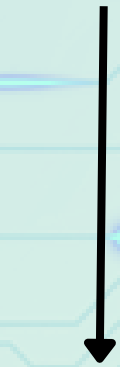
What is an API?

API stands for **Application Programming Interface.**
An API is a software that allows two applications
to talk to each other.

make a request

API retrieve data



API responds

Web APIs
A web API is an API that can be
accessed using the HTTP protocol.

API types by audience

1. Public APIs

Public APIs may also be called external or open APIs. These APIs are available for anyone to use with little to no restriction, though many require registration and authentication, often via an easy-to-grab API key.

2. Private / internal APIs

Private or internal APIs are designed for use within a closed group of API consumers, usually a private company or institution.

To interact with the data in a private API, a developer typically needs to be actively granted permission to access it, because the data and functionality available through the API are proprietary to the company.

3. Partner APIs

Partner APIs exist somewhere between public and private APIs. They often function to share data between two companies or organizations for a specific business purpose, while still ensuring strict privacy protection.

API types by architecture

1. Monolithic APIs

A monolithic API is an interface for a monolithic application, where all application components—such as the UI, business logic, and database access—are tightly coupled within a single codebase.

2. Microservices APIs

A microservices API is the communication interface for a small, independent service that performs a specific business function within a larger application. Instead of a single API controlling all application logic, a microservices architecture uses multiple, distinct APIs to allow its separate services to work together.

3. Composite APIs

Microservices come with an obvious drawback, which is that they generate an enormous number of individual API calls. **A composite API is a special API type that lets you hit multiple API endpoints on a single call.**

4. Unified APIs

A unified API is similar to a composite API, but instead of bundling calls to multiple endpoints on a single API, it bundles related calls to multiple different APIs.

API protocols

1. REST APIs

REST APIs are widely adopted for their simplicity, using HTTP to transmit data in text-based formats like JSON or XML; however, they are limited by the need to encode all data, including images and audio, as text

2. SOAP APIs

SOAP APIs are more flexible in communication protocols (HTTP, TCP, SMTP) but more restrictive in structure, as they only support XML and enforce strict request formats.

3. RPC APIs

RPC APIs focus on actions rather than resources, calling methods instead of returning documents. Unlike REST, which exposes resources via routes, RPC endpoints identify only the server, returning either success confirmation or an error.

4. GraphQL APIs

GraphQL, a query language over HTTP, simplifies data access by using a single endpoint that allows clients to request exactly the fields they need, unlike REST's multiple schema-based endpoints.