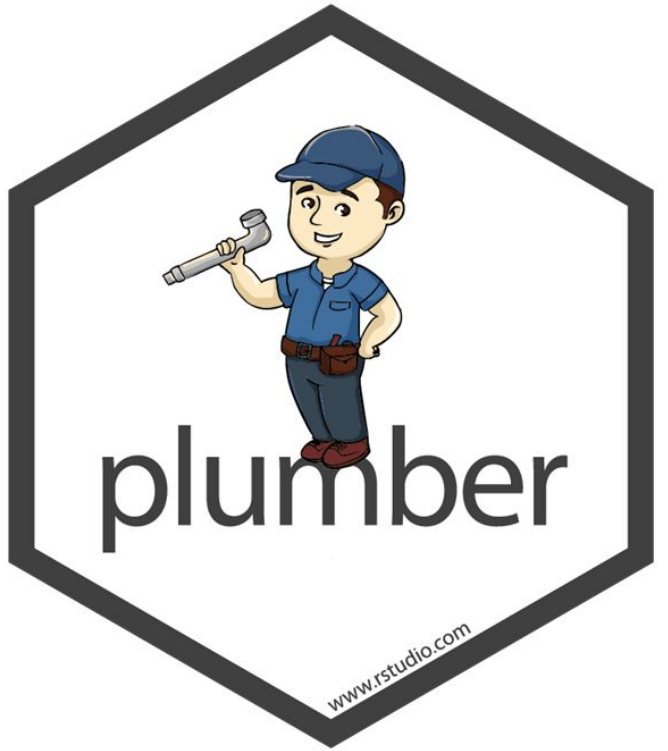
Colocando um modelo **R** online

Construindo APIs com *Plumber*



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Sistemas Produtivos e Logísticos Inteligentes - ProLogIS
Universidade Federal de Santa Catarina

28/11/2019

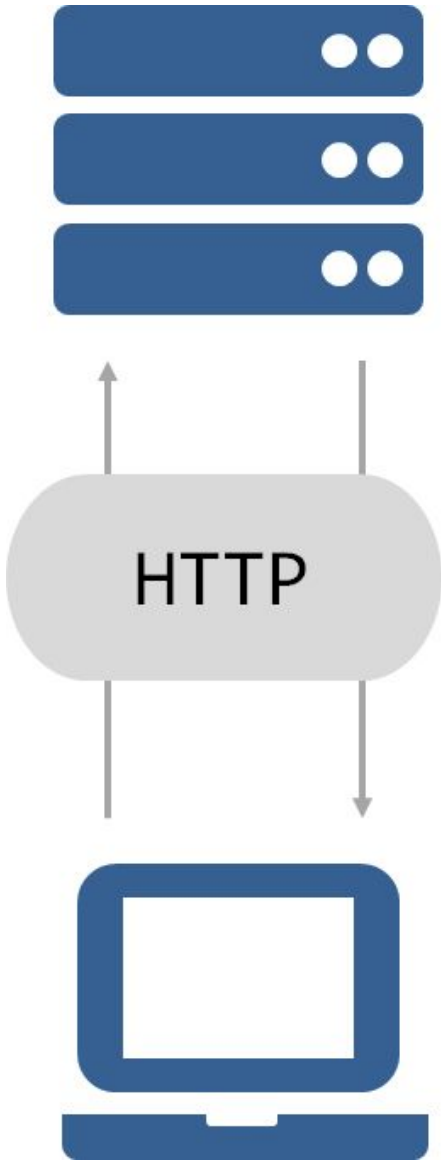
Agenda

- O que é uma API?
- Por que devo usar API's?
- Plumber
- Exemplo
- Como colocar online?

O que é uma API?

- Interface de Programação de Aplicações
- Web **APIs**
  - HTTP (Hypertext Transfer Protocol)

- Meio como informações são transferidas entre aplicações

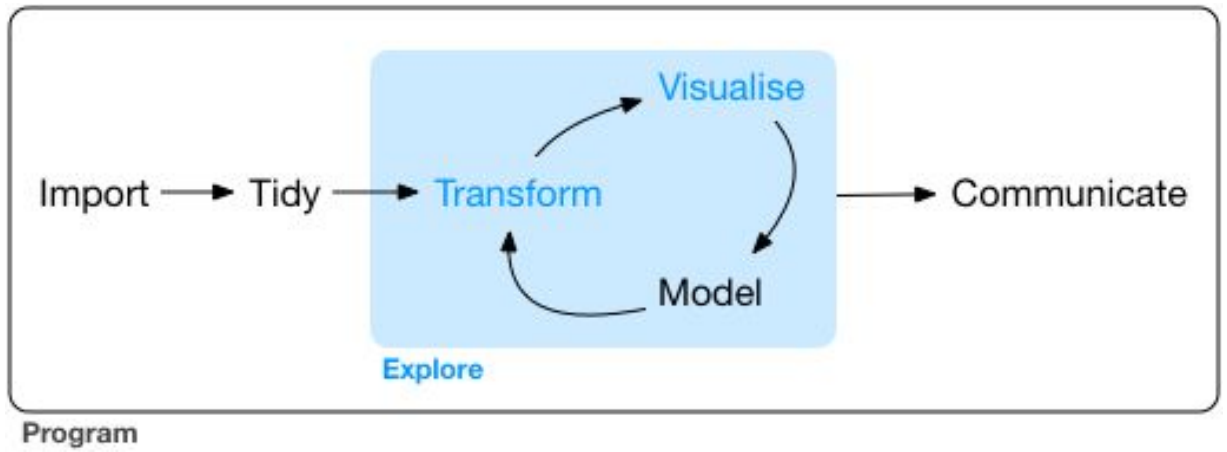


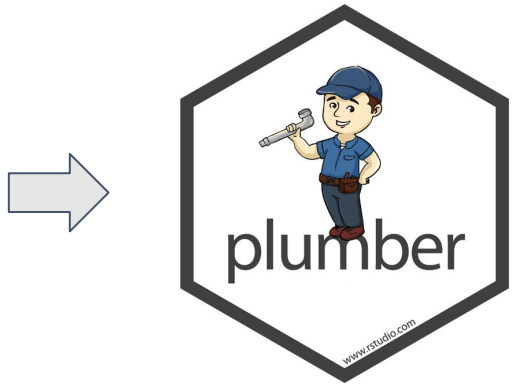
O que é uma API?

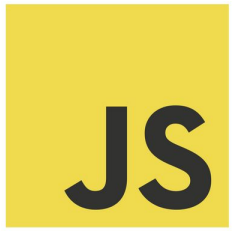
- Interface de Programação de Aplicações
- Web **APIs**
  - HTTP (Hypertext Transfer Protocol)
- Meio como informações são transferidas entre aplicações
- *Exemplo:*

```
jamesblair@James-MBP:~|⇒  curl -v "http://httpbin.org/get"
*   Trying 52.72.80.190...
* TCP_NODELAY set
* Connected to httpbin.org (52.72.80.190) port 80 (#0)
> GET /get HTTP/1.1
> Host: httpbin.org
> User-Agent: curl/7.55.1
> Accept: */*
>
< HTTP/1.1 200 OK
< Connection: keep-alive
< Server: gunicorn/19.9.0
< Date: Wed, 08 Aug 2018 04:20:02 GMT
< Content-Type: application/json
< Content-Length: 214
< Access-Control-Allow-Origin: *
< Access-Control-Allow-Credentials: true
< Via: 1.1 vegur
<
{
  "args": {},
  "headers": {
    "Accept": "*/*",
    "Connection": "close",
    "Host": "httpbin.org",
    "User-Agent": "curl/7.55.1"
  },
  "origin": "71.199.44.171",
  "url": "http://httpbin.org/get"
}
* Connection #0 to host httpbin.org left intact
jamesblair@James-MBP:~|⇒
```

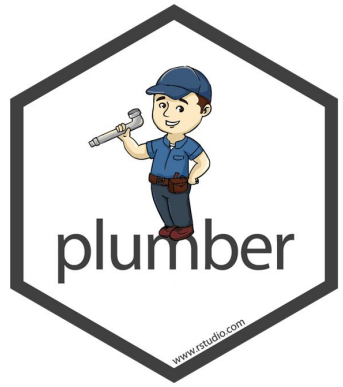
Por que devo usar API's?







Plumber

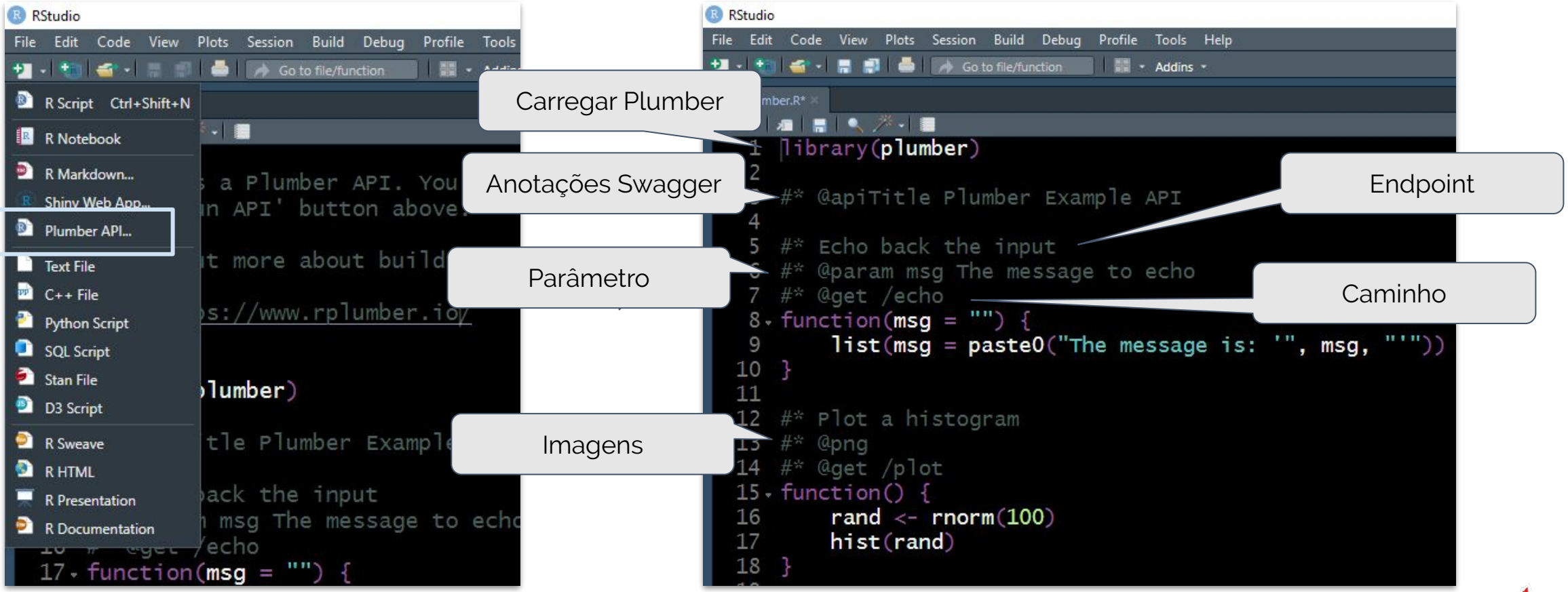


- Converte funções escritas em **R** em APIs
- Usa comandos especiais para definir atributos e variavéis
  - #* - plumber comments
  - @ - endpoints attributes / details

- Simplifica o desenvolvimento para criação de APIs
- Você só precisa saber ***R***

Plumber

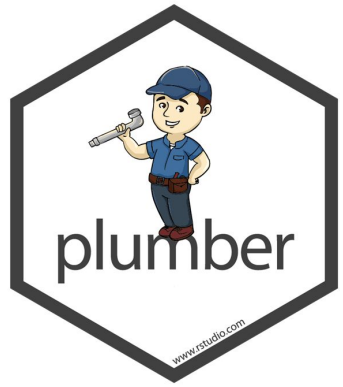
- Você só precisa saber ***R***



Exemplo

```r
library(plumber)
library(forecast)

dados <- read.table("https://raw.githubusercontent.com/icaroagostino/BD/m
attach(dados)

#* @apiTitle Simple Forecasting Application

#* Realiza Previsao
#* @param horizonte Escolha o horizonte de previsao (inteiro)
#* @param modelo Escolha o modelo (ar, ets ou nn)
#* @param serie Escolha a serie para prever (Expo, Infla ou PIB)
#* @post /fore
function(serie, modelo, horizonte) {

  y <- ts(get(serie), start = 2017, frequency = 12)

  ar  <- auto.arima(y)
  ets <- ets(y)
  nn  <- nnetar(y)
```

Como colocar online?



- Usar sua máquina pessoal com IP fixo
- Usar um servidor físico
- Usar uma máquina virtual
  - Amazon Web Services

- http://www.louisaslett.com/RStudio_AMI/

Como colocar online?

- http://www.louisaslett.com/RStudio_AMI/

- https://towardsdatascience.com/how-to-run-rstudio-on-aws-in-under-3-minutes-for-free-65f8d0b6ccda

RStudio Server Amazon Machine Image (AMI)

IMPORTANT NOTE! **... The default password is no longer `rstudio`, but rather is set to the instance ID of the instance you have launched for greater security (thanks to Colin Gillespie for security report)**

< Back to homepage

Amazon's EC2 platform provides a convenient environment for rapidly procuring computational resources in the cloud. As a Statistician, my interest is specifically in statistical computation with R and the advent of RStudio Server has made it a hand-in-glove fit with the cloud.

To get started with the Amazon cloud, you must first signup for an AWS account if you don't already have one. To use the AMIs described on this page, you simply click your chosen AMI ID which will take you through to the Amazon web interface and preselect the correct region and AMI. Simply ensure that your 'security group' settings allow incoming HTTP (port 80) traffic and then copy-and-paste the 'Public DNS' for your running instance to a web browser address bar to bring up the login page.

Current AMI Quick Reference (9th May 2019)

Amazon instance type reference

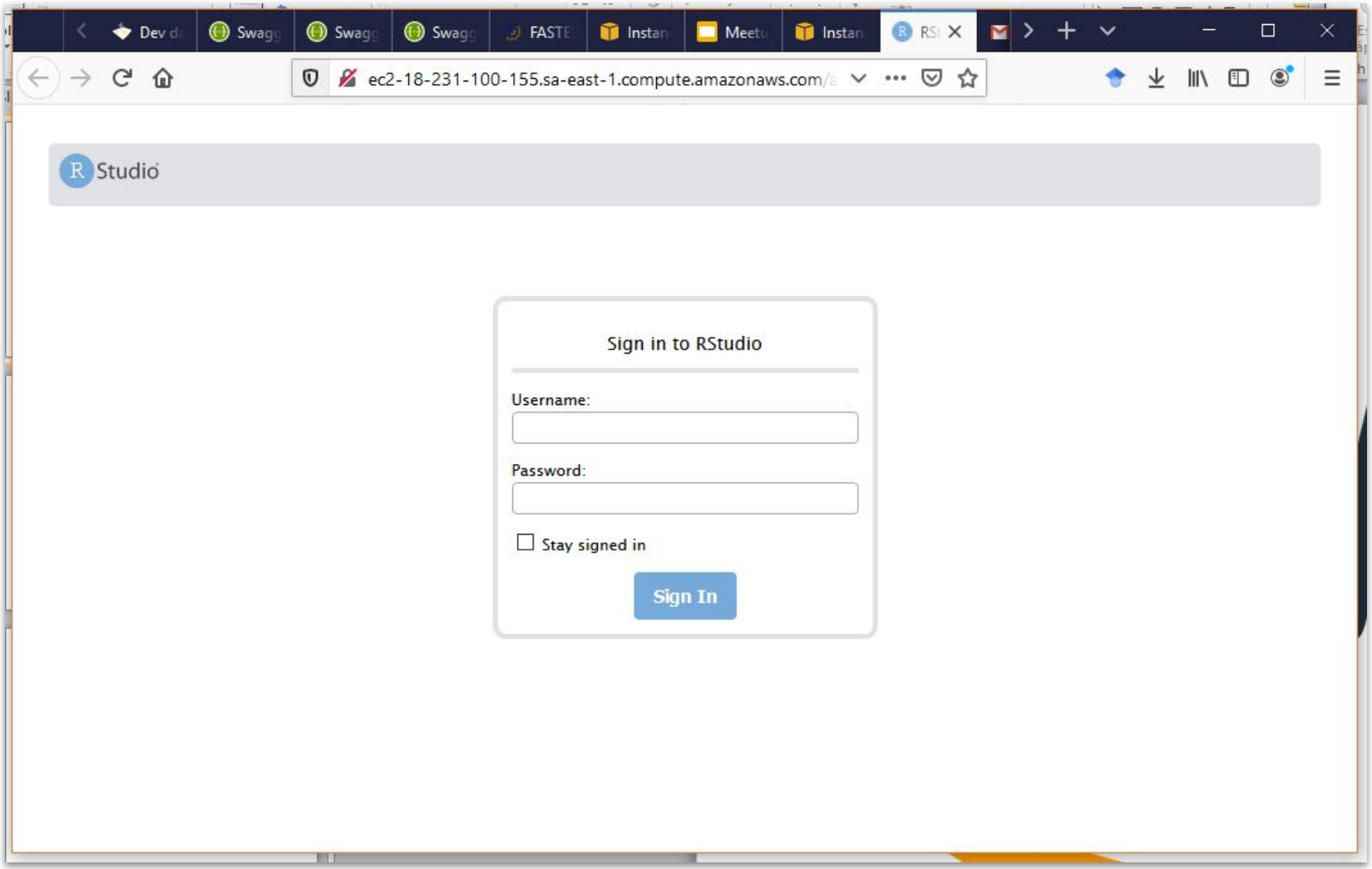
Click to launch through AWS web interface:

Region	64-bit HVM AMI
EU West, Ireland	ami-0754449f54adcc62d
EU West, London	ami-0e9e5245fffe34a3e
EU West, Paris	ami-08cd0f9ecf5f0a4c2
EU Central, Frankfurt	ami-059a2456bd2027e31
EU North, Stockholm	ami-e2a32b9c
Canada, Central	ami-09b8f2f441fc21b6f
US East, Virginia	ami-0226a8af83fcecb43
US East, Ohio	ami-09aea2adb48655672
US West, N. California	ami-02bf650155c44b475
US West, Oregon	ami-01a01f46102fb6737
South America, São Paulo	ami-07f82aa15f5fad682
Asia Pacific, Singapore	ami-09bb0803945e1c05
Asia Pacific, Tokyo	ami-045e320c21be5a5f1
Asia Pacific, Hong Kong	ami-5887ff29
Asia Pacific, Seoul	ami-040cb826eb4885a0b
Asia Pacific, Sydney	ami-097dd79c1a626b807
Asia Pacific, Mumbai	ami-01172262fc72d4421

RStudio 1.2.1335 *20GB SSD EBS store*

R 3.6.0 *RStudio on port 80 (HTTP)*

Como colocar online?



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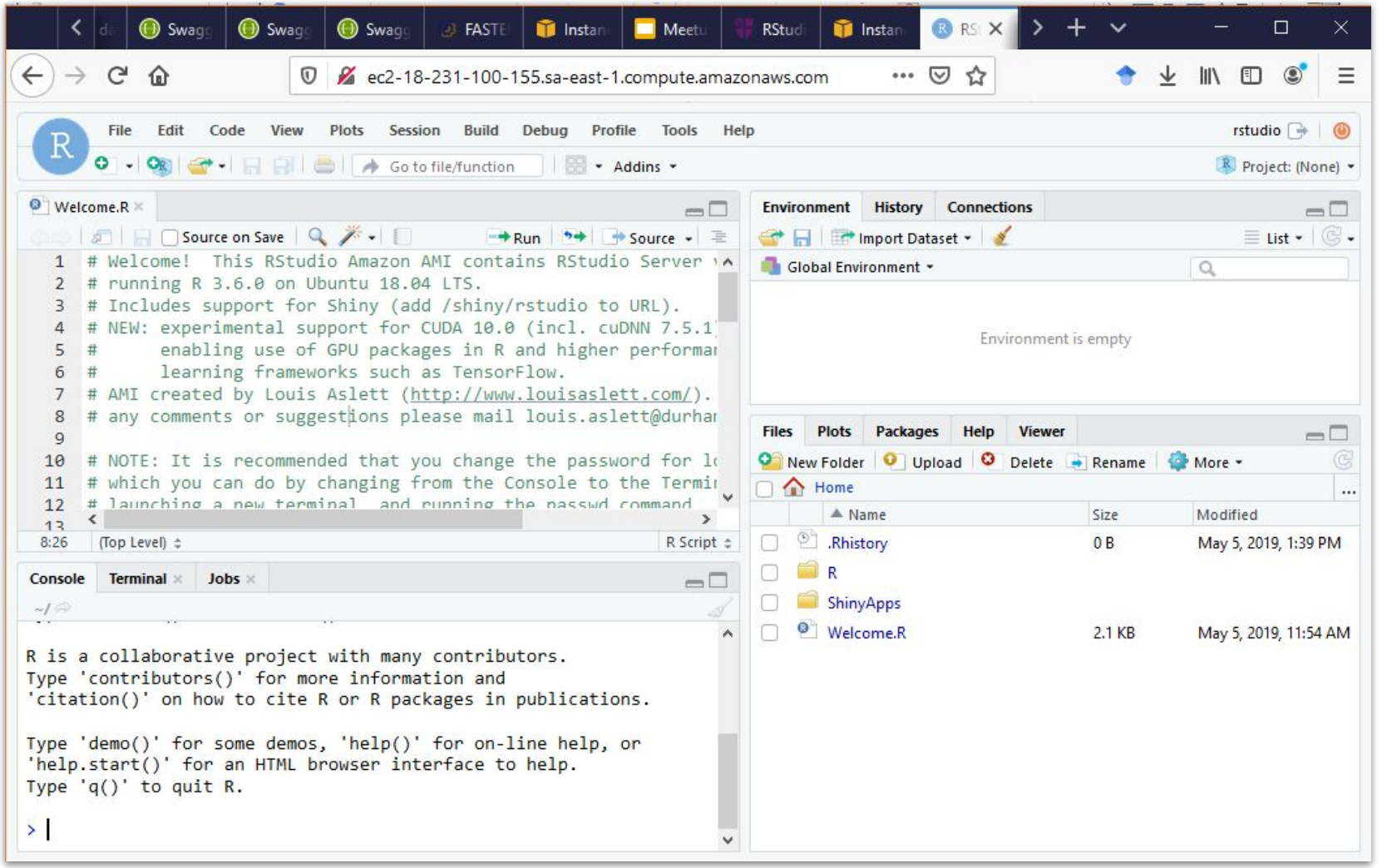
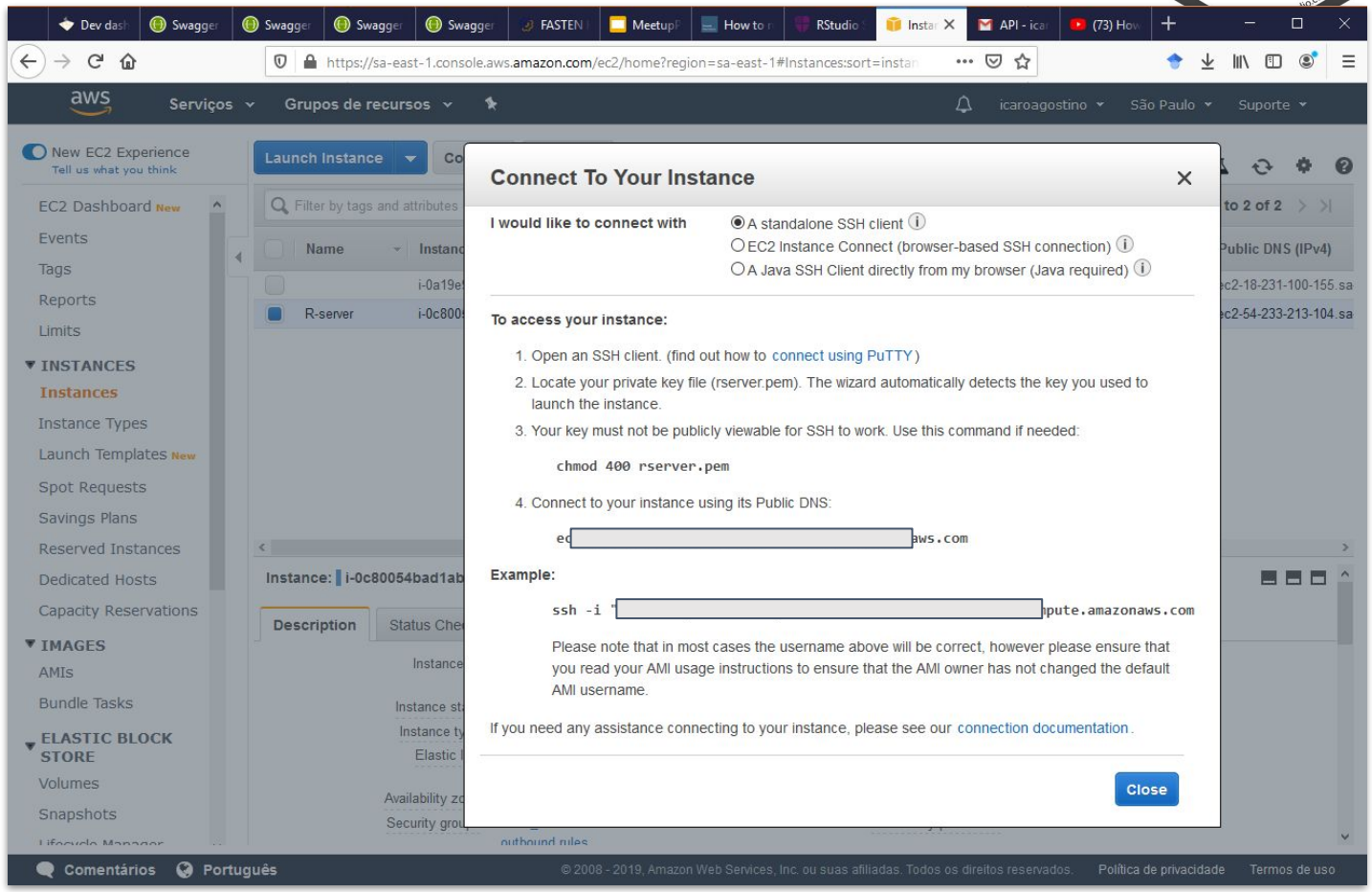


Como colocar online?

- Será preciso chamar a aplicação via terminal a aplicação para deixa-la rodando.

- Tutorial:

- https://www.youtube.com/watch?v=0h9VOQZX6QM&t=1419s



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Links

- RStudio server Amazon:
  - http://www.louisaslett.com/RStudio_AMI/
- Building and Deploying robust APIs in R using Plumber:
  - https://www.youtube.com/watch?v=pCXYzN0HbwA&t=1718s
- Material original:
  - https://github.com/blairj09/bmdd-plumber/blob/master/presentation/BMDD-plumber.pdf
- Outro material muito bom:
  - http://material.curso-r.com/api/

Construindo APIs com **Plumber**

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