APIs

October 20-21, 2025

API Videos

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- What is an API?
  - https://www.youtube.com/watch?v=s7wmiS2mSXY
- Every Type Of API You Must Know Explained!
  - https://www.youtube.com/watch?v=pBASqUbZgkY

What is an API?

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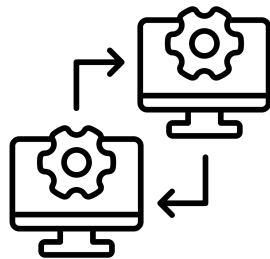
An API (Application Programming Interface) is a set of rules and protocols that allows one software application to interact with another

- API models
    - Libraries
    - Remote Procedure Call (RPC)
    - REST
    - SOAP
    - GraphQL
    - gRPC
- Data encoding formats
    - JSON
    - XML
   - Protobuf
    - x-www-form-urlencoded

JSON vs XML

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{"users":[{"id":1,"name":"John
Doe","email":"john.doe@example.com","posts
":[{"id":101,"title":"GraphQL
Introduction","content":"An introduction
to
GraphQL...","timestamp":"2024-07-05T12:34:
56Z"},{"id":102,"title":"Advanced
GraphQL","content":"Deep dive into
GraphQL...","timestamp":"2024-07-06T14:20:
00Z"}]},{"id":2,"name":"Jane
Smith","email":"jane.smith@example.com","p
osts":[{"id":103,"title":"REST API vs
GraphQL","content":"Comparing REST and
GraphQL...","timestamp":"2024-07-07T09:15:
45Z"}]}]}

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<users>
  <user id="1" name="John Doe"
email="john.doe@example.com">
    <posts>
      <post id="101" title="GraphQL Introduction"
content="An introduction to GraphQL..."
timestamp="2024-07-05T12:34:56Z"/>
      <post id="102" title="Advanced GraphQL"
content="Deep dive into GraphQL..."
timestamp="2024-07-06T14:20:00Z"/>
    </posts>
  </user>
  <user id="2" name="Jane Smith"
email="jane.smith@example.com">
    <posts>
      <post id="103" title="REST API vs GraphQL"
content="Comparing REST and GraphQL..."
timestamp="2024-07-07T09:15:45Z"/>
    </posts>
  </user>
</users>
```

REST APIs

- REST = Representational State Transfer (Fielding, 2000)
- Resource-based, identified by URIs
- Use HTTP methods for specific purpose: GET, POST (create), PUT (replace), PATCH (modify)
- Each request is stateless (independency; idempotency)
- Resources represented in a specific format (e.g. JSON, XML)
- Uniform interface (typically HTTP)
- Infrastructure layers between client and server OK

by Julia Evans
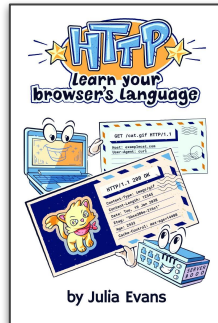
Play Around with REST APIs

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- Use your **yaade** server
  - https://*name-api.cloud24x7.com*
  - Username: spark
  - Password: askdumbquestions!
- API links:
  - https://www.freepublicapis.com/
  - https://mixedanalytics.com/blog/list-actually-free-open-no-auth-needed-apis/
  - https://github.com/public-apis/public-apis
  - https://freeapihub.com/apis