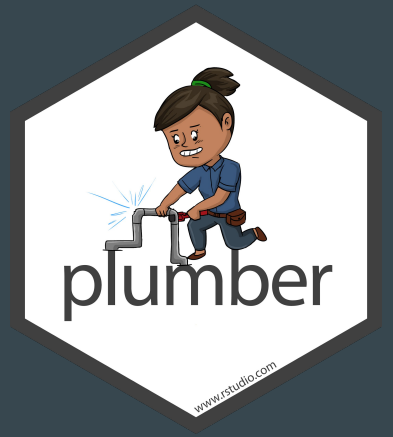


REST APIs in R

James Blair (@Blair09M)
RStudio

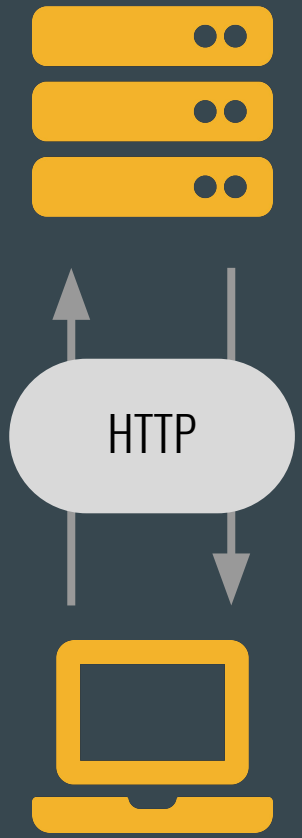
Big Mountain Data & Dev • October 12, 2018

Overview

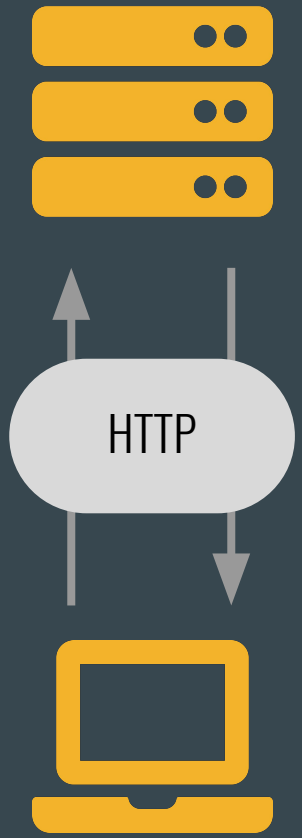
- What is an API?
- Why do I care?
- Plumber intro
- Plumber example
- Deployment
- Additional Resources

What is an API?

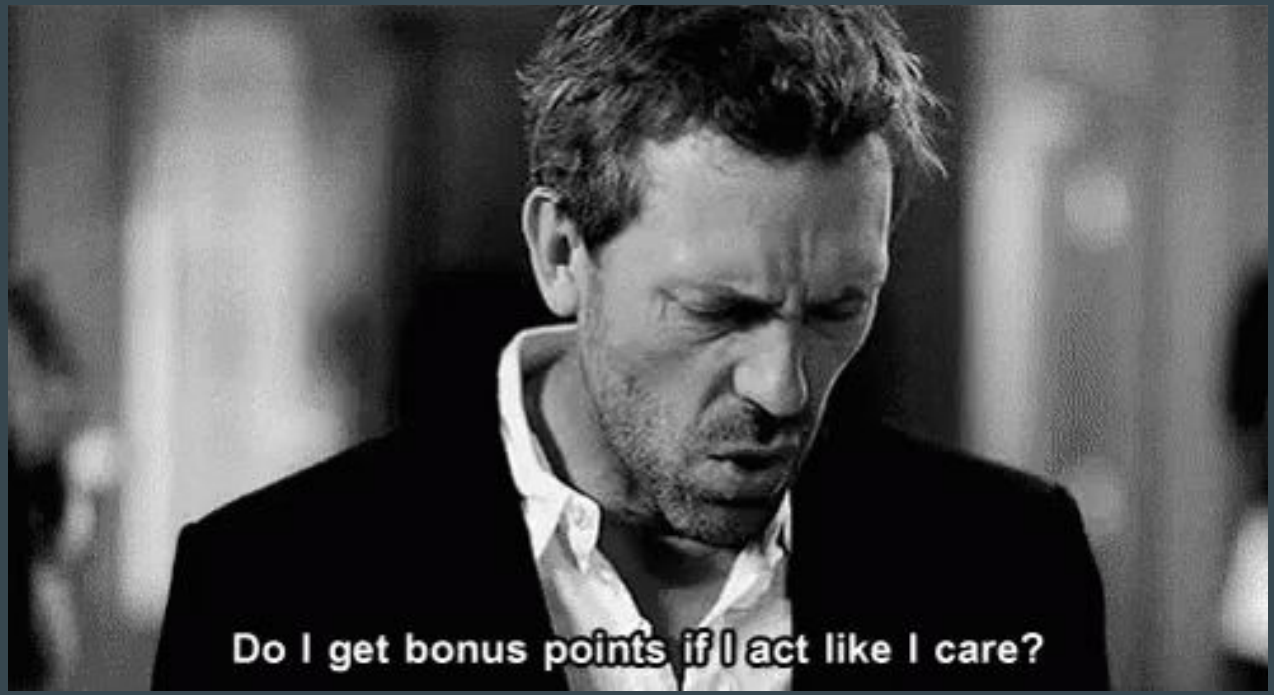
- Application Programming Interface
- Web APIs
  - HTTP
- Representational State Transfer (REST)
  - 6 guiding constraints for building web services.
  - Focus on performance and scalability



```
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:~|⇒
```



Why do I care?



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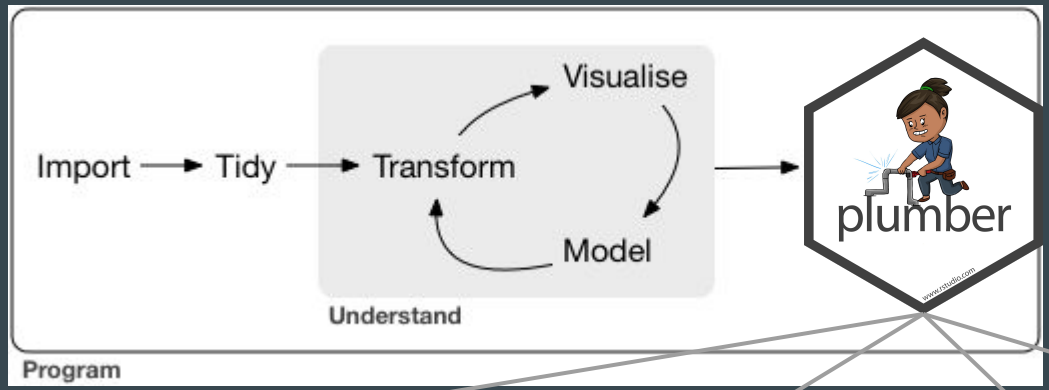

Import
Tidy
Transform
Visualise
Model
Understand
Program
plumber

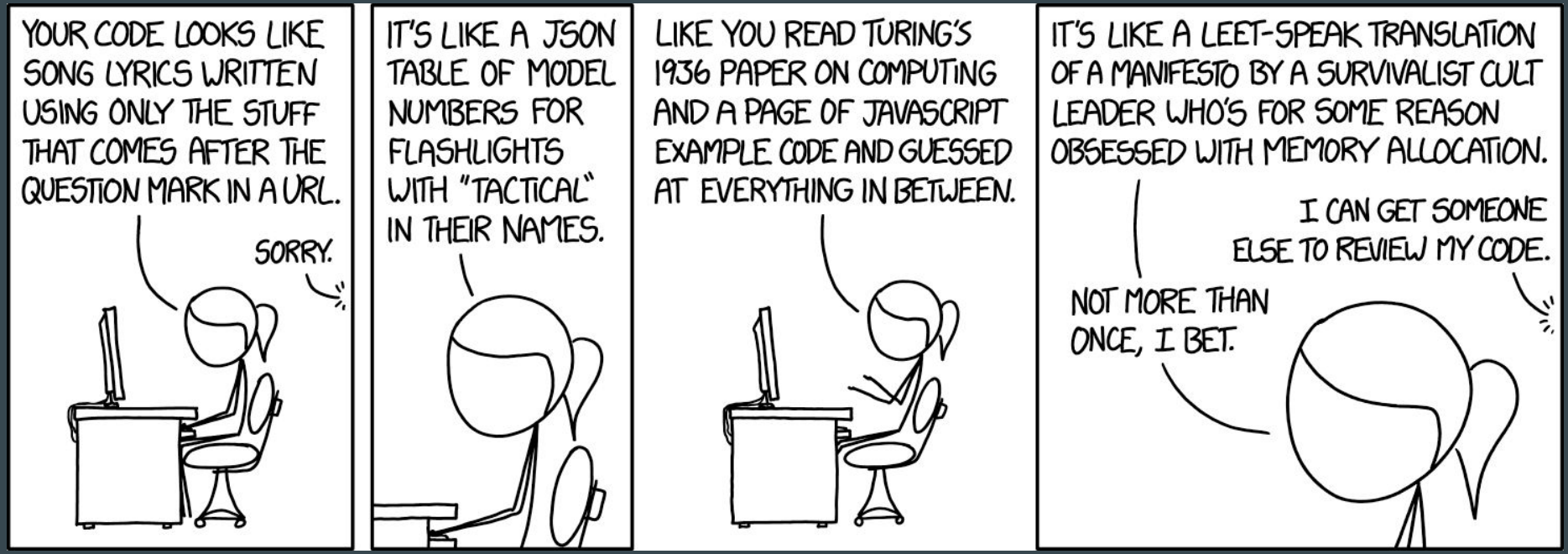
JS

GO

Shiny

rmarkdown

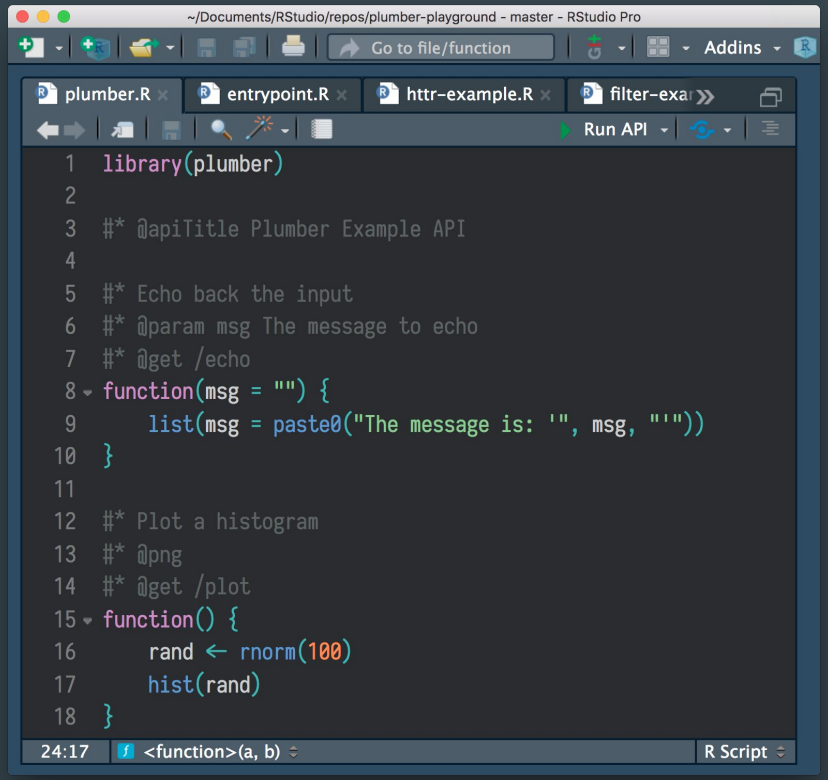
Why do I care?


YOUR CODE LOOKS LIKE SONG LYRICS WRITTEN USING ONLY THE STUFF THAT COMES AFTER THE QUESTION MARK IN A URL.
SORRY.
IT'S LIKE A JSON TABLE OF MODEL NUMBERS FOR FLASHLIGHTS WITH "TACTICAL" IN THEIR NAMES.
LIKE YOU READ TURING'S 1936 PAPER ON COMPUTING AND A PAGE OF JAVASCRIPT EXAMPLE CODE AND GUESSED AT EVERYTHING IN BETWEEN.
IT'S LIKE A LEET-SPEAK TRANSLATION OF A MANIFESTO BY A SURVIVALIST CULT LEADER WHO'S FOR SOME REASON OBSESSED WITH MEMORY ALLOCATION.
NOT MORE THAN ONCE, I BET.
I CAN GET SOMEONE ELSE TO REVIEW MY CODE.

Plumber

- Turn R functions into REST API endpoints
- Use special comments and decorators
  - #* - plumber comments
  - @ - endpoint attributes / details

Minimal overhead to create working API



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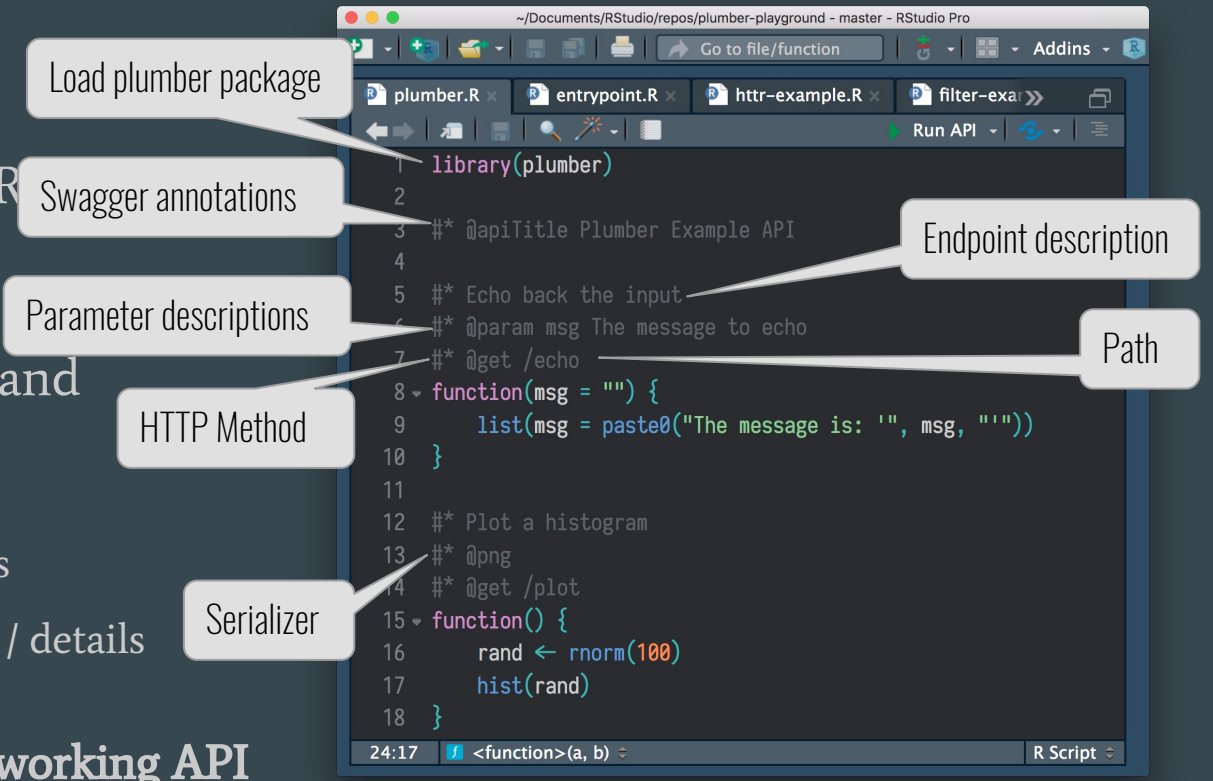


```
#* @apiTitle mtcars model API
#* @apiDescription Endpoints for working with mtcars dataset model

#* Log some information about the incoming request
#* @filter logger
function(req){
  cat(as.character(Sys.time()), "-"
      req$REQUEST_METHOD, req$PATH_INFO, "-",
      req$HTTP_USER_AGENT, "@", req$REMOTE_ADDR, "\n")

  # Forward the request
  forward()
}
```

Demo

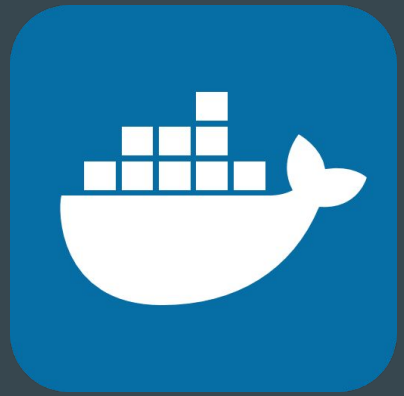
https://bit.ly/2OjX57x

Plumber

Easily *productionalize* R assets through REST APIs

PM2

Deployment



Additional Resources

Plumber Documentation: https://www.rplumber.io/docs/

Plumber Webinar: https://www.rstudio.com/resources/videos/plumbing-apis-with-plumber/

RViews Blog Post: https://rviews.rstudio.com/2018/07/23/rest-apis-and-plumber/

GitHub: https://github.com/trestletech/plumber

Talk Repository: https://github.com/blairj09/bmdd-plumber

Postman: https://www.getpostman.com/

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