Day 06: APIs

Erin Rossiter

27 February, 2023

Announcements

Announcements

- PS04 graded
- PS05 due tomorrow
  - do not do Question 1 in Rmd
- You all can see each others' code, right?

Announcements

- PS04 graded
- PS05 due tomorrow
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- PS04 graded
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Today's plan

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- Last two sessions
  - basics of websites/html
  - rvest
  - conditions & condition handling
  - extracting data from more complex websites and JSON
  - selenium demo
- Today
  - legality of all this
  - basics of http requests
  - APIs
- Next time
  - Inclass midterm

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  - if/else and logicals
  - basic loops
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Webscraping considerations and warnings

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Three main things to consider:

- Terms of service
- Intellectual property rights/copyright material
- Data privacy

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  - » Ex: Selenium to scrape Facebook
- Always read the terms of service
- If website is okay with you accessing your data, it'll be:
  - » Publicly accessible (i.e., without needing an account)
    - U.S. appeals court said so re: LinkedIn
  - » It has an API you can use
- Note check with IRB, too for human subjects data collection
- Note you often can't share the raw data
  - » Ex: Twitter
- In sum
  - » There are lots of legal regulations you could violate
  - » How litigious are these companies? We don't want to find out.

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API intuition

What does it stand for?

- Application
  - » They have an application, we have an “application,” we’re trying to communicate with each other
- Programming
- Interface
  - » how they’re having you interact
  - » API documentation will say how your structure your **requests** for data and what to expect for a **response**, or how the data will be returned

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Twitter example

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- Lots of apps to help with marketing
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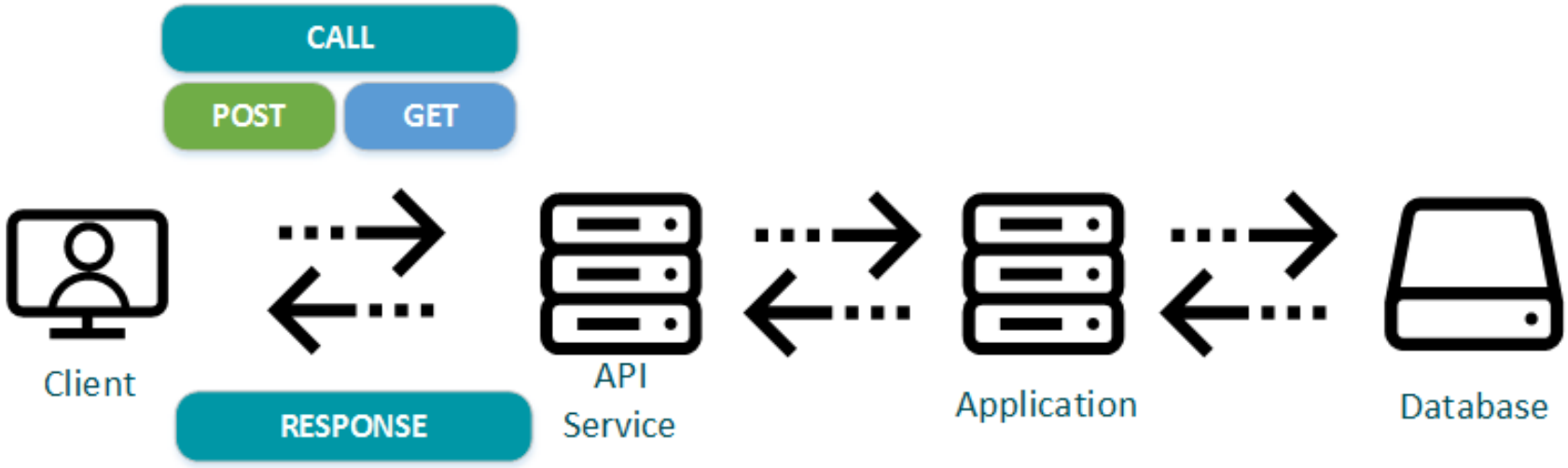
- This U.S. trending topics app
- Lots of apps to help with marketing
- . . . and of course academic data collection

How does it work? Very big picutre



- We are the client wanting responses from the server
- Image from here

How does it work? http as the very basic ingredients

- HyperText Transfer Protocol is the basic way that data is passed and accessed across the web
- GET, POST, PUT, DELETE and HEAD are the main commands
  - Mostly you will use GET and POST
    - GET = get data :)
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How would we use this API in R to find out how many people are in space right now?

- Open Notify API for some of NASA's data
  - No R package to help us!
  - We need to know the basics
- APIs have *endpoints* – think of these as function that are available.
  - In the documentation it will explain what arguments these endpoints accept.
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day06-httr.R

Summary

We used the `httr` and `jsonlite` packages to:

1. Use `http` requests to pass the right arguments to the right API endpoint.
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Other notes on APIs

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  - But, don't forget the logic discussed so far is the same
- You also might run into...
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