Q. What is REST API?

A REST API (Representational State Transfer Application Programming Interface) is an architectural style for designing networked applications. It's a set of rules and principles for building scalable and maintainable web services. Here are some key aspects of REST APIs:

1. **Statelessness**: Each request from a client to the server must contain all the information necessary to understand and process the request. The server should not rely on any previous requests or stored client context. This makes APIs easier to scale and more reliable.
2. **Resources**: Resources are the key abstraction of information in a REST API. A resource can be any piece of data or object, such as a user profile, a product, or a blog post. Resources are identified by unique URIs (Uniform Resource Identifiers).
3. **HTTP Methods**: RESTful APIs use standard HTTP methods to perform operations on resources:
   * GET: Retrieve a resource or a collection of resources.
   * POST: Create a new resource.
   * PUT: Update an existing resource or create a new resource if it doesn't exist.
   * DELETE: Remove a resource.
   * PATCH: Update a resource partially.
   * OPTIONS: Get information about the communication options available for a resource.
4. **Uniform Interface**: REST APIs follow a uniform interface that simplifies communication between clients and servers. This includes using standard HTTP methods, resource URIs, and representation formats (e.g., JSON or XML) for data exchange.
5. **Representation**: Resources in a REST API can have multiple representations, such as JSON, XML, HTML, or others. Clients and servers negotiate the representation format using HTTP headers like Content-Type and Accept.
6. **Hypermedia**: REST APIs can include hypermedia links along with responses, allowing clients to navigate the API dynamically. This enables a more flexible and self-descriptive API design.
7. **State Transfer**: REST APIs transfer the state of a resource between client and server using representations, allowing clients to manipulate resource state by exchanging representations.

Overall, REST APIs provide a standardized and scalable way for different systems to communicate over the internet. They are widely used in web and mobile application development, as well as in integrating disparate systems and services.

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