

# R, RStudio – Instalação

James Hunter

7 de fevereiro de 2017

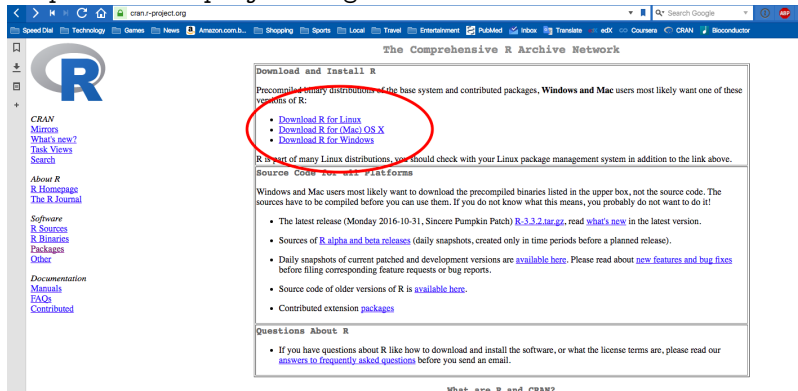
- R - software de base que faz todos os cálculos e programas
- RStudio - IDE (Interactive Development Environment) GUI para R
  - ▶ Cheio de recursos para ajudar com R

- Vídeo no canal YouTube

# Instalação de R

- R tem home page no site de CRAN

► <http://cran.r-project.org>



The screenshot shows the CRAN website with the title "The Comprehensive R Archive Network". The main content area is titled "Download and Install R". It states: "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 (Monday 2016-10-31, Sincere Pumpkin Patch) [R-3.3.2.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](#)

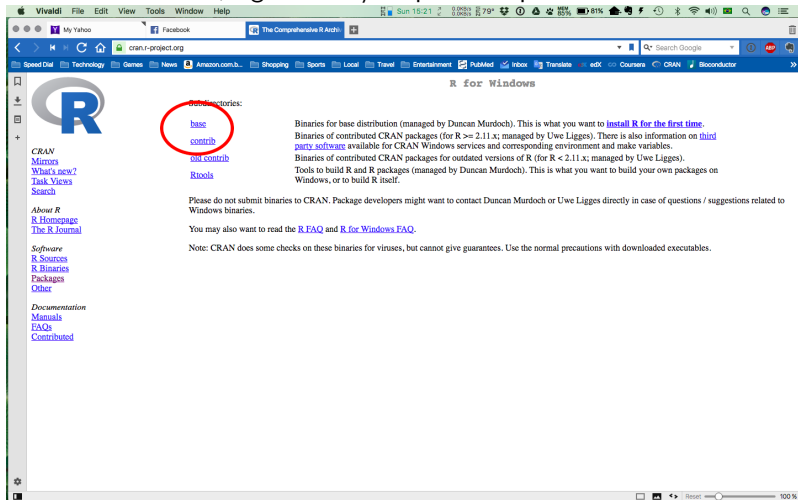
**Questions About R**

- If you have questions about R like how to download and install the software, or what the license terms are, please read our [answers to frequently asked questions](#) before you send an email.

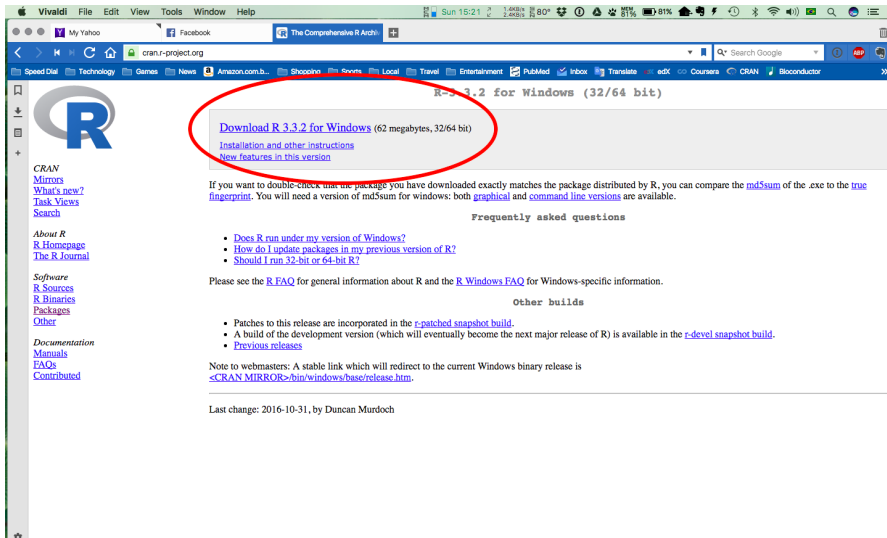
What are R and CRAN?

# Quem Tem Windows

- Clique no “Download R for Windows”
- ▶ Para Mac ou Linux, siga as direções paralelos para esses OS



- Clique no “Download R 3.3.2 for Windows”



The screenshot shows the CRAN website with the R logo and navigation links on the left. The main content area displays the title "R 3.3.2 for Windows (32/64 bit)". Below this, the link "Download R 3.3.2 for Windows (62 megabytes, 32/64 bit)" is circled in red. Other links include "Installation and other instructions" and "New features in this version". A paragraph explains how to verify the download using md5sum. Below this is a "Frequently asked questions" section with three bullet points. Further down is an "Other builds" section with two bullet points. A note for webmasters is provided, followed by the last change date: "Last change: 2016-10-31, by Duncan Murdoch".

CRAN

- [Mirrors](#)
- [What's new?](#)
- [Task Views](#)
- [Search](#)

About R

- [R Homepage](#)
- [The R Journal](#)

Software

- [R Sources](#)
- [R Binaries](#)
- [Packages](#)
- [Other](#)

Documentation

- [Manuals](#)
- [FAQs](#)
- [Contributed](#)

## R 3.3.2 for Windows (32/64 bit)

[Download R 3.3.2 for Windows](#) (62 megabytes, 32/64 bit)

[Installation and other instructions](#)

[New features in this version](#)

If you want to double-check that the package you have downloaded exactly matches the package distributed by R, you can compare the [md5sum](#) of the .exe to the [true fingerprint](#). You will need a version of md5sum for windows: both [graphical](#) and [command line versions](#) are available.

### Frequently asked questions

- [Does R run under my version of Windows?](#)
- [How do I update packages in my previous version of R?](#)
- [Should I run 32-bit or 64-bit R?](#)

Please see the [R FAQ](#) for general information about R and the [R Windows FAQ](#) for Windows-specific information.

### Other builds

- Patches to this release are incorporated in the [r-patched snapshot build](#).
- A build of the development version (which will eventually become the next major release of R) is available in the [r-devel snapshot build](#).
- [Previous releases](#)

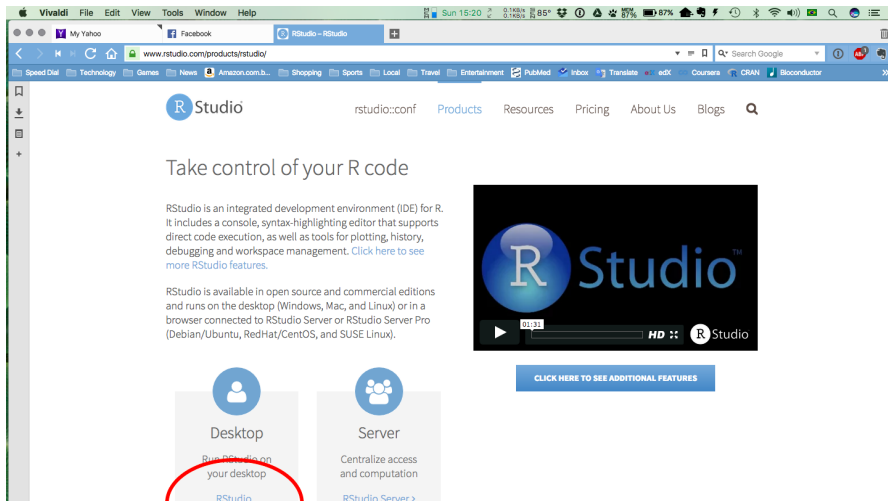
Note to webmasters: A stable link which will redirect to the current Windows binary release is [<CRAN MIRROR>/bin/windows/base/release.htm](#).

Last change: 2016-10-31, by Duncan Murdoch

# O Que Acontece

- Programa e recursos download como normal
- Precisa Instalar como normal para OS
- Vai pôr um ícone no Desktop

- RStudio seria nosso interface com R
- Navegue ao site de RStudio ([www.rstudio.com/products/rstudio/](http://www.rstudio.com/products/rstudio/))



The screenshot shows the RStudio website in a web browser. The browser's address bar displays [www.rstudio.com/products/rstudio/](http://www.rstudio.com/products/rstudio/). The website features the RStudio logo at the top left, followed by navigation links: `rstudio::conf`, [Products](#), [Resources](#), [Pricing](#), [About Us](#), and [Blogs](#). A search icon is also present. The main heading is "Take control of your R code". Below this, a paragraph describes RStudio as an integrated development environment (IDE) for R, highlighting its console, syntax-highlighting editor, and tools for plotting, history, debugging, and workspace management. A link to "more RStudio features" is provided. Another paragraph states that RStudio is available in open source and commercial editions, running on desktops (Windows, Mac, Linux) or in a browser connected to RStudio Server or RStudio Server Pro (Debian/Ubuntu, RedHat/CentOS, and SUSE Linux). To the right, there is a video player showing the RStudio logo and the text "R Studio". Below the video, a button reads "CLICK HERE TO SEE ADDITIONAL FEATURES". At the bottom, two large buttons are visible: "Desktop" and "Server". The "Desktop" button is circled in red and includes the text "Run RStudio on your desktop" and "RStudio". The "Server" button includes the text "Centralize access and computation" and "RStudio Server".



# Da Tela de Produtos

- Clique no botão de “Download RStudio Desktop”

R Studio® [rstudio::conf](#) [Products](#) [Resources](#) [Pricing](#) [About Us](#) [Blogs](#)

|                 | Open Source Edition  | Commercial License   |
|-----------------|--|--|
| <b>Overview</b> | <ul style="list-style-type: none"><li>• Access RStudio locally</li><li>• Syntax highlighting, code completion, and smart indentation</li><li>• Execute R code directly from the source editor</li><li>• Quickly jump to function definitions</li><li>• Easily manage multiple working directories using projects</li><li>• Integrated R help and documentation</li><li>• Interactive debugger to diagnose and fix errors quickly</li><li>• Extensive package development tools</li></ul> | <p>All of the features of open source; plus:</p> <ul style="list-style-type: none"><li>• A commercial license for organizations not able to use AGPL software</li><li>• Access to priority support</li></ul> |
| <b>Support</b>  | Community forums only  | <ul style="list-style-type: none"><li>• Priority Email Support</li><li>• 8 hour response during business hours (ET)</li></ul>  |
| <b>License</b>  | AGPL v3  | <a href="#">RStudio License Agreement</a>  |
| <b>Pricing</b>  | Free   | \$995/year   |
|                 | <a href="#">DOWNLOAD RSTUDIO DESKTOP</a>   | <a href="#">BUY NOW</a>  |

# Selecione a Versão “Open Source License”

|  | RStudio Desktop<br>Open Source License | RStudio Desktop<br>Commercial License | RStudio Server<br>Open Source License | RStudio Server Pro<br>Commercial License |
|--|--|---------------------------------------|---------------------------------------|--|
|  | FREE                                   | \$995 per year                        | FREE                                  | \$9,995 per year                         |
| Integrated Tools for R                   | ●                                      | ●                                     | ●                                     | ●  |
| Priority Support                         |  | ●                                     |                                       | ●  |
| Access via Web Browser                   |  |                                       | ●                                     | ●  |
| Enterprise Security                      |  |                                       |                                       | ●  |
| Project Sharing                          |  |                                       |                                       | ●  |
| Manage Multiple R<br>Sessions & Versions |  |                                       |                                       | ●  |
| Admin Dashboard                          |  |                                       |                                       | ●  |
| Load Balancing                           |  |                                       |                                       | ●  |
| License                                  | AGPL                                   | Commercial                            | AGPL                                  | Commercial                               |
| Pricing                                  | FREE                                   | \$995/yr                              | FREE                                  | \$9,995/yr                               |
|  | <a href="#">Learn More</a>             | <a href="#">Learn More</a>            | <a href="#">Learn More</a>            | <a href="#">Learn More</a>               |
|  | <a href="#">DOWNLOAD</a>               | <a href="#">BUY NOW</a>               | <a href="#">DOWNLOAD</a>              | <a href="#">DOWNLOAD</a>                 |


Figure 4:

# Selecione a versão para seu OS

## RStudio Desktop 1.0.136 — [Release Notes](#)

RStudio requires R 2.11.1+. If you don't already have R, download it [here](#).

### Installers for Supported Platforms

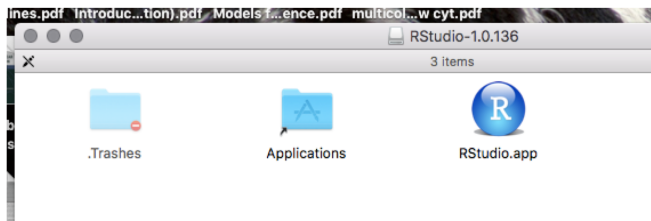
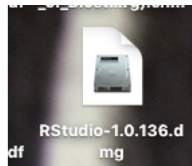


| Installers   | Size    | Date       | MD5                              |
|--|---------|------------|----------------------------------|
| RStudio 1.0.136 - Windows Vista/7/8/10                         | 81.9 MB | 2016-12-21 | 93b3f307f567c33f7a4db4c114099b3e |
| RStudio 1.0.136 - Mac OS X 10.6+ (64-bit)                      | 71.2 MB | 2016-12-21 | 12d6d6ade0203a2fcef6fe3dea65c1ae |
| RStudio 1.0.136 - Ubuntu 12.04+/Debian 8+ (32-bit)             | 85.5 MB | 2016-12-21 | 0a20fb89d8aaeb39b329a640ddadd2c5 |
| RStudio 1.0.136 - Ubuntu 12.04+/Debian 8+ (64-bit)             | 92.1 MB | 2016-12-21 | 2a73b88a12a9fbaf96251cecf8b41340 |
| RStudio 1.0.136 - Fedora 19+/RedHat 7+/openSUSE 13.1+ (32-bit) | 84.7 MB | 2016-12-21 | fa6179a7855bff0f939a34c169da45fd |
| RStudio 1.0.136 - Fedora 19+/RedHat 7+/openSUSE 13.1+ (64-bit) | 85.7 MB | 2016-12-21 | 2b3a148ded380b704e58496befb55545 |

Figure 5:

# Instalar RStudio

- Quando RStudio fica no seu computador, siga o processo para instalar RStudio



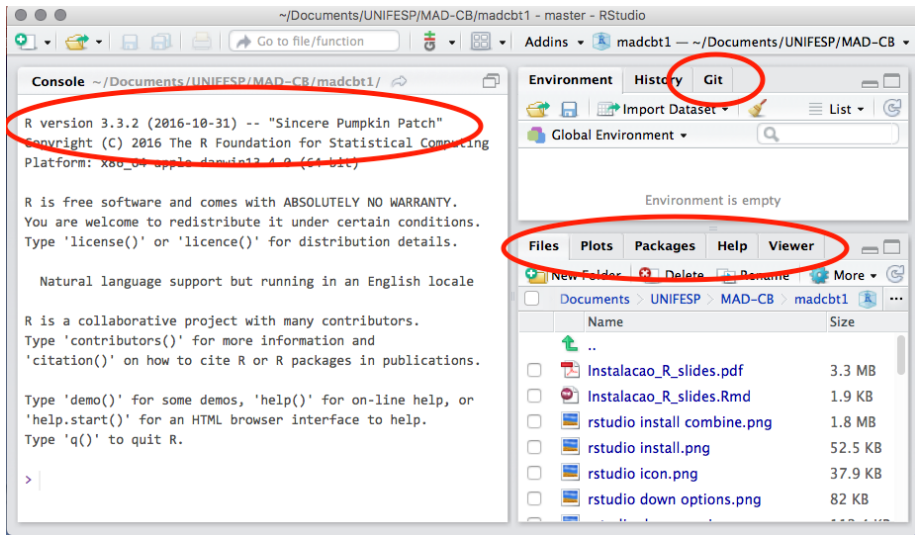


Figure 7:

# Opening a Markdown Document

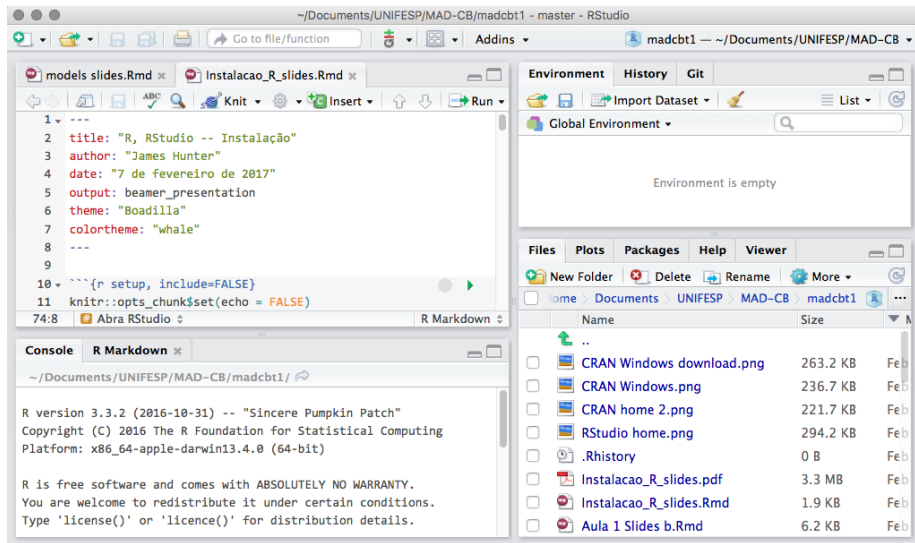


Figure 8:

- RStudio tem um número de “cheat sheets” para ajudar você
  - ▶ Interface
  - ▶ Comandos de R e os pacotes importantes
- Pode achar eles na página:  
<https://www.rstudio.com/resources/cheatsheets/>
- Cheat sheets recomendados para RStudio:
  - ▶ RStudio IDE Cheat Sheet
  - ▶ R Markdown Cheat Sheet
- Cheat Sheets para R e os pacotes importantes:
  - ▶ Data Import Cheat Sheet (tidyverse)
  - ▶ Data Transformation Cheat Sheet (tidyverse)
  - ▶ Data Visualization Cheat Sheet (ggplot2)

# O Que É “Markdown”

- Uma maneira simplificada para entrar texto, comandos e fazer cálculos e gráficos em R



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- Estes slides vem de um documento de Markdown:  
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- Para ver vários exemplos, vá para repositório em GitHub, onde coloquei todos os arquivos.

- Um formato simples para os scripts ou programas de R

# “.R” Arquivos

- Um formato simples para os scripts ou programas de R
- Tem o mesmo formato interno que um arquivo “.txt”

- Um formato simples para os scripts ou programas de R
- Tem o mesmo formato interno que um arquivo “.txt”
- Para download os pacotes que precisa usar, criei um script para automatizar o download dos pacotes que precisamos na primeira parte de MAD-CB

# Texto de Instalar Pacotes

```
## Programa para automatizar o download dos pacotes
## necessários para iniciar MAD-CB
## Author: James Hunter
## Date: 6/2/17
## Version: 1.0

pacotes <- c("tidyverse", "boot", "car", "caret", "caTools",
             "data.table", "DescTools", "e1071", "ggvis",
             "gmodels", "knitr", "lattice", "lubridate",
             "nortest", "nycflights13", "outliers", "pROC",
             "psych", "RColorBrewer", "Rcpp", "readxl",
             "ROCR", "rpart", "rpart.plot", "seqinr",
             "shiny", "swirl", "titanic", "yarrr")

install.packages(pacotes)
```



## Como Download instalar\_pacotes.R

# 1 – GitHub Projeto Tela Principal

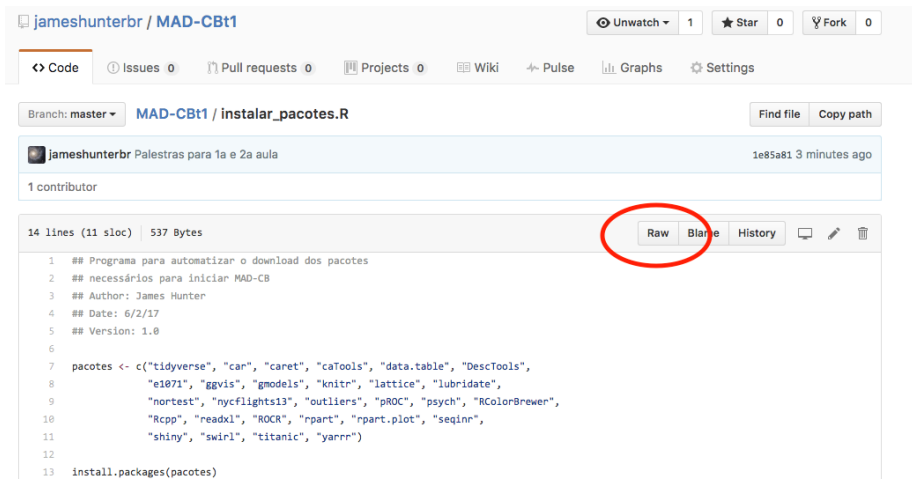
The screenshot shows the GitHub interface for the repository `jameshunterbr / MAD-CBt1`. The repository has 1 watch, 0 stars, and 0 forks. The main content area displays the file list for the `master` branch, which includes:

- `Aula 1 Slides b.Rmd`
- `Aula_1_Slides_b.pdf`
- `Instalacao_R_slides.Rmd`
- `Instalacao_R_slides.pdf`
- `instalar_pacotes.R` (highlighted with a red circle)

All files were committed 2 minutes ago. The repository also shows 4 commits, 1 branch, 0 releases, and 1 contributor.

Figure 9:

## 2 – Escolhe Formato “RAW”



James Hunter

Branch: master ▾ **MAD-CBT1** / instalar\_pacotes.R Find file Copy path

jameshunterbr Palestras para 1a e 2a aula 1e85a81 3 minutes ago

1 contributor

14 lines (11 sloc) | 537 Bytes

Raw Blame History

```
1 ## Programa para automatizar o download dos pacotes
2 ## necessários para iniciar MAD-CB
3 ## Author: James Hunter
4 ## Date: 6/2/17
5 ## Version: 1.0
6
7 pacotes <- c("tidyverse", "car", "caret", "caTools", "data.table", "DescTools",
8             "e1071", "ggvis", "gmodels", "knitr", "lattice", "lubridate",
9             "nortest", "nycflights13", "outliers", "pROC", "psych", "RColorBrewer",
10            "Rcpp", "readxl", "ROCR", "rpart", "rpart.plot", "seqinr",
11            "shiny", "swirl", "titanic", "yarr")
12
13 install.packages(pacotes)
```

Figure 10:

## 3 – Salvar o Texto

- Usando o comando de browser para salvar o arquivo, salvé-lo
- Você quer que o sufixo seja “.R” e não “.txt”
  - ▶ Alguns browsers tentam de forçar a escolha de “.txt”
  - ▶ Insiste em “.R”
- Escolhe a pasta onde guarda os arquivos desta matéria



The screenshot shows a web browser window with the address bar displaying `raw.githubusercontent.com/jameshunterbr/MAD-CBT1/master/instalar_pacotes.R`. The browser's tab bar includes several tabs: "Speed Dial", "Technology", "Games", "News", "Amazon.com.b...", "Shopping", "Sports", "Local", "Travel", and "E". The main content area displays the text of the R script `instalar_pacotes.R`. The script is a comment-based program for automating the download of R packages. It includes a header with the author's name (James Hunter), the date (6/2/17), and the version (1.0). The script defines a vector `pacotes` containing the names of 20 R packages: `tidyverse`, `car`, `caret`, `caTools`, `data.table`, `DescTools`, `e1071`, `ggvis`, `gmodels`, `knitr`, `lattice`, `lubridate`, `nortest`, `nycflights13`, `outliers`, `pROC`, `psych`, `RColorBrewer`, `Rcpp`, `readxl`, `ROCR`, `rpart`, `rpart.plot`, `seqinr`, `shiny`, `swirl`, `titanic`, and `yarr`. Finally, the script calls `install.packages(pacotes)` to install these packages.

```
## Programa para automatizar o download dos pacotes
## necessários para iniciar MAD-CB
## Author: James Hunter
## Date: 6/2/17
## Version: 1.0

pacotes <- c("tidyverse", "car", "caret", "caTools", "data.table", "DescTools",
            "e1071", "ggvis", "gmodels", "knitr", "lattice", "lubridate",
            "nortest", "nycflights13", "outliers", "pROC", "psych", "RColorBrewer",
            "Rcpp", "readxl", "ROCR", "rpart", "rpart.plot", "seqinr",
            "shiny", "swirl", "titanic", "yarr")

install.packages(pacotes)
```

Figure 11:

# Como Executar `instalar_pacotes.R`

- Acerte que tem conexão à Internet
- Na aba de 'Files', navegue à pasta com o arquivo
- Clique no "More" / "Set as Working Directory"
- Clique no arquivo
  - ▶ Vai abrir na área dos arquivos
- Coloque a seta (cursor) na linha que começa com pacotes
  - ▶ MAC: toque CMD-Return
  - ▶ Windows: toque CTRL-Return
- Você colocou em memória a lista dos pacotes
- A seta vai à linha de `install.packages(pacotes)`
  - ▶ CMD-Return ou CTRL-Return
- Assiste enquanto ele executa

# Instalar Pacotes por Comando

- A função (comando) para instalar pacotes é: `install.packages()`

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- Exemplo: `> install.packages("forecast")` ou

# Instalar Pacotes por Comando

- A função (comando) para instalar pacotes é: `install.packages()`
- Dentro dos parênteses, coloque o nome de pacote **em aspas**
- Exemplo: `> install.packages("forecast")` ou
- `> install.packages("forecast", "foreign")`

# Tela de Instalação



The screenshot shows the RStudio interface with the 'Console' tab selected. The path in the top bar is `~/Documents/UNIFESP/MAD-CB/madcbt1/`. The console output shows the command `install.packages("forecast")` being executed. It reports the URL `https://cran.rstudio.com/bin/macosx/mavericks/contrib/3.3/forecast_7.3.tgz`, the content type `application/x-gzip`, and the file size `1552825 bytes (1.5 MB)`. After a separator line of equals signs, it states `downloaded 1.5 MB`. Below this, a message indicates the download location: `/var/folders/g7/r7dc0nqd5xzbcbtrtqv26ffxc0000gn/T/Rtmp3iJWUS/downloaded_packages`. The prompt `>` is visible at the bottom of the console.

```
~/Documents/UNIFESP/MAD-CB/madcbt1/

> install.packages("forecast")
trying URL 'https://cran.rstudio.com/bin/macosx/mavericks/contrib/3.3/forecast_7.3.tgz'
Content type 'application/x-gzip' length 1552825 bytes (1.5 MB)
=====
downloaded 1.5 MB

The downloaded binary packages are in
  /var/folders/g7/r7dc0nqd5xzbcbtrtqv26ffxc0000gn/T/Rtmp3iJWUS/downloaded_packages
>
```

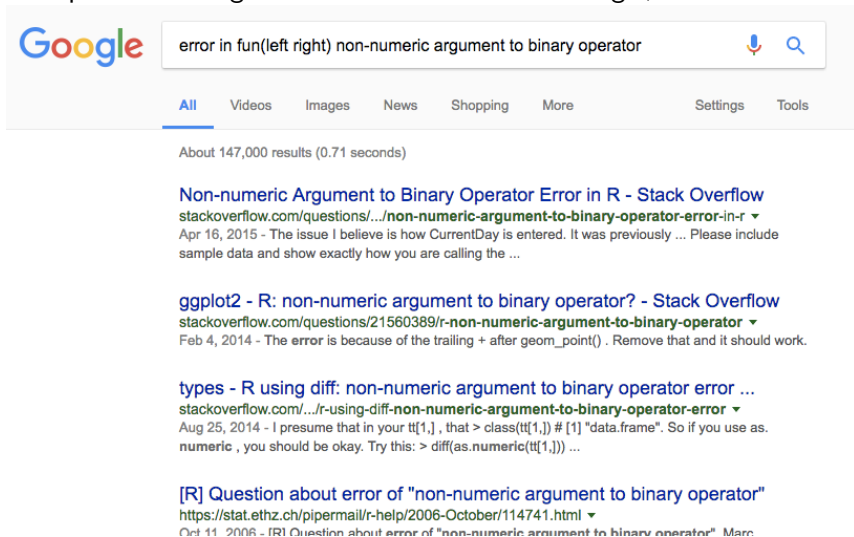
Figure 12:

- Para manter os pacotes atualizados:
- `> update.packages()` – todos os pacotes ou
- `> update.packages(forecast)`
- Em RStudio: – Tools/Check for Package Updates

- Telas excelentes de ajuda para funções acessível através do comando
  - ▶ `help(<palavra chave>)`
- Também, `? <palavra chave>` dá acesso às mesmas telas
- Se você não tem certeza se ajuda existe para uma palavra, pode procurá-la com o comando:
  - ▶ `?? <palavra chave>`
- Aba de Help no RStudio produz a mesma informação

– <https://stat.ethz.ch/mailman/listinfo/r-help> (site oficial para ajuda) – <http://leg.est.ufpr.br/doku.php/sokware:rbr> (User Group do Brasil) – RBloggers: <http://www.r-bloggers.com/> – StackOverflow: <http://stackoverflow.com/> (site para perguntas e respostas) – Togaware (Graham Williams) One-Pagers: <http://onepager.togaware.com> – Hadley Wickham's Advanced R book/site: <http://adv-r.had.co.nz>

- Coloque sua mensagem de erro diretamente em Google; vai ter vários hits



The screenshot shows a Google search interface. The search bar contains the text "error in fun(left right) non-numeric argument to binary operator". Below the search bar, the "All" tab is selected. The results show "About 147,000 results (0.71 seconds)". Three search results are visible, each with a title, a URL, and a snippet of text.

Google

error in fun(left right) non-numeric argument to binary operator

All Videos Images News Shopping More Settings Tools

About 147,000 results (0.71 seconds)

**Non-numeric Argument to Binary Operator Error in R - Stack Overflow**  
stackoverflow.com/questions/.../non-numeric-argument-to-binary-operator-error-in-r ▾  
Apr 16, 2015 - The issue I believe is how CurrentDay is entered. It was previously ... Please include sample data and show exactly how you are calling the ...

**ggplot2 - R: non-numeric argument to binary operator? - Stack Overflow**  
stackoverflow.com/questions/21560389/r-non-numeric-argument-to-binary-operator ▾  
Feb 4, 2014 - The error is because of the trailing + after geom\_point(). Remove that and it should work.

**types - R using diff: non-numeric argument to binary operator error ...**  
stackoverflow.com/.../r-using-diff-non-numeric-argument-to-binary-operator-error ▾  
Aug 25, 2014 - I presume that in your tt[1,], that > class(tt[1,]) # [1] "data.frame". So if you use as.numeric, you should be okay. Try this: > diff(as.numeric(tt[1,])) ...

**[R] Question about error of "non-numeric argument to binary operator"**  
https://stat.ethz.ch/pipermail/r-help/2006-October/114741.html ▾  
Oct 11 2006 - [R] Question about error of "non-numeric argument to binary operator" Marc

- Datacamp
- Coursera/Johns Hopkins: serie de cursos do departamento de Bioestatística
  - ▶ Programação em R (R Programming – Roger Peng)
- Coursera/Duke U: Data Analysis and Statistical Inference
- edX/HarvardX: Statistics and R for the Life Sciences (1 of 8 courses)
  - ▶ mais avançado



## Próxima Aula - Operações e Cálculos Iniciais in R