

Installing Anaconda R and R Studio



CE 5331 Machine Learning for Civil Engineers

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Venki Uddameri, Ph.D. , P.E.

Goals

- Install Python 3.+ through Anaconda Data Science Platform
- Python IDEs within Anaconda
 - Spyder
 - Jupyter Notebook
- Install R and R studio

Python versus R for Machine Learning

Both R and Python have their strengths and weaknesses
R offers greater flexibility when it comes to analysis methods
Python offers many programmatic advantages

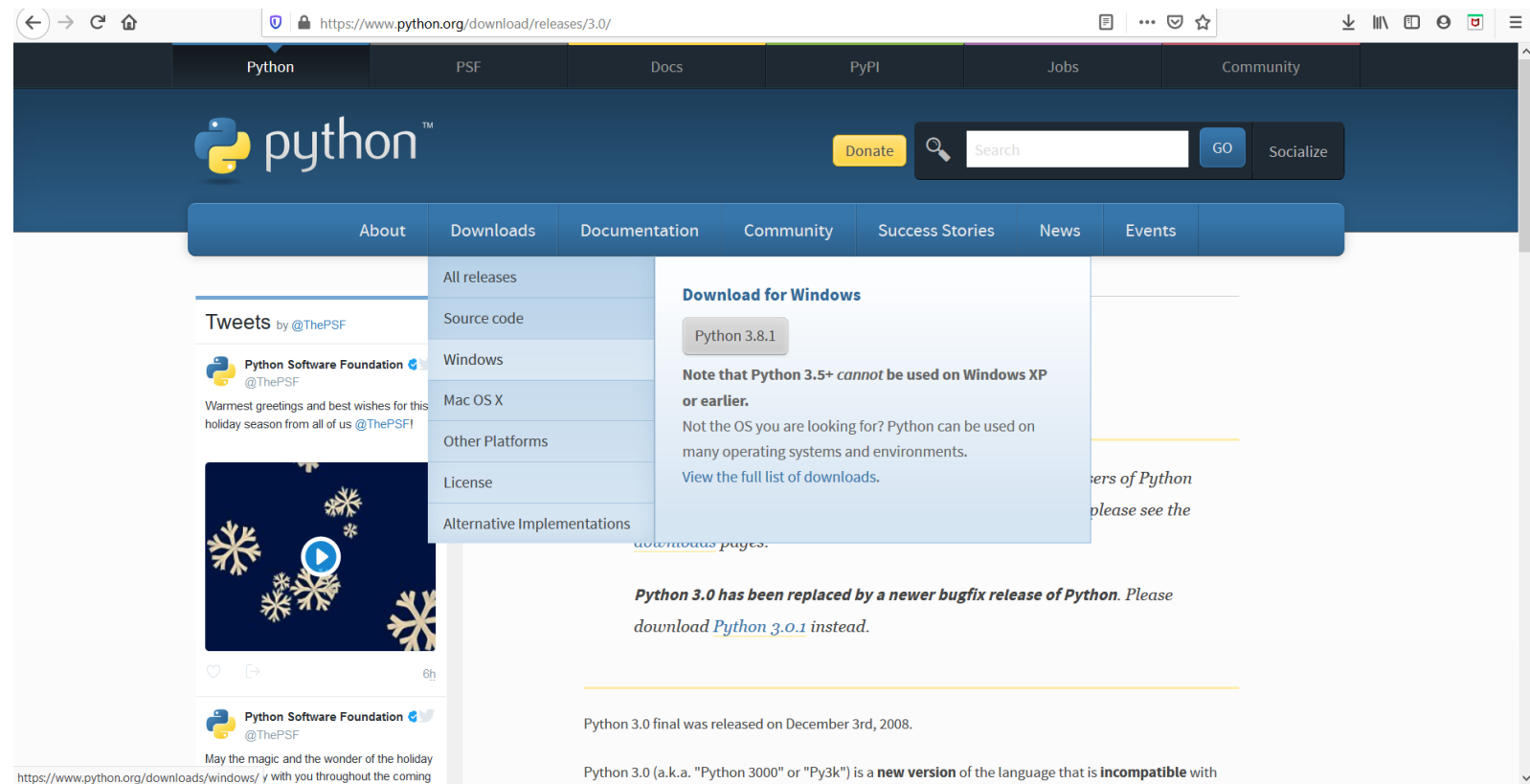
It is good to be proficient in both

Difference between R and Python (source: www.guru99.com)

Parameter	R	Python
Objective	Data analysis and statistics	Deployment and production
Primary Users	Scholar and R&D	Programmers and developers
Flexibility	Easy to use available library	Easy to construct new models from scratch. I.e., matrix computation and optimization
Learning curve	Difficult at the beginning	Linear and smooth
Popularity of Programming Language. Percentage change	4.23% in 2018	21.69% in 2018
Average Salary	\$99.000	\$100.000
Integration	Run locally	Well-integrated with app
Task	Easy to get primary results	Good to deploy algorithm
Database size	Handle huge size	Handle huge size
IDE	Rstudio	Spyder, Ipython Notebook
Important Packages and library	tydiverse, ggplot2, caret, zoo	pandas, scipy, scikit-learn, TensorFlow, caret
Disadvantages	Slow High Learning curve Dependencies between library	Not as many libraries as R
Advantages	<ul style="list-style-type: none">• Graphs are made to talk. R makes it beautiful• Large catalog for data analysis• GitHub interface• RMarkdown• Shiny	<ul style="list-style-type: none">• Jupyter notebook: Notebooks help to share data with colleagues• Mathematical computation• Deployment• Code Readability• Speed• Function in Python

Native Python

- You can get native python from www.python.org
- Several IDEs are available
- Site has useful information on learning Python



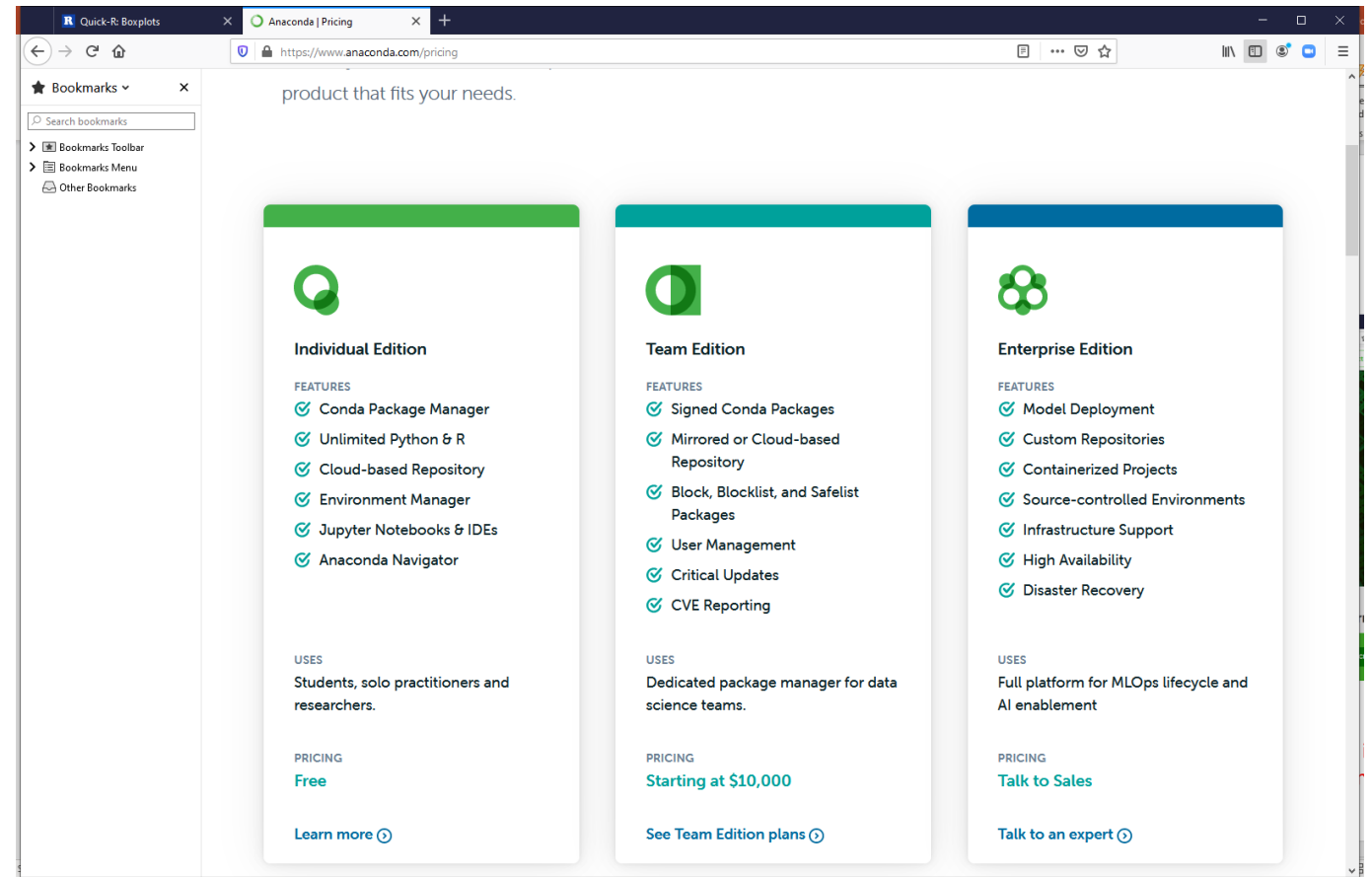
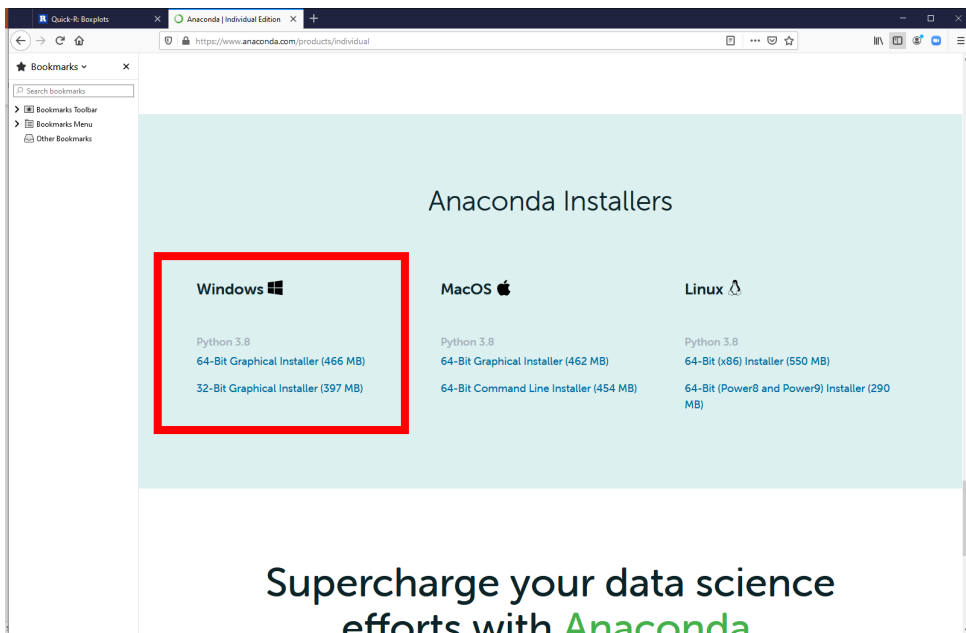
While native Python will work for this class. It is easier to work with an installation that is focused on data science and machine learning

Anaconda

- An environment for quickly developing Python/R data science projects
- Available on major computing platforms
 - Windows, Mac, Linux
- 15+ million users worldwide <https://www.anaconda.com/>
 - Open-Source
- Supports 1500+ Python and R packages
- Provides access to learning modules and materials
- Can be used to both prototype and develop at scale applications

Installing Anaconda

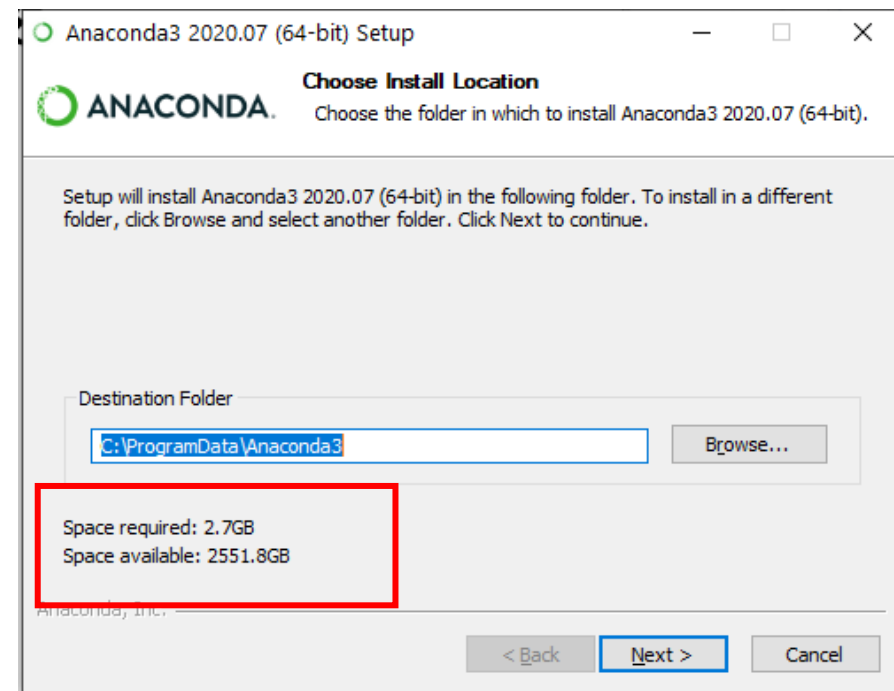
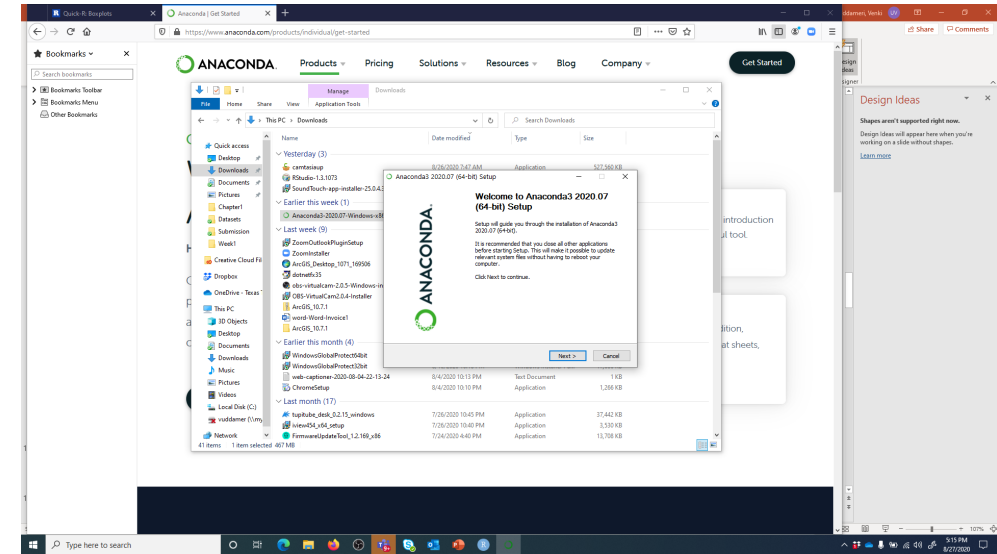
- www.anaconda.com
- Python 3.8
 - 64 bit windows



Anaconda is one of the Python installation that is optimized for Data Science and Machine Learning

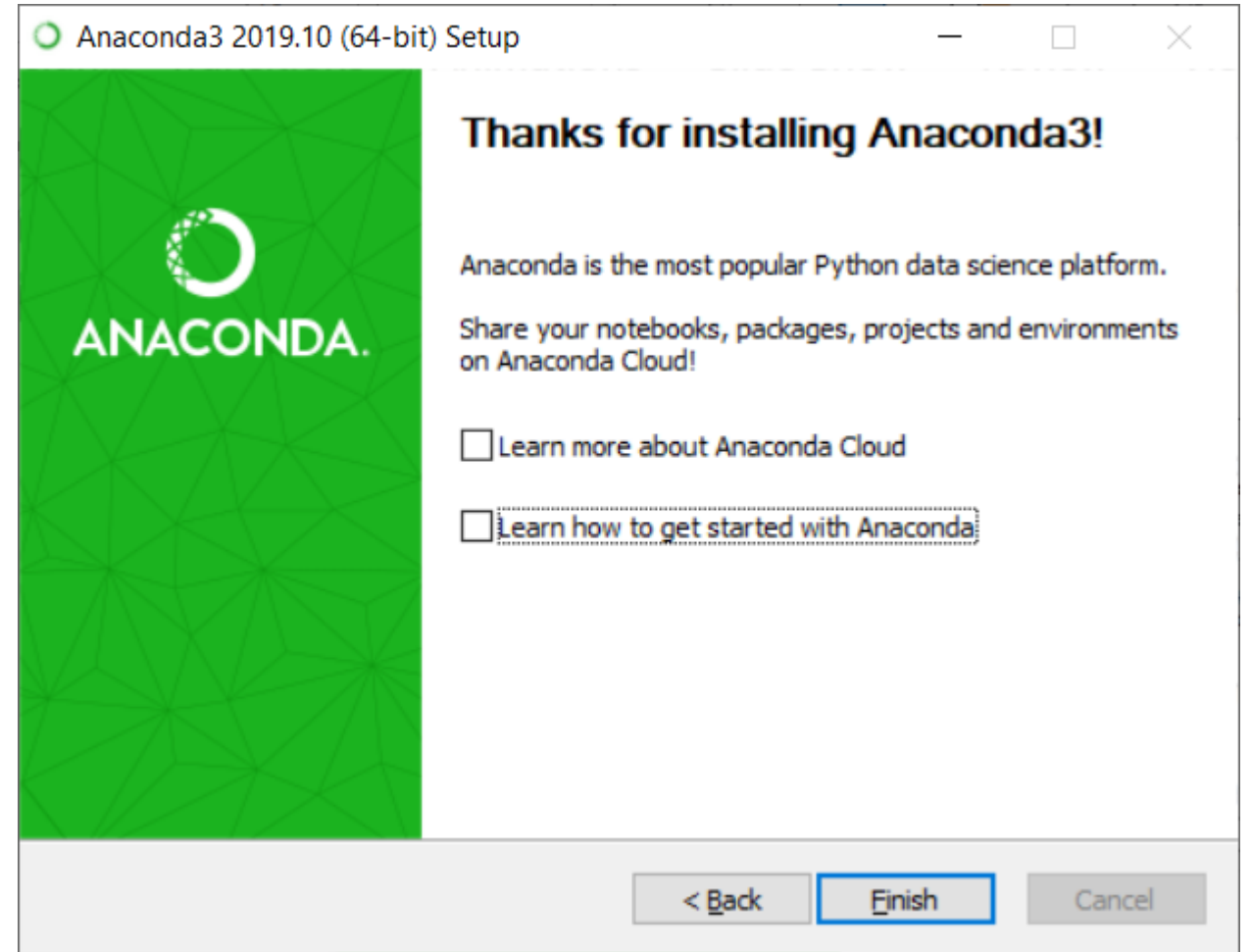
Anaconda is Big

- Anaconda requires approximately 2.7 GB for installation
- Put Anaconda in its own separate folder
- Choose a drive that has sufficient memory



Anaconda Installation

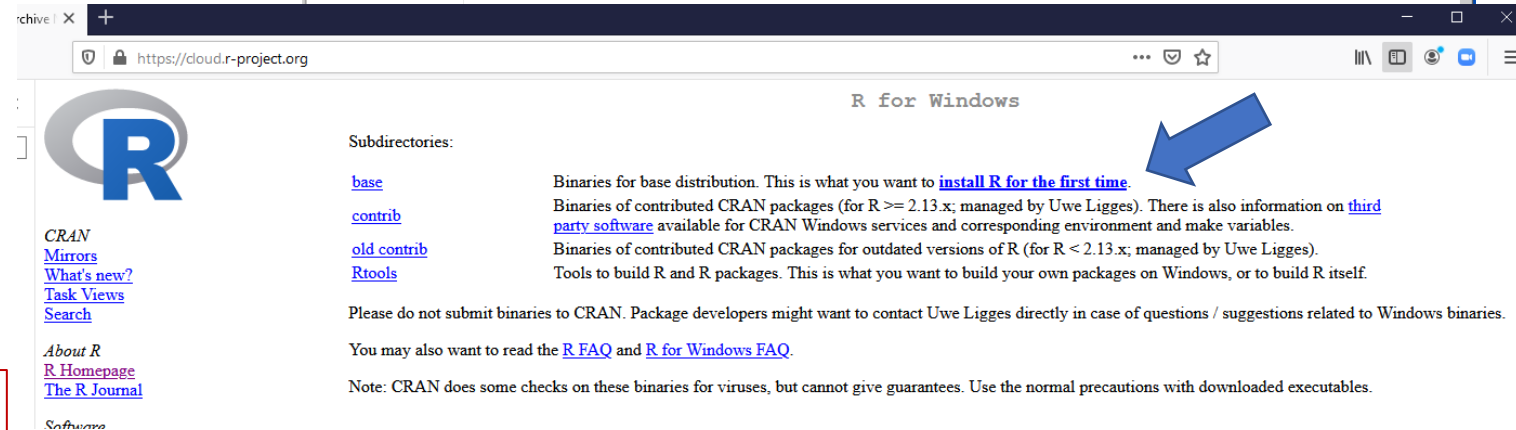
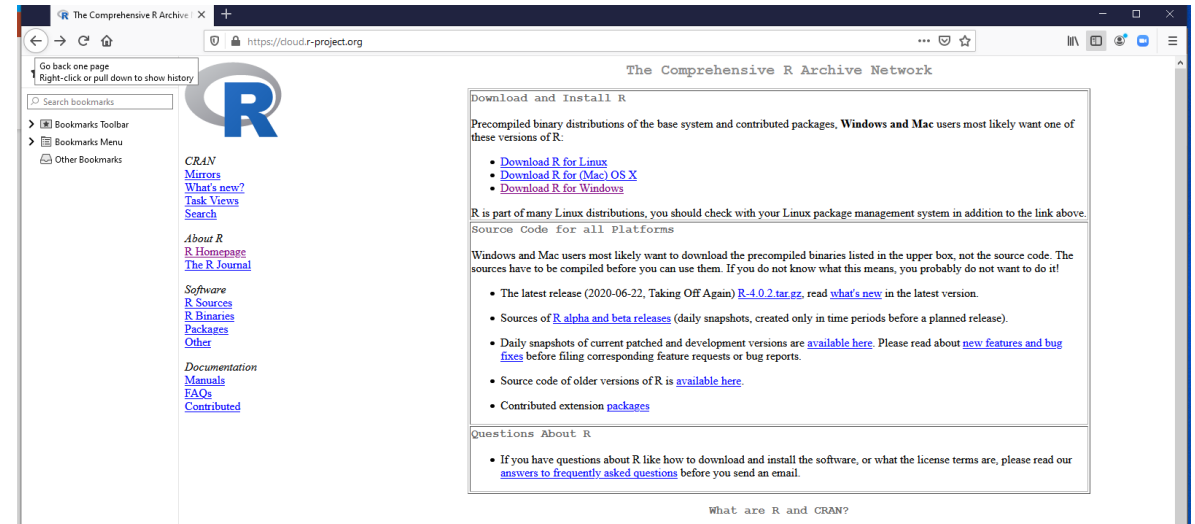
- You can accept defaults for most part
 - Decide if the installation is just for you or for everyone (need administrative access in case of latter)
- Installation takes time
 - Be patient
 - Try doing it at school or on a high-speed setting



Downloading & Installing R

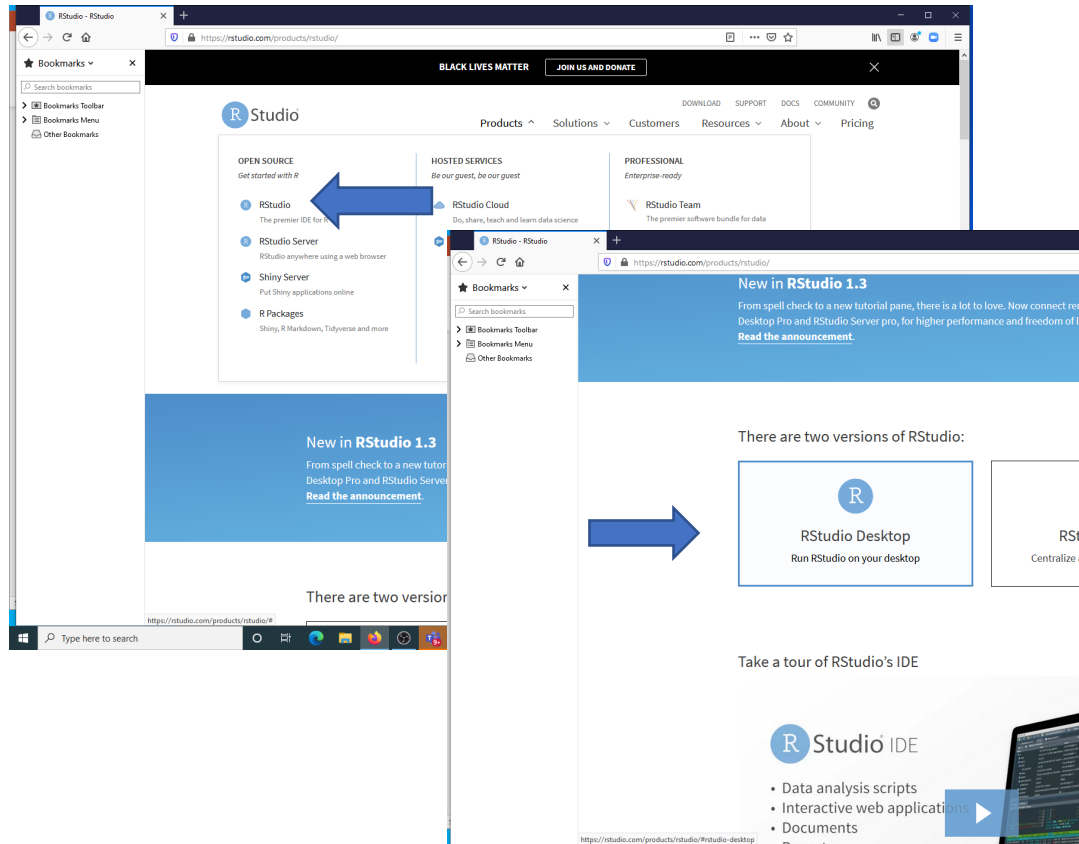
- R is available on all major operating systems
 - Windows, Mac, Linux, Unix
- Base R can be downloaded from CRAN
 - Comprehensive R Archive Network

Need to have administrator Privilege to install R software
Installation on Windows is Straightforward



Both 64 Bit and 32 Bit versions can be installed

Downloading and Installing R studio



R Studio Desktop

Open Source Edition

- Access RStudio locally
- Syntax highlighting, code completion, and smart indentation
- Execute R code directly from the source editor
- Quickly jump to function definitions
- Easily manage multiple working directories using projects
- Integrated R help and documentation
- Interactive debugger to diagnose and fix errors quickly
- Extensive package development tools

Overview

Support	Community forums only
License	AGPL v3
Pricing	Free

[DOWNLOAD RSTUDIO DESKTOP](#)

- Rstudio is an IDE
- Not required to run R
- Useful if you are using Linux or a Mac
- Beginners find this useful

You need to have installed R before you install R studio

You should Know

- How to install Python 3.+ using Anaconda Environment
- Anaconda Navigator
- Install R
- Install RStudio