ASSIGNMENT

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**Course: Operating System**

**Question: What is an API? Why we use API? Mention the types of an API and for what they are used?**

**Ans:**

API:

API stands for **Application Programming Interface**. It is used between applications for the interaction purpose among themselves. It allows the communication between your application program and external software. It is a set of functions and procedures that allows the creation of application that can access the data or features of an operating system, application or any other service.

EXPLANATION:

It sends the response given by the user to the system and gives back the system’s response to the user. For instance, you’re using an online shopping website. When you click add to cart option, API tells the system that user has added an item in the cart. The website updates your cart accordingly.

Microservices (an architecture that divides the system functionality within the web application) use API to interact with one another. Developers make request to send or get information. This interaction is done through a programming language known as JSONS.

PROTOCOLS FOR AN API:

API needs some rules, constraints and structures that monitors its operation. Three types of API protocols are used REST, SOAP and RPC. Each have different purpose.

* REST API: It stands for **Representational State Transfer**. It delivers and receives responses via HTTP functions. It is works on 4 HTTP functions GET, PUT, DELETE and POST. It is the most common protocol to build API. It separates front and back end as it is based on client-server approach.
* SOAP API: It stands for **Simple Object Access Protocol.** It is based on XML systems and programming, which have larger and expensive data. It has higher level of security. It supports many communication protocols that are available on internet such as HTTP, SMTP and TCP. features can be easily added.
* RPC API: It stands for **Remote Procedure Call.** It is the earliest form of API protocol that executes block of code on different servers. It is based on two different languages JASON and XML. When this API is used on HTTP, it turns into a web API.

REASON FOR USING AN API:

* API is used to bring different applications together to perform sharing data functions and executing pre-defined processes.
* User build new programmatic interactions between different applications and people.
* It increases productivity.
* It saves cost.
* API has improved marketing.
* It is used for collecting data for intelligence analytics.

TYPES OF API:

|  |  |  |  |
| --- | --- | --- | --- |
| **PUBLIC API** | **PRIVATE API** | **PARTNER API** | **COMPOSITE API** |
| It is available for use to any developer. | It is available for use within the project, to share the system and data within the business. | It is available to specific authorized outside consumers. | It is a combination of two or more APIs to have a sequence of similar operations. |
| It needs adequate authorization and authentication. | It does not require authorization and authentication. | Partners have rights to access the API. That is why stronger security mechanism, authentication and authorization. | It is beneficial for complex API behaviours. |
| An operation might monetize the API by striking a per-call cost to utilize it. | It does not need to monetize the API. | Operations do not directly monetize the API directly. | It can improve performance and speed of individual API. |