VIDYABHARTI TRUST COLLEGE OF BUSINESS, COMPUTER-SCIENCE AND RESEARCH

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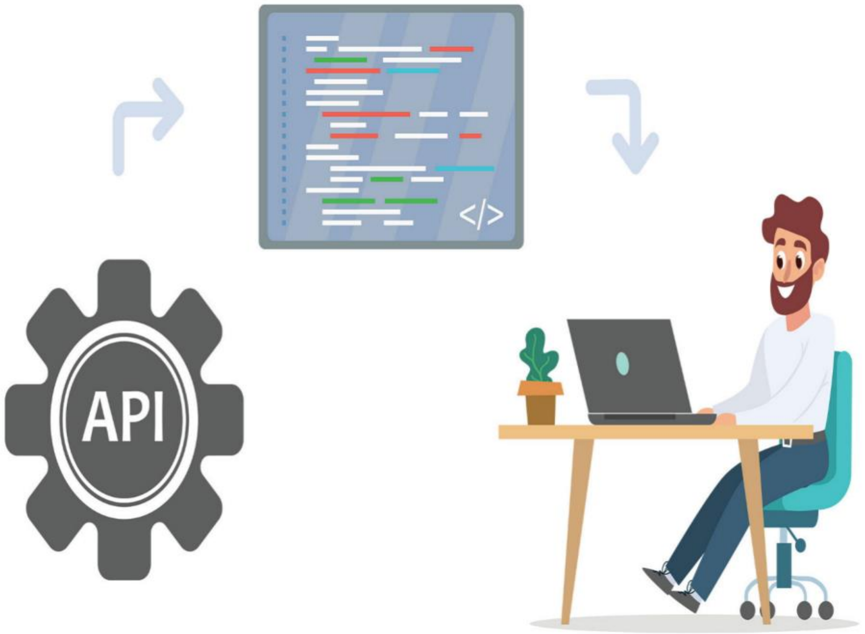
Get to know more about IT

What is an APPLICATION PROGRAMMING INTERFACE?



Today we will talk about **Applications Programming Interfaces.** It's a concept that applies almost everywhere, from command line tools to enterprise Java Code, Ruby, or Rails web pages. The other day I was scrolling through Instagram and talking to my friends when I saw a couple of ads for sneakers. Considering the fact that I was interested, I clicked the link on that post, and instead of redirecting me to the website selling a bunch of different brand sneakers, it simply let me place the order right there. I was very pleased to find what I was looking for earlier in the day. I continued scrolling and started to wonder how these connections work in the first place, how Instagram let me shop from this third party without ever leaving the app. So it's a way to interact with separate software components programmatically.

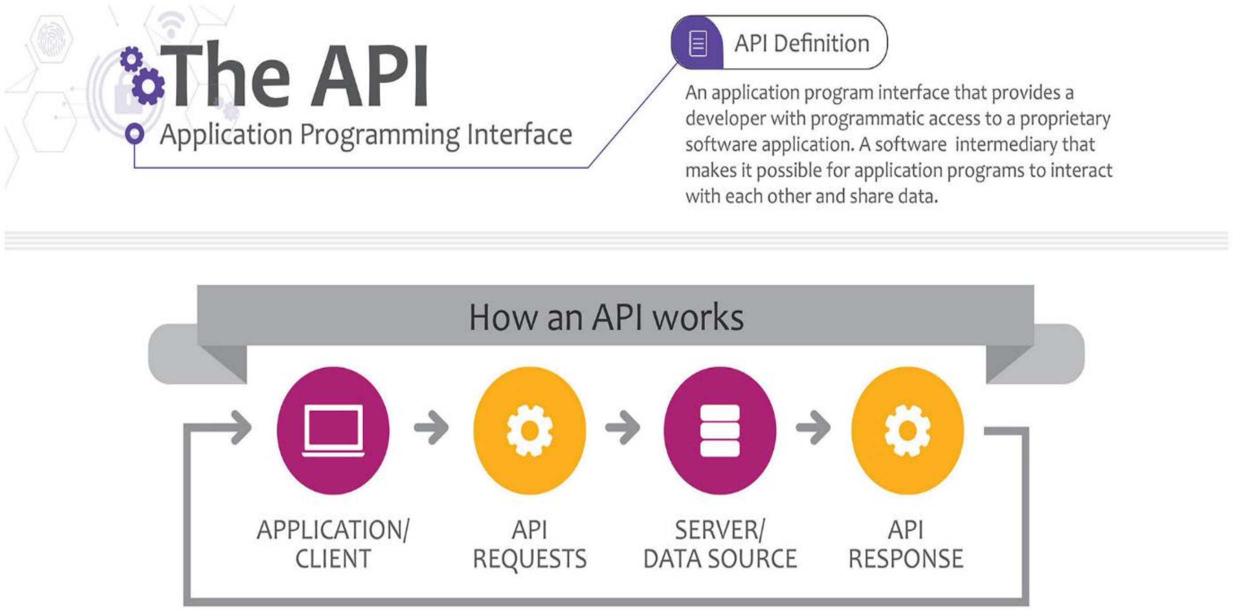
What are Web services and APIs?

API fundamentally states the rules and facilitates communication between all cross applications. Instead of directly trying to access the internals of another application, it works with the API layer of the other applications, supplying the required inputs and waiting for the output to be processed. Basically, this layer verifies the client and proceeds to access the internal data of the other application and process the required output. This way, the two applications can communicate without compromising each other's security.

Web services is a component of software that can be accessed via a web address. By definition it requires a network. A web service exposes an applications data and functionality, in effect every web services is an API. There are, however, some APIs that are not web services.

APIs are commonly used in service-oriented architecture (SOA) and micro services architecture. Let me brief you about what SOA and Micro service architecture are. So typically, *SOA* is a software design style implemented using web services, making the functional building blocks accessible through standard communication protocols. And developers can build these services from scratch, but they usually create it by exposing functions from legacy systems as service interfaces. Whereas *Micro service architecture* is an alternative architectural style that divides an application into smaller, independent components. When the application is implemented as a collection of separate services, it is easier to test, maintain, and scale. Over the years, this methodology has gained prominence in the cloud computing age, allowing developers to work independently on one component.

Unlike SOA, micro services architecture is built for scalability, providing developers and businesses with the flexibility to create, modify, test, and deploy applications at a granular level with shorter interaction cycles.



An application program interface that provides a developer with programmatic access to a proprietary software application. A software intermediary that makes it possible for application programs to interact with each other and share data.

In general, there is some protocol to follow when submitting inputs to the API Layer. The API Layer also needs a key to verify the client's identity and authenticity and keep track of who is accessing the information before submitting it to be processed. Most applications and systems will have their API set up with varying endpoints and protocols. These protocols will dictate what inputs are required by your app to communicate and interact with each of these systems.

What are the benefits of REST APIs?

1. Integration

APIs are used to integrate new applications with existing software systems. This increases development speed because each functionality doesn't have to be written from scratch. You can use APIs to leverage existing code.

2. Innovation

Entire industries can change with the arrival of a new app. Businesses need to respond quickly and support the rapid deployment of innovative services. They can do this by making changes at the API level without having to re-write the whole code.

3. Expansion

APIs present a unique opportunity for businesses to meet their clients' needs across different platforms. For example, maps API allows map information integration via websites, Android, iOS, etc. Any business can give similar access to their internal databases by using free or paid APIs.

4. Ease of maintenance

The API acts as a gateway between two systems. Each system is obliged to make internal changes so that the API is not impacted. This way, any future code changes by one party do not impact the other party.

Types of APIs:-

Today most APIs are web APIs that expose an application's data and functionality over the internet. Here are the four main types of web API:

- **Open APIs** are open-source application programming interfaces you can access with the HTTP protocol. Also known as public APIs, they have defined API endpoints and request and response formats.

- **Partner APIs** connect strategic business partners. Typically, developers access these APIs in self-service mode through a public API developer portal. Still, they need to complete an on boarding process and get login credentials to access partner APIs.'

- **Internal APIs** remain hidden from external users. These private APIs aren't available for users outside of the company and are instead intended to improve productivity and communication across different internal development teams.

- **Composite APIs** combine multiple data or service APIs. They allow programmers to access several endpoints in a single call. Composite APIs are useful in micro services architecture where performing a single task may require information from several sources.

How do APIs work?

API architecture is usually explained in terms of client and server. The application sending the request is called the client, and the application sending the response is called the server. So in the weather example, the bureau's weather database is the server, and the mobile app is the client.

There are four different ways that APIs can work depending on when and why they were created.

SOAP APIs

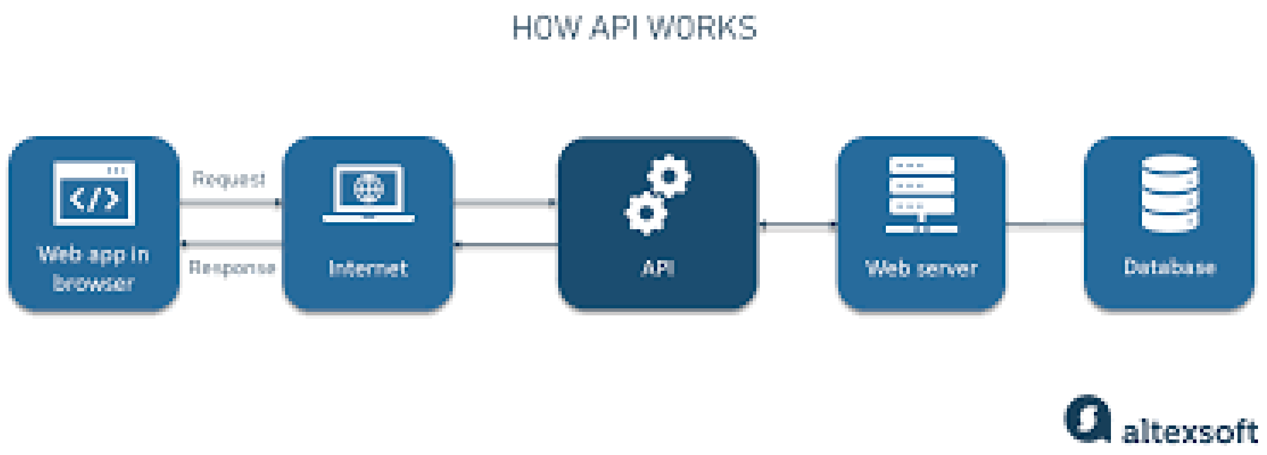
These APIs use Simple Object Access Protocol. Client and server exchange messages using XML. This is a less flexible API that was more popular in the past.

RPC APIs

These APIs are called Remote Procedure Calls. The client completes a function (or procedure) on the server, and the server sends the output back to the client.

REST APIs

These are the most popular and flexible APIs found on the web today. The client sends requests to the server as data. The server uses this client input to start internal functions and returns output data back to the client. Let's look at REST APIs in more detail below.



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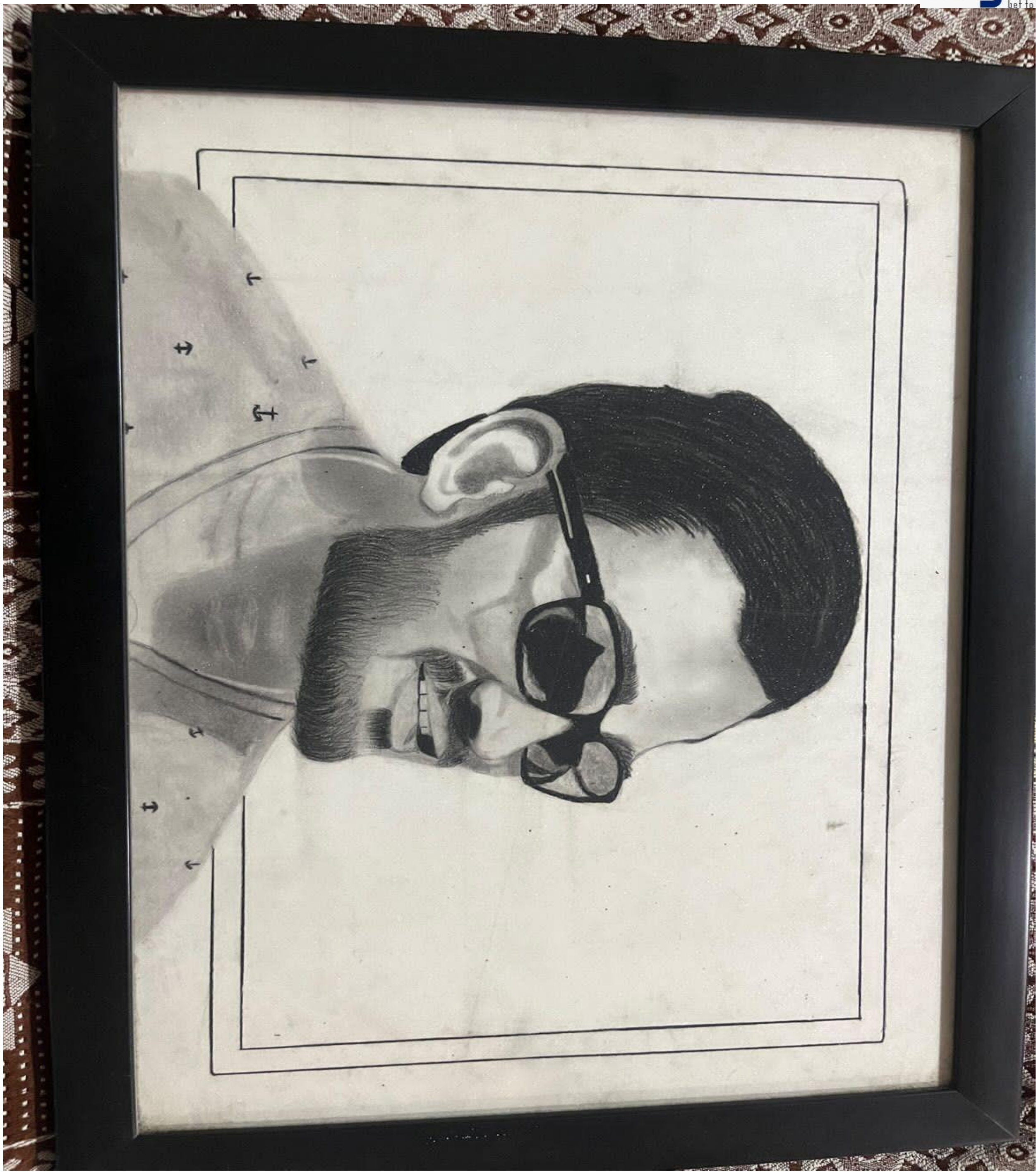

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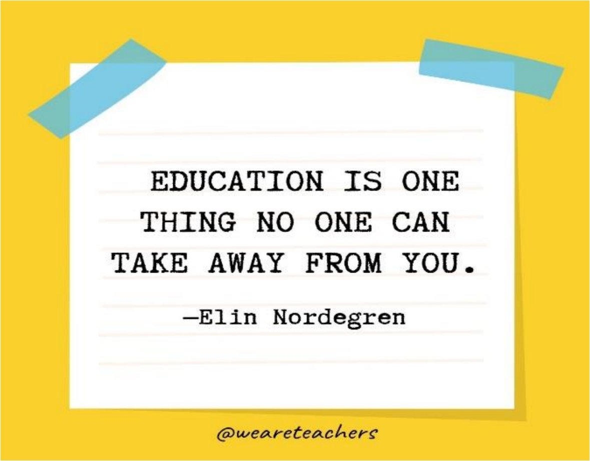
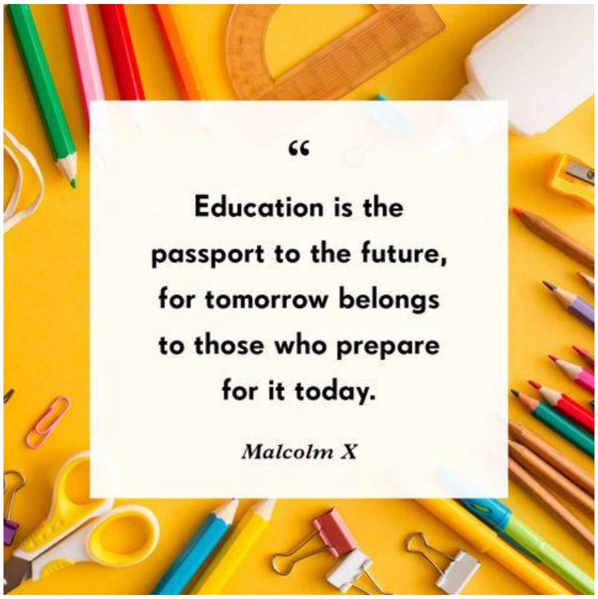


EDUCATION IS ONE THING NO ONE CAN TAKE AWAY FROM YOU.

—Elin Nordegren

@weareteachers



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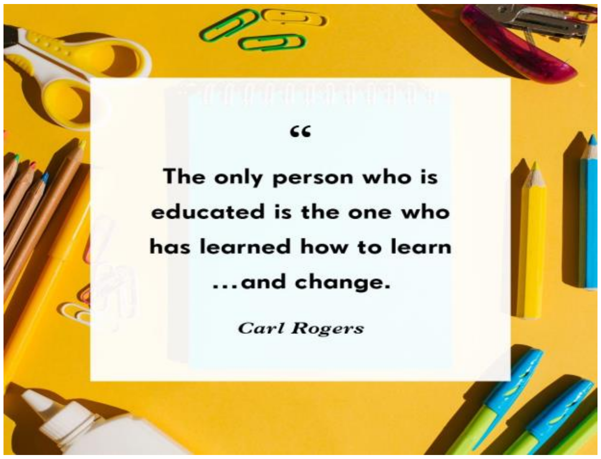
Education is the passport to the future, for tomorrow belongs to those who prepare for it today.

Malcolm X



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The only person who is educated is the one who has learned how to learn ...and change.

Carl Rogers

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