # install necessary packages
> install.packages(c("readr", "psych"))
Restarting R session...
> install.packages(c("readr", "psych"))

WARNING: Rtools is required to build R packages but is not currently installed. Please download and install the appropriate version of Rtools before proceeding.

https://cran.rstudio.com/bin/windows/Rtools/
Installing packages into 'C:/Users/IT/Documents/R/win-library/4.1'
(as 'lib' is unspecified)

There are binary versions available but the source versions are later:
  binary source needs compilation
readr 2.1.4 2.1.6      TRUE
psych 2.3.3 2.5.6     FALSE

  Binaries will be installed
trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.1/readr_2.1.4.zip'
content type 'application/zip' length 1804406 bytes (1.7 MB)
downloaded 1.7 MB

package 'readr' successfully unpacked and MD5 sums checked

The downloaded binary packages are in
  C:/Users/IT/AppData/Local/Temp/RtmpM9Y8Fv/downloaded_packages
installing the source package 'psych'

trying URL 'https://cran.rstudio.com/src/contrib/psych_2.5.6.tar.gz'
content type 'application/x-gzip' length 1152216 bytes (1.1 MB)
downloaded 1.1 MB

* installing *source* package 'psych' ...
** package 'psych' successfully unpacked and MD5 sums checked
** using staged installation
** R
```

The right instance shows the console output for the second package installation:

```
R > 
*** moving datasets to lazyload DB
** byte-compile and prepare package for lazy loading
** help
*** installing help indices
  converting help for package 'psych'
    finding HTML links ... done
  00.psych-package      html
  00.psych-package      html
REDIRECT:topic Previous alias or file overwritten by alias: C:/Users/IT/Documents/R/win-library/4.1/00LOCK-psych/00
new/psych/help/auc.html
  Garcia                  html
  Gleser                  html
  Gorsuch                 html
  Harman                 html
  Harman                 html
  ICLUSST                html
REDIRECT:topic Previous alias or file overwritten by alias: C:/Users/IT/Documents/R/win-library/4.1/00LOCK-psych/00
new/psych/help/iclust.html
  ICLUSST.cluster         html
  ICLUSST.graph          html
REDIRECT:topic Previous alias or file overwritten by alias: C:/Users/IT/Documents/R/win-library/4.1/00LOCK-psych/00
new/psych/help/iclust.graph.html
  ICLUSST.rgraph          html
  ICLUSST.sort            html
REDIRECT:topic Previous alias or file overwritten by alias: C:/Users/IT/Documents/R/win-library/4.1/00LOCK-psych/00
new/psych/help/iclust.sort.html
  KMO                     html
  PInv                    html
  Promax                 html
  RMSEA                  html
  RV                      html
  SD                      html
  Schmid.Leiman          html
  Tucker                 html
  VSS                     html
REDIRECT:topic Previous alias or file overwritten by alias: C:/Users/IT/Documents/R/win-library/4.1/00LOCK-psych/00
new/psych/help/vss.html
  VSS.parallel           html
  VSS.plot                html
  VSS.scree               html
  Yule                   html
  VSS
```

Both instances show the Global Environment pane with a dataset named "my\_data" containing 18000 observations and 15 variables. The file browser pane shows a folder structure for "prac3" containing "Rhistory" and "prac3.Rproj". The taskbar at the bottom of the screen shows various application icons.

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**prac3 - RStudio**

File Edit Code View Plots Session Build Debug Profile Tools Help

Console Terminal Background Jobs

```
R 4.1.2 -->prac3/ 
  unidim      html
  wlnsor      html
  withinbetween      html

** building package indices
** installing vignettes
** testing if installed package can be loaded from temporary location
** testing if .RData files can be loaded
** arch - x86
** testing if installed package can be loaded from final location
** arch - i386
** arch - x64
** testing if installed package keeps a record of temporary installation path
DONE (psych)

The downloaded source packages are in
  'C:\Users\ITV\AppData\Local\Temp\RtmpM9v8fY\downloaded_packages'
> tail(my_data)
  timestamp country city latitude longitude pm25 pm10 no2 so2 o3 co aqi
17995 2025-11-19 12:25:17.554219 CH Zurich 47.377 8.542 42.982 54.692 37.756 7.528 55.321 0.929 94
17996 2025-11-19 13:25:17.554219 CH Zurich 47.377 8.542 27.899 74.179 41.474 6.677 50.869 1.028 103
17997 2025-11-19 14:25:17.554219 CH Zurich 47.377 8.542 27.899 74.179 41.474 6.677 50.869 1.028 103
17998 2025-11-19 15:25:17.554219 CH Zurich 47.377 8.542 61.347 72.908 41.976 5.763 66.492 0.947 122
17999 2025-11-19 16:25:17.554219 CH Zurich 47.377 8.542 40.722 95.152 32.957 5.524 53.193 0.868 95
18000 2025-11-19 17:25:17.554219 CH zurich 47.377 8.542 23.830 30.411 35.317 4.336 66.246 0.848 88
> head(my_data)
  timestamp country city latitude longitude pm25 pm10 no2 so2 o3 co aqi
1 2025-11-04 18:25:17.554219 US New York 40.713 -74.006 50.295 108.938 27.998 6.539 52.568 1.096 108
2 2025-11-04 19:25:17.554219 US New York 40.713 -74.006 50.295 108.938 27.998 6.539 52.568 1.096 108
3 2025-11-04 20:25:17.554219 US New York 40.713 -74.006 50.295 108.938 27.998 6.539 52.568 1.096 108
4 2025-11-04 21:25:17.554219 US New York 40.713 -74.006 30.403 79.951 63.536 7.609 31.369 0.230 158
5 2025-11-04 22:25:17.554219 US New York 40.713 -74.006 21.083 66.423 38.997 6.919 45.615 1.085 97
6 2025-11-04 23:25:17.554219 US New York 40.713 -74.006 31.242 92.779 30.633 8.030 43.725 0.347 92
temperature humidity wind_speed
1 18.504 70.168 3.725
2 5.838 80.088 8.969
> 31°C
sunny

```

Environment History Connections Tutorial

R Global Environment

Data my\_data 18000 obs. of 15 variables

Files Plots Packages Help Viewer Presentation

Home prac3

Files Plots Packages Help Viewer Presentation

Home prac3

31°C

Sunny

Search

ENG IN 13:00 24-11-2025

**prac3 - RStudio**

File Edit Code View Plots Session Build Debug Profile Tools Help

Console Terminal Background Jobs

```
R 4.1.2 -->prac3/
3 2025-11-04 20:25:17.554219 US New York 40.713 -4.006 42.250 82.553 26.935 9.538 23.320 0.9// 84
4 2025-11-04 21:25:17.554219 US New York 40.713 -74.006 30.403 79.951 63.536 7.609 31.369 0.230 158
5 2025-11-04 22:25:17.554219 US New York 40.713 -74.006 21.083 66.423 38.997 6.919 45.615 1.085 97
6 2025-11-04 23:25:17.554219 US New York 40.713 -74.006 31.242 92.779 30.633 8.030 43.725 0.347 92
temperature humidity wind_speed
1 18.504 70.168 3.725
2 5.838 80.088 8.969
3 31.833 62.783 9.650
4 23.143 89.153 8.956
5 13.632 76.499 4.017
6 15.159 42.505 1.199
> dim(my_data)
[1] 18000 15
> cat("dimensions (rows, columns): ", dim(my_data), "\n")
Dimensions (Rows, Columns): 18000 15
> describe(my_data)
Error in describe(my_data) : could not find function "describe"

> summary(my_data)
  timestamp      country      city      latitude      longitude      pm25 
Length:18000   Length:18000   Length:18000   Min.:-3.81   Min.:-123.121   Min. : 0.035 
Class:character Class:character Class:character  1st Qu.: 32.97   1st Qu.: 41.297   1st Qu.: 0.035 
Mode:character  Mode:character  Mode:character  Median: 29.23   Median: 42.146   Median : 40.286 
                           Mean : 23.07   Mean : 48.065   Mean : 40.369 
                           3rd Qu.: 41.01   3rd Qu.: 103.820  3rd Qu.: 52.436 
                           Max. : 60.17   Max. : 174.763  Max. :115.683 
  pm10      no2      so2      o3      co      aqi 
Min. : 0.001  Min. : 0.013  Min. : 0.003  Min. : 0.114  Min. :0.0000  Min. : 16.0 
1st Qu.: 53.126 1st Qu.: 22.369 1st Qu.: 4.391 1st Qu.: 38.029 1st Qu.: 0.6330 1st Qu.: 57.0 
Median : 69.961  Median : 32.020  Median : 6.026  Median : 48.142  Median : 0.8005  Median :103.0 
Mean : 70.152  Mean : 32.055  Mean : 6.036  Mean : 48.065  Mean : 0.8000  Mean :104.6 
3rd Qu.: 87.257 3rd Qu.: 41.364 3rd Qu.: 7.715 3rd Qu.: 58.258 3rd Qu.: 0.9690 3rd Qu.:121.0 
Max. :161.810  Max. : 90.019  Max. :16.559  Max. :103.016  Max. :1.8320  Max. :231.0 
  temperature      humidity      wind_speed 
Min. :-15.00   Min. :25.00   Min. :0.500 
1st Qu.: 15.00   1st Qu.: 32.00   1st Qu.: 9.937 
Median :21.46   Median :37.85   Median :53.297 
Mean :21.51   Mean :37.71   Mean :53.284 
3rd Qu.:29.69   3rd Qu.:74.23   3rd Qu.:17.662 
Max. :38.00   Max. :90.00   Max. :9.999
>
```

31°C

Sunny

Search

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