API Testing Interview Questions

1. What is an API?

API is an acronym and it stands for Application Programming Interface. API is a set of routines,
protocols, and tools for building Software Applications. APIs specify how one software program
should interact with other software programs.

In simple words, API stands for Application Programming Interface. API acts as an interface between two software applications and allows the two software applications to communicate with each other. API is a collection of software functions which can be executed by another software program.

2. What is API Testing?

API testing is a type of software testing that involves testing APIs directly and also as a part of integration testing to check whether the API meets expectations in terms of functionality, reliability, performance, and security of an application. In API Testing our main focus will be on the Business logic layer of the software architecture. API testing can be performed on any software system which contains multiple APIs.

3. What are the common API Testing Types?

API testing typically involves the following practices:
Unit testing
Functional testing
Load testing
Runtime/ Error Detection
Security testing

UI testing
Interoperability and WS Compliance testing
Penetration testing
Fuzz testing

4. Name some of the common protocols used in API Testing?

Some of the protocols using in API Testing are as follows:
REST
SOAP
JMS
UDDI

5. Difference between API and Web services?

Web services:

1. All web services are APIs

2. All web services need to be exposed over web(HTTP)

3. A Web service uses only three styles of use: SOAP, REST and XML-RPC for communication

A Web service always needs a network to operate
APIs:

1. All APIs are not web services

2. All APIs need not be exposed over web(i.e. HTTP)

3. API uses multiple ways for communication e.g. DLL les in C/C++, Jar les/ RMI in java, Interrupts in Linux kernel API etc.

4. APIs don't need a network for operation

6. What is Soap?

SOAP stands for Simple Object Access Protocol. It is an XML based messaging protocol. It helps
in exchanging information among computers.

7. What is Rest API?

REST stands for Representational State Transfer. It is a set of functions helping developers in performing requests and receiving responses. Interaction is made through HTTP Protocol in REST API.

8. Difference between SOAP and REST?

SOAP:

1. SOAP is a protocol through which two computers communicate by sharing XML document

2. SOAP supports only XML format

3. SOAP does not support caching

4. SOAP is slower than REST

5. SOAP is like custom desktop application, closely connected to the server

6. SOAP runs on HTTP but envelopes the message

REST:

1. REST is a service architecture and design for network-based software architecture

2. REST supports different data formats

3. REST supports caching

4. REST is faster than SOAP

5. REST client is just like a browser and uses standard methods

6. REST uses the HTTP headers to hold meta information

9. What are the common tests that are performed on APIs?

Some of the common tests we perform on APIs are as follows.

1. Verify whether the return value is based on input condition. Response of the APIs should be verified based on the request.

2. Verify whether the system is authenticating the outcome when the API is updating any data structure

3. Verify whether the API triggers some other event or request another API

4. Verify the behavior of the API when there is no return value

10. What are the advantages of API Testing?

API Testing is time effective when compared to GUI Testing. API test automation requires less code so it can provide faster and better test coverage.
API Testing helps us to reduce the testing cost. With API Testing we can nd minor bugs before the GUI Testing. These minor bugs will become bigger during the GUI Testing. So finding those bugs in the API Testing will be cost effective to the Company

API Testing is language independent

API Testing is quite helpful in testing Core Functionality. We can test the APIs without a user interface. In GUI Testing, we need to wait until the application is available to test the core functionalities

API Testing helps us to reduce the risks

11. What exactly needs to be verified in API Testing?

Basically, on API Testing, we send a request to the API with the known data and we analyze the response.
1. Data accuracy
2. HTTP status codes
3. Response time
3. Error codes in case API returns any errors
4. Authorization checks
5. Non functional testing such as performance testing, security testing

12. Name some tools used for API Testing?

Some of the tools used for API Testing are as follows:
Postman
Katalon Studio
SoapUI
Assertible
Tricentis Tosca

Apigee

JMeter

Rest-Assured

Karate DSL

API Fortress

Parasoft

HP QTP(UFT)

vREST

Airborne

API Science

APIary Inspector

Citrus Framework

Hippie-Swagger

HttpMaster Express

Mockbin

Ping API

Pyresttest

Rest Console

RoboHydra Server

SOAPSonar

Unirest

WebInject

13. List some most used templates for API documentation?

Some of the API documentation templates are as follows.
Swagger
FlatDoc
RestDoc
API blueprint
Slate
Miredot
Web service API Specification

14. Name some of the API examples which are quite popular.

Some of the popular API examples are
Google Maps API
YouTube
Twitter
Amazon Advertising API

15. Difference between API testing and Unit Testing?

UNIT TESTING:

Unit testing is conducted by Development Team

Unit testing is a form of White box testing

Unit testing is conducted prior to the process of including the code in the build

Source code is involved in Unit testing

In unit testing, the scope of testing is limited, so only basic functionalities are considered for testing

API TESTING:

API testing is conducted by QA Team

API testing is a form of Black box testing

API testing is conducted after the build is ready for testing

Source code is not involved in API testing

In API testing, the scope of testing is wide, so all the issues that are functional are considered for testing

16. What are the main challenges faced in API testing?

Some of the challenges we face while doing API testing are as follows
Selecting proper parameters and its combinations
Categorizing the parameters properly
Proper call sequencing is required as this may lead to inadequate coverage in testing
Verifying and validating the output
Due to absence of GUI it is quite difficult to provide input values

17. What are the types of bugs we face when performing API testing?

Issues observed when performing API testing are

Stress, performance, and security issues

Duplicate or missing functionality

Reliability issues

Improper messaging

Incompatible error handling mechanism

Multi-threaded issues

Improper errors

18. How is UI testing not similar to API testing?

UI (User Interface) testing is to test the graphical interface part of the application. Its main focus
is to test the look and feel of an application. On the other hand, API testing enables
communication between two different software systems. Its main focus is in the
business layer of the application.

19. Name some most commonly used HTTP methods?

Some of the HTTP methods are:

GET: It enables you to retrieve data from a server

POST: It enables you to add data to an existing le or resource in a server

PUT: It lets you replace an existing le or resource in a server

DELETE: It lets you delete data from a server

PATCH: It is used to apply partial modifications to a resource

OPTIONS: It is used to describe the communication options for the target resource

HEAD: It asks for a response identical to that of a GET request, but without the response
body

20. Can you use a GET request instead of PUT to create a resource?

No, GET request only allows read only rights. It enables you to retrieve data from a server but cannot create a resource. PUT or POST methods should be used to create a resource.

21. What is the difference between PUT and POST methods?

PUT and POST methods are sometimes confused in regards to when each should be used. Using POST request, our intent is to create a new object on the server whereas with PUT request, our intent is to replace an object by another object.
POST should be used when the client sends the page to the server and then the server lets the client know where it put it. PUT should be used when the client species the location of the page