18 Feb Ass

March 10, 2023

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Q1. What is an API? Give an example, where an API is used in real life.
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APIs are mechanisms that enable two software components to communicate with␣
 ↪each other using a set
of definitions and protocols.
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for example , The weather bureaus sofrware system contains daily weather data.␣
 ↪The weather app on
your phone "talks" to this system via APIs  and show you daily weather updates␣
 ↪on your phone.
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Restaurants interact with databases pertaining to restaurants through a␣
 ↪restaurant apllication program
interface(API), which enable you to include pertinent restaurant and dining␣
 ↪information in your own application
these restaurant APIs make it simple to search for restaurants,query␣
 ↪datasets,and display information that consumers
are intersted in.
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Q2. Give advantages and disadvantages of using API.
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Advantages:

    - Applications :
                    Access to APIs ensures more flexibility in information-␣
 ↪transfer processes.

    - Reach :
              APIs let you create layers in apps in order to distribute␣
 ↪information to different audiences.
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   - Customization :
                    Futhermore,it can serve as a solution to create different␣
↪experiences for users, letting protocols,
                    functions, and commands be adapted according to specific␣
↪demands.

   - Efficiency :
                  When you have content that is automatically published and␣
↪made avaliable on different channels
                  simultaneously, APIs allows for more efficient data␣
↪distribution.

   - Adaptability :
                   One of the greatest benefits of APIs is the ability it has␣
↪to adapt to changes through data
                   migration and flexibility of services.
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Disadvantages:
             As a single point of entry, an API is a gateway and can become a␣
↪hacker primary target.Once the API is
       compromised, all other application and systems become vulnerable.
        APIs are vulnerable to man-in-the-middle attacks, CSRF attacks, XSS␣
↪attacks, SQL injection,and DDoS attacks.

   - Creating API is very time consuming process.
   - A fixed scale is necessary.
   - Imprecise boundary delineation.
   - To create API, programming knowledge is necessary.
   - Maintenance cost is very high.
   - It can crash when testing API.
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Q3. What is a Web API? Differentiate between API and Web API.
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API stands for Application Programming Interface. API is actually some kind of␣
 ↪interface which is having a set of functions.
These set of functions will allow programmers to acquire some specific features␣
 ↪or the data of an application.
A browser API can extends the functionality of a web browser.
A server API can extend the functionality of a web server.
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Both APIs and web service are technologies that enable the transfer of data␣
 ↪between seprate software applications.
API is an interface that exposes an applications data to outside software,␣
 ↪Whereas Web applications are one type
of API with stricter
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Q4. Explain REST and SOAP Architecture. Mention shortcomings of SOAP.
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REST(Representational State Transfer)is truly a "web services"API.REST APIs are␣
 ↪based on URLs and the HTTP protocol and use JSON
for a data format.which is super browser-compatible(it could also theoretically␣
 ↪use the SOAP protocol,as we mentioned above)
REST APIs can be simple to build and scale but they can also be massive and␣
 ↪complicated its all in how they built added on
to and they designed to do.
 REST INFORMATION:
        - REST is all about simplicity,thanks to HTTP protocols
        - REST APIs facilitate client serve communications and architecture ,if␣
 ↪its RESTFUL its is built on this client serve principle.
        - REST APIs use a single uniform interface.
        - REST is optimized for the web.
        - REST is known for excellent performance and scalability.
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SOAP(Simple Object Access Protocol) is its own protocol and is a bit more␣
 ↪complex by defining more standards than REST- things
like security and how are message are sent.these built in standard do carry a␣
 ↪bit more overhead.still,they can be a deciding factor
for organizations that require more feature in the of security tranactions and␣
 ↪ACID compliances,for sake of this comparision,we
should point out that many of the reasons why SOAP is a good choice rarely␣
 ↪apply to web service.
 SOAP INFORMATION:
        - SOAP has much tighter security.
        - Successful/retry logic for reliable messaging functionality.
        - SOAP has built-in ACID compliance.
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Q5. Differentiate between REST and SOAP.
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Rest API :

   - Rest API is implemented as ith has no offical standard at all because it␣
↪is an architectural style.
   - REST APIs is uses multiple standards like HTTP,JSON,URL,and XML for data␣
↪communication and transfer.
   - As REST API deploys and uses multiple standards as stated above, so  it␣
↪take fewer resources and bandwidth as compared to SOAP APIs.
   - REST API uses web application description language for describing the␣
↪functionalities being offered by web serve.
   - REST has SSL and HTTPS for security.
   - REST stands for Representational stae transfer.
   - REST can make use of soap as the underlying protocol web sevices. because␣
↪in the end it is just an architectural pattern.
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Soap API:

   - On other hands soap API has an offical standards because it is a protocol.
   - SOAP API is largely based and uses only HTTP and XML.
   - On other hand soap API require more resources and bandwidth as it needs␣
↪to convert the data in XML which increase it payload
     and result in a large size files.
   - On other hand soap API uses web services description laungage for the␣
↪same.
   - On other hand soap has SSL and WS security duw to which in a case like␣
↪bank account password, cardnumber.
   - On other hand soap stands for simple object access protocol.
   - On other hand SOAP can not use of REST since SOAP is a protocol and REST␣
↪is an architectural pattern.
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