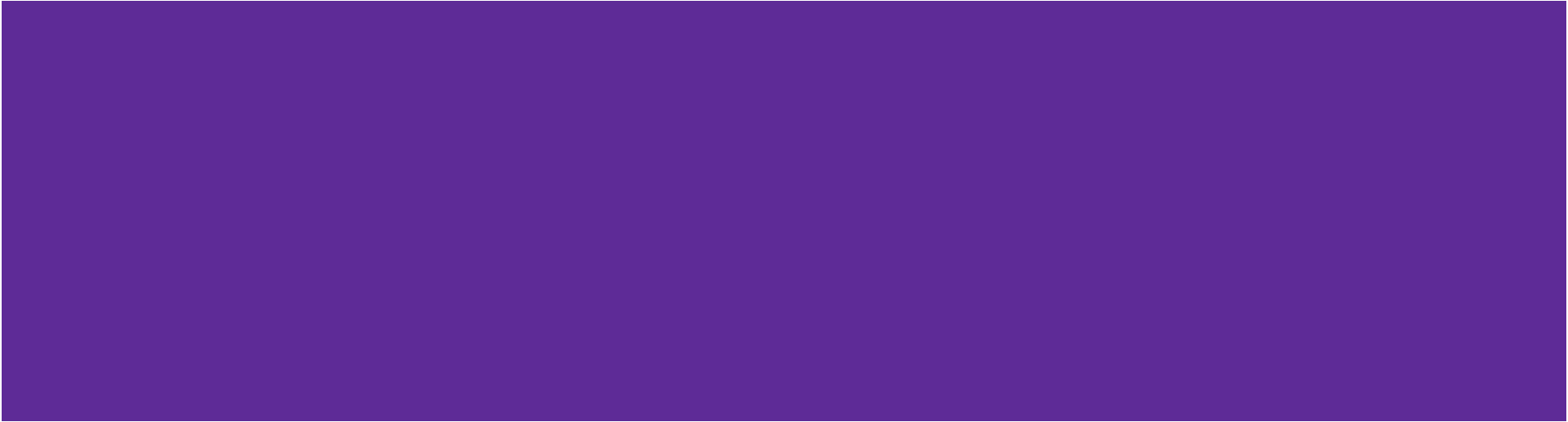# HTTP & REST APIs

Everybody's doing it
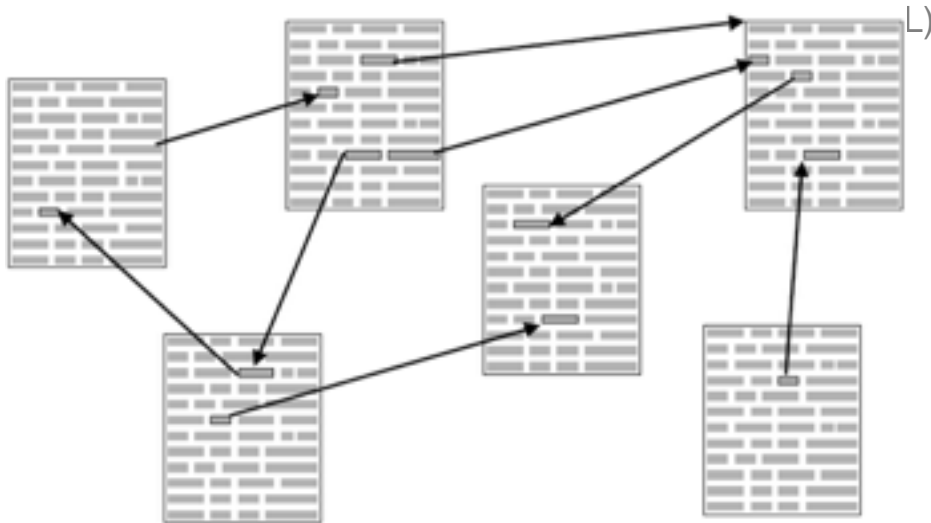
HTTP: The least you need to know

Hypertext Transfer Protocol

"The foundation of data communication for the World Wide Web." [src]

Exchanges hypertext

HTTP Client

A program

Establishes a connection to the server

Sends one or more HTTP **requests**

HTTP Server

A program

Accepts connections

Services HTTP requests by sending **responses**

Client request for primeacademy.io

method	URI	protocol version
GET	/	HTTP/1.1

Host: primeacademy.io

Connection: keep-alive

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8

Server response for client request

protocol version	success/error code	textual reason phrase

HTTP/1.1   200   OK

Server: Cowboy

Connection: close

Date: Sun, 29 Nov 2015 02:49:20 GMT

Status: 200 OK

X-Frame-Options: SAMEORIGIN

X-Xss-Protection: 1; mode=block

X-Content-Type-Options: nosniff

Content-Type: text/html; charset=utf-8

HTTP (Most Used) Methods

Request Methods

Method	Description
GET	Transfer a current representation of a target resource.
POST	Perform resource-specific processing on the request payload.
PUT	Replace all current representations of the target resource with the request payload.
DELETE	Remove all current representations of the target resource.

For Example

Meet Rando, an HR/Talent Company

Rando has an internal system that allows them to manage talent data (e.g. consultants) and company relationships.

Their goal is to place talent at companies at a rate that suits both parties.

They have internal applications that allow them to meet their goals.

Data is transferred from the enterprise backend system to internal apps via the HTTP protocol.

Available HTTP Resources

Talent

TalentID

Name

Address

Skills

Salary Requirements

Employment History

Current Placement

Company

CompanyID

Name

Contact

Address

Opportunities

Account Rep

HTTP Requests on the Talent resource

| Method	URI	Expected Response
GET	/talent	A collection of all talent
GET	/talent/34	The talent with an ID of 34
POST	/talent	Add a new talent
PUT	/talent/34	Update the talent with ID of 34 with our updated representation
DELETE	/talent/34	Remove the talent with an ID of 34 from our collection of talent

REST API History

Pre-REST exchange of data w/external sys.

Roy Fielding introduces REST

Today
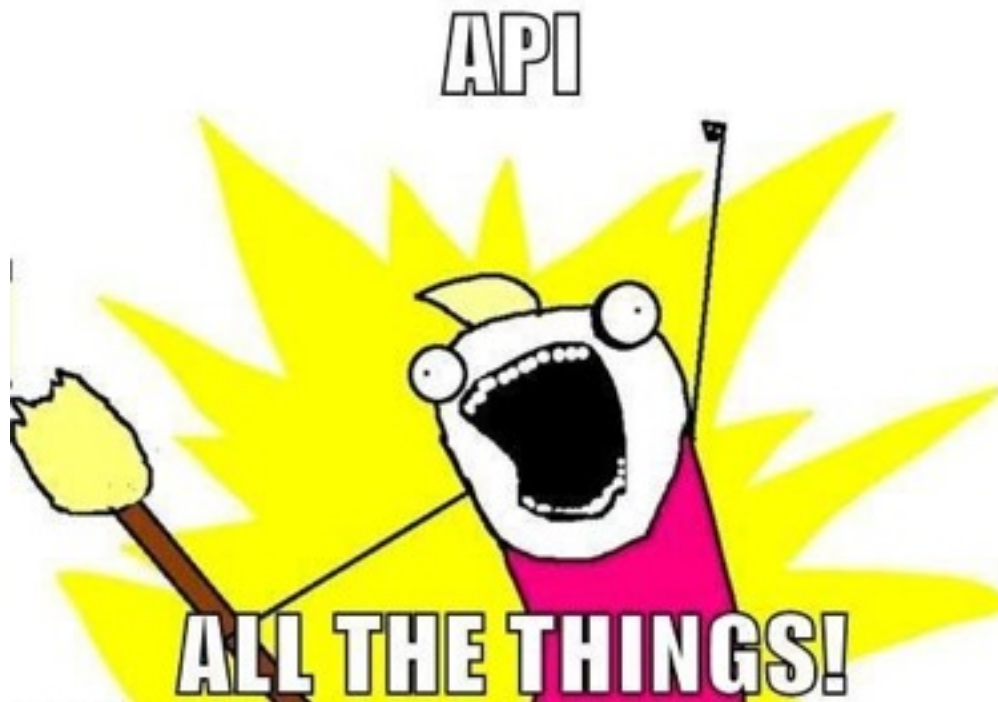
What makes it RESTful?

RESTful API Characteristics

Uses HTTP protocol

Multiple endpoints represent resources

Uses HTTP methods/verbs

Hypermedia controls

 Actually not present in most REST APIs today

 Allows for discoverable next actions for a resource

Etcetera

Resources

W3C HTTP specifications

      HTTP Header Field Definitions

      HTTP Method Definitions

SOAP (a way to exchange data that became less popular post-REST)

Roy Fielding's dissertation

Haters gonna HATEOAS -- on how most REST APIs aren't actually RESTful

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