Exploratory Statistical Data Analysis With R Software (ESDAR)

Swayam Prabha

Lecture 2

Introduction to R Software

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Slides can be downloaded from

http://home.iitk.ac.in/~shalab/sp

R Software

Use of a software is desirable and moreover an essential part of any analysis.

Software – used in all sciences including mathematics and statistics.

Some popular statistical software are SPSS, SAS, Minitab, Stata, Matlab etc.

Another software is R.

Developers of R Software

Currently developed by the R Development Core Team.

Available at www.r-project.org

It is a free software.

It supports many free packages which helps the data scientist and analyst.

What is R?

R is an environment for data manipulation, statistical computing, graphics display and data analysis.

Effective data handling and storage of outputs is possible.

Simple as well as complicated calculations are possible.

Simulations are possible.

What is R?

Graphical display on-screen and hardcopy are possible.

Programming language is effective which includes all possibilities just like any other good programming language.

R has a statistical computing environment.

It has a computer language which is convenient to use for statistical and graphical applications.

Switching to R

R is free (open source) software and therefore is not a black box.

Built in and contributed packages are available, and users are provided tools to make packages.

It is possible to contribute own packages.

The commands can be saved, run and stored in script files.

Switching to R

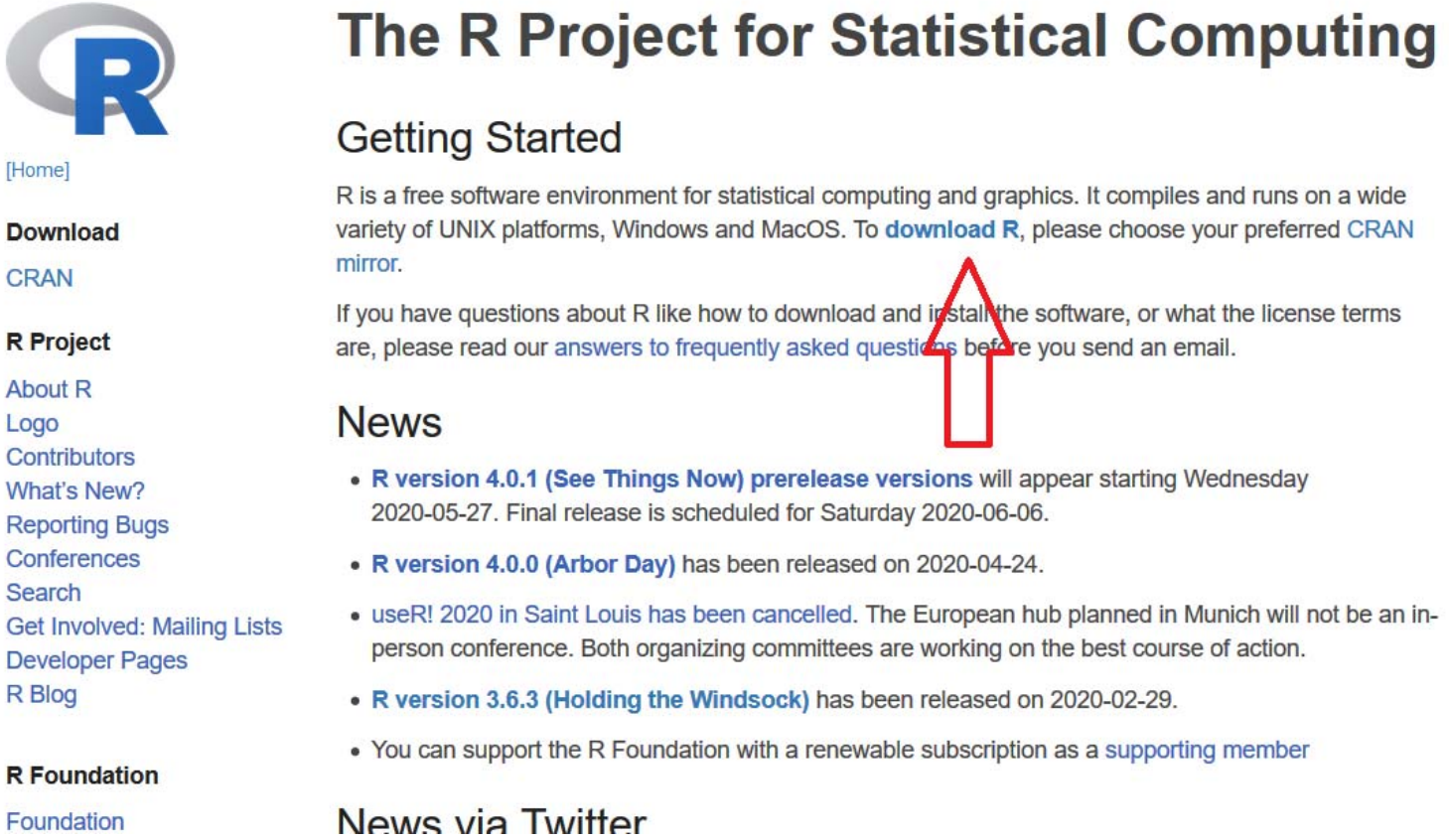
R is available for Windows, Unix, Linux and Macintosh platforms.

Graphics can be directly saved in a Postscript or PDF format.

Installing R

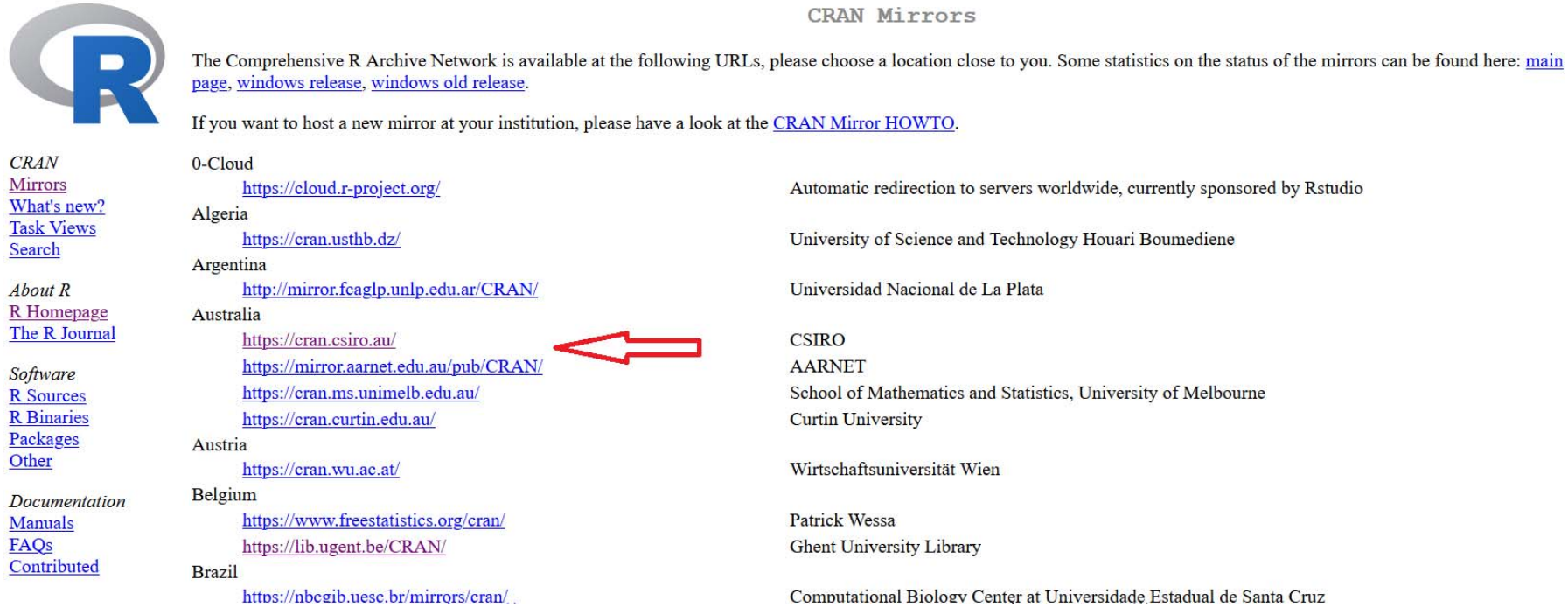
You may install R in a windows or Apple computer by downloading from https://www.r-project.org

Click on download R



Installing R

Choose any mirror and click on the link



CRAN Mirrors

The Comprehensive R Archive Network is available at the following URLs, please choose a location close to you. Some statistics on the status of the mirrors can be found here: main page, windows release, windows old release.

If you want to host a new mirror at your institution, please have a look at the CRAN Mirror HOWTO.

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0-Cloud	
https://cloud.r-project.org/	Automatic redirection to servers worldwide, currently sponsored by Rstudio
Algeria	
https://cran.usthb.dz/	University of Science and Technology Houari Boumediene
Argentina	
http://mirror.fcaglp.unlp.edu.ar/CRAN/	Universidad Nacional de La Plata
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Brazil	
https://nbcgib.uesc.br/mirrors/cran/	Computational Biology Center at Universidade Estadual de Santa Cruz

Installing R

Else, download it from the Comprehensive R Archive Network (CRAN) website: http://cran.r-project.org/

The Comprehensive R Archive Network

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Download and Install R

Precompiled binary distributions of the base system and contributed packages, **Windows and Mac** users most likely want one of these versions of R:

- Download R for Linux
- Download R for (Mac) OS X
- Download R for Windows

R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.

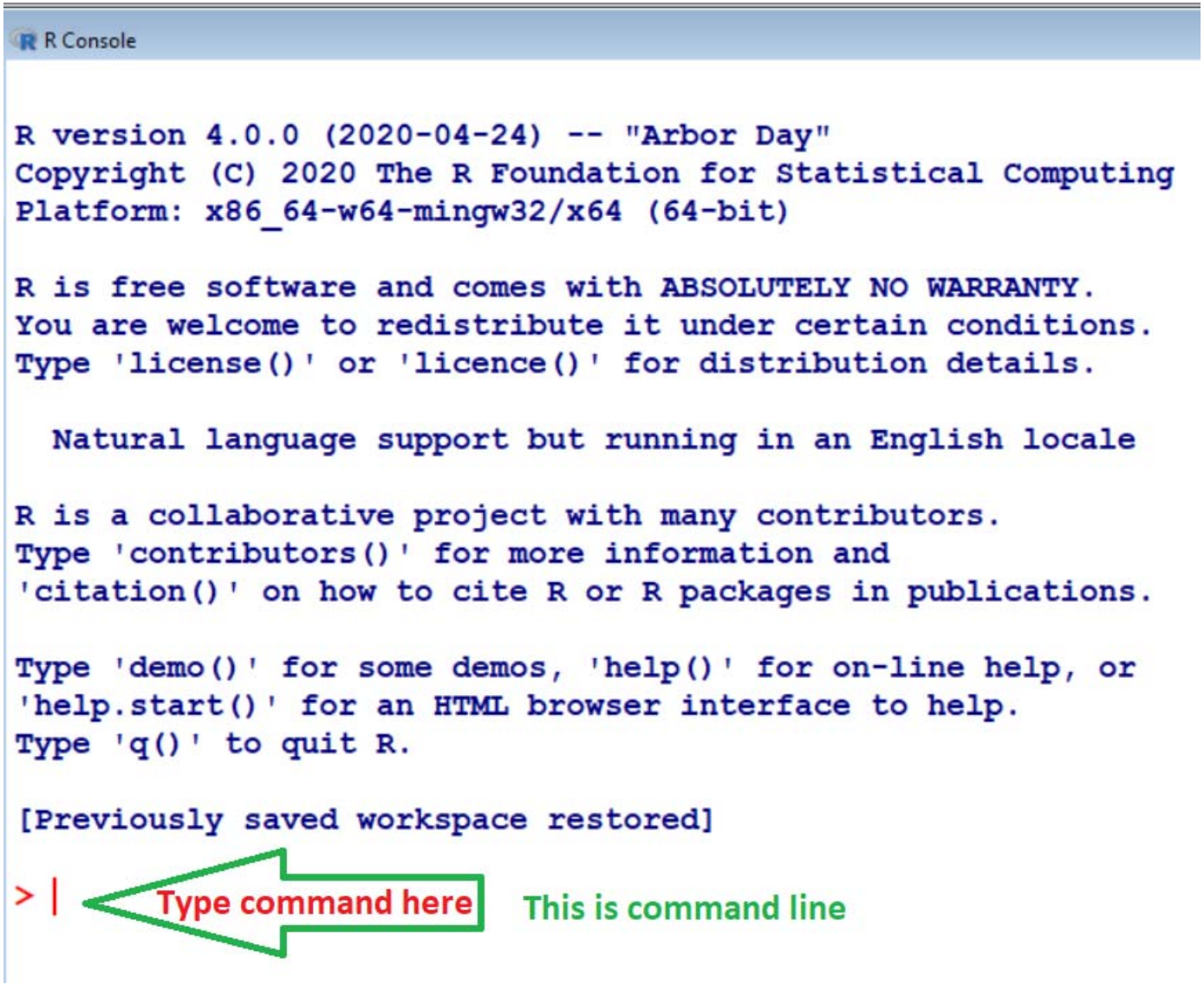
Source Code for all Platforms

Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!

- The latest release (2020-04-24, Arbor Day) R-4.0.0.tar.gz, read what's new in the latest version.
- Sources of R alpha and beta releases (daily snapshots, created only in time periods before a planned release).
- Daily snapshots of current patched and development versions are available here. Please read about new features and bug fixes before filing corresponding feature requests or bug reports.
- Source code of older versions of R is available here.
- Contributed extension packages

Command Line versus Scripts

What is command line?



Working with R

Use command line to type and execute the commands.

Some free software like R Studio, Tinn R etc. are also available to work with R software. It is an interface between R and us.

Such software are more useful for beginners.

It makes coding and execution of programmes easier.

R Studio is available at https://www.rstudio.com/

Rstudio is written in C++ programming language.

Tinn R is available at https://sourceforge.net/projects/tinn-r/

Installing R Studio

Rstudio is a software which helps in running the R software.

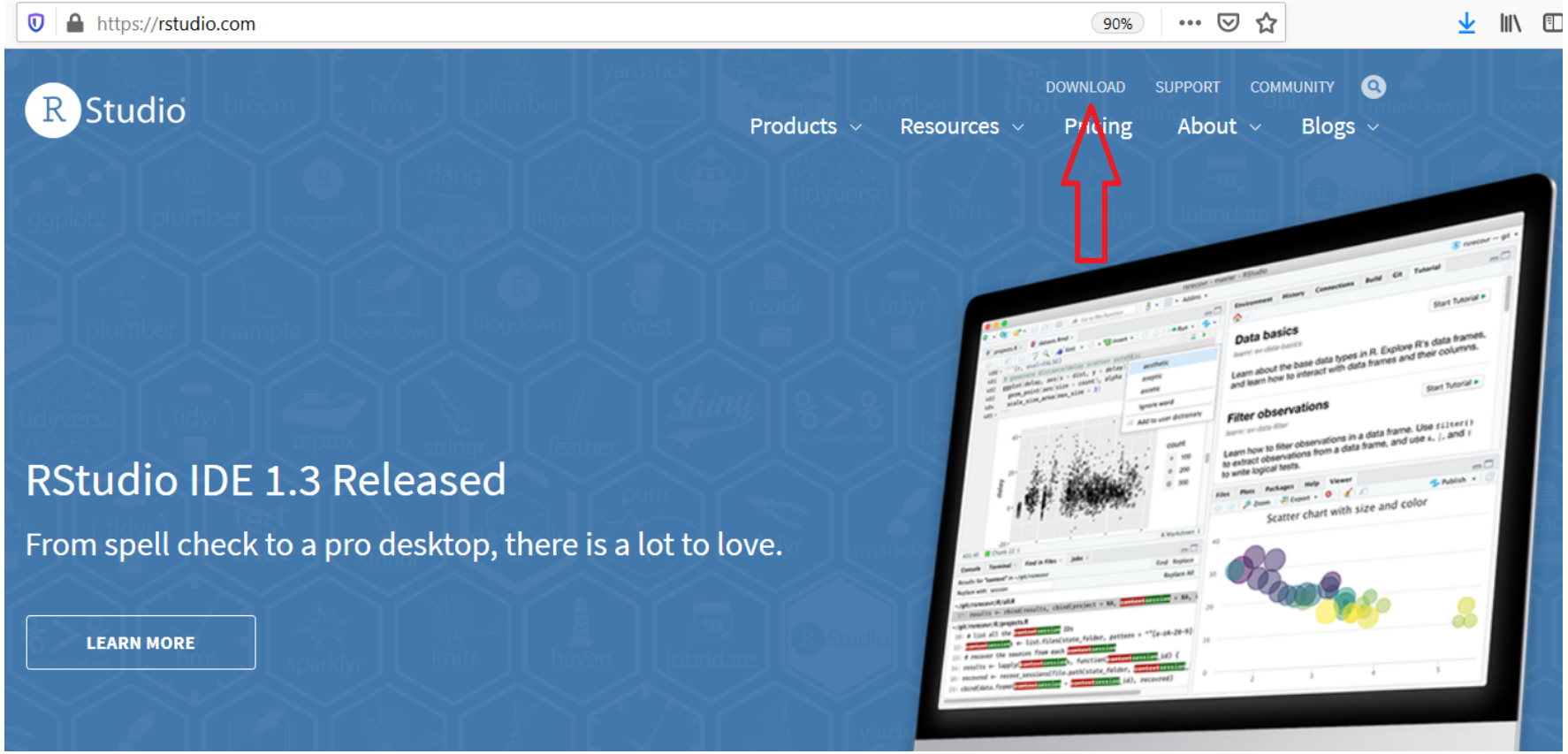
Several such editors are available, e.g. Tinn R (https://sourceforge.net/projects/tinn-r)

Rstudio is written in C++ programming language.

Rstudio is a free and open-source integrated development environment (IDE) for R.

Download R-Studio software from website https://www.rstudio.com/

Installing R Studio



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