# Understanding APIs and REST

Your Gateway to Web & App Integration

What is an API?

Application Programming Interface is a set of rules that allows different software applications to communicate with each other.

Think of an API as a **restaurant menu** : it presents what's available, you order (request), and receive your food (response) without needing to know how it's prepared.
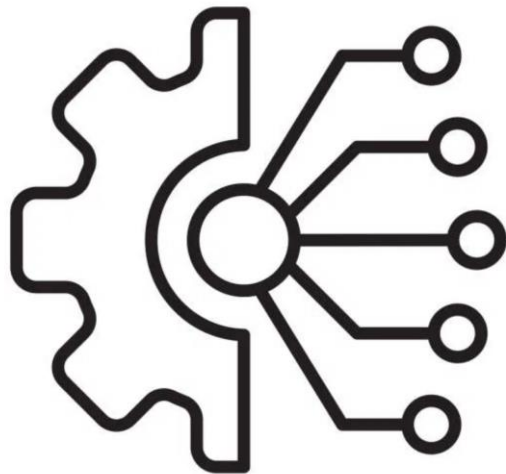
Why REST?

REST (Representational State Transfer) is an architectural style that uses standard HTTP methods.

It's the default for web integrations because it's **stateless** , **scalable** , and **simple** to implement with existing web infrastructure.

Rest Web Service Server
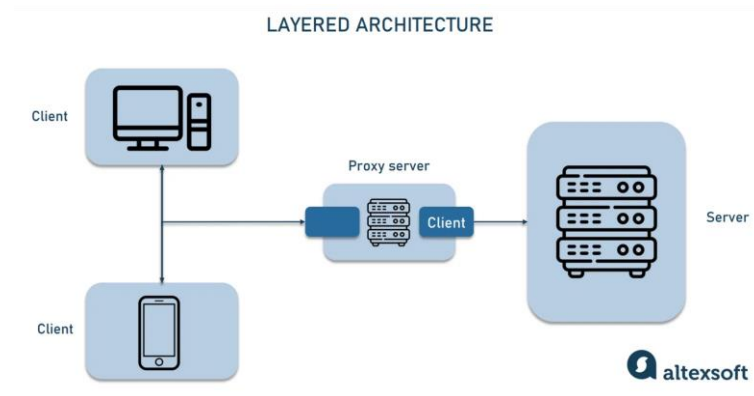
HTTP Request

HTTP Response

Client
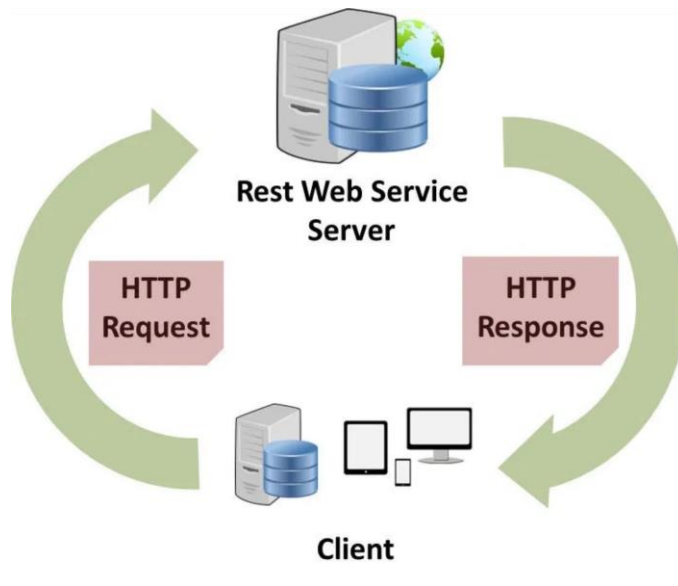
Anatomy of an API Spec

Base URL: The root address of the API

Endpoints: Specific paths for different resources

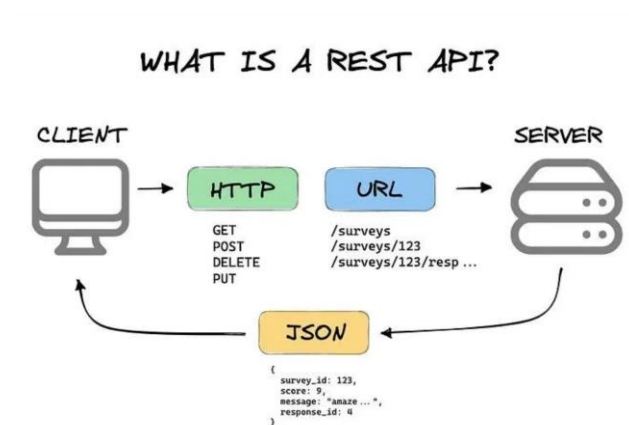**Methods:** GET, POST, PUT, DELETE operations

LAYERED ARCHITECTURE

API Spec: Parameters & Headers

Parameters: Query, Path, Body

Headers: Metadata about the request

Authentication: API keys, OAuth, JWT

WHAT IS A REST API?

CLIENT

SERVER

HTTP
GET
POST
DELETE
PUT

URL
/surveys
/surveys/123
/surveys/123/resp ...

JSON

```
{
    survey_id: 123,
    score: 9,
    message: "amaze ... ",
    response_id: 4
}
```

Making Requests with Postman

1. Enter the endpoint URL

2. Select the HTTP method

3. Send and view the JSON response
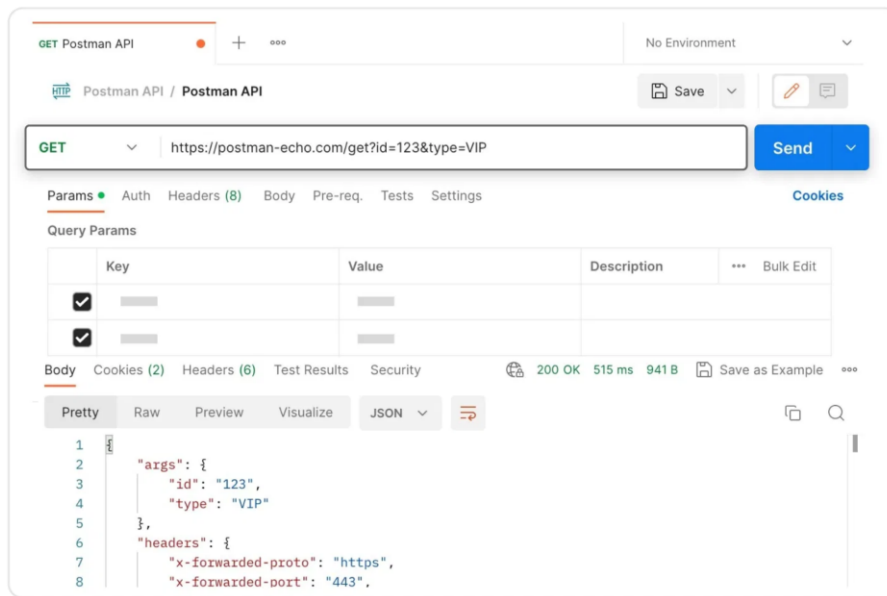
Making Requests with Python

1. Import the requests library

2. Make a request with parameters

3. Process the JSON response


```python
import requests

parameters = {'car': 2, 'model': 40, 'kim':
30}

response =
requests.get('https://httpbin.org/get',
params=parameters)

response.raise_for_status()

print(response.text)
```

Understanding HTTP Status Cod

2xx Success: 200 OK, 201 Created

4xx Client Error: 400 Bad Request, 401 Unauthorized, 404 Not Found

5xx Server Error: 500 Internal Server Error

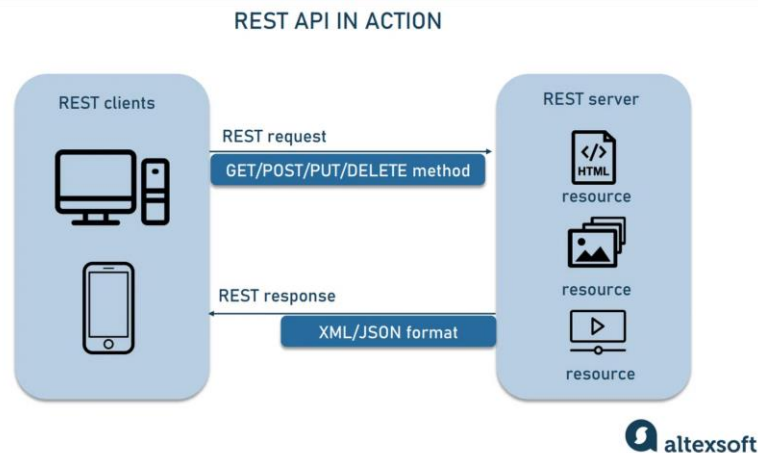| 1XX Informational codes	The server has received the request and is currently processing it
2XX Success codes	The server processed the request after successfully receiving and understanding it
3XX Redirection codes	The server has received the request, but it is being redirected to another location. In some rare instances, additional actions beyond a redirect may be required
4XX Client error codes	The server was unable to locate or access the page or website. This issue originates from the site's end
5XX Server error codes	The client submitted a valid request, but the server was unable to fulfill it

API Design Best Practices

Authentication: Secure your API with appropriate auth methods

Versioning: Use /v1/, /v2/ to maintain backward compatibility

Rate Limiting: Prevent abuse and ensure fair usage

REST API IN ACTION

REST clients — REST request — GET/POST/PUT/DELETE method — REST server

resource HTML

resource

resource

REST response — XML/JSON format

altexsoft

THANK YOU

For connecting with us