

Q.You need to research Web Services (SOAP, JSON, REST) this will be used most of the time in API Communication.

SOAP:(Simple Object Access Protocol)

It is a messaging protocol specification for exchanging structured information in the implementation of web services in computer networks. Its purpose is to provide extensibility, neutrality, verbosity and independence. It uses XML Information Set for its message format, and relies on application layer protocols, most often Hypertext Transfer Protocol (HTTP), although some legacy systems communicate over Simple Mail Transfer Protocol (SMTP), for message negotiation and transmission.

SOAP allows developers to invoke processes running on disparate operating systems (such as Windows, macOS, and Linux) to authenticate, authorize, and communicate using Extensible Markup Language (XML). Since Web protocols like HTTP are installed and running on all operating systems, SOAP allows clients to invoke web services and receive responses independent of language and platforms.

It is an XML-based protocol consisting of three parts:

- an envelope, which defines the message structure and how to process it
- a set of encoding rules for expressing instances of application-defined data types
- a convention for representing procedure calls and responses

JSON(JavaScript Object Notation):

JSON is a syntax for sorting and exchanging data.

It is a text, written in JavaScript object notation.

JSON is a language-independent data format. It was derived from JavaScript, but many modern programming languages include code to generate and parse JSON-format data. The official Internet media type for JSON is `application/json`. JSON filenames use the extension `.json`.

Douglas Crockford originally specified the JSON format in the early 2000s. JSON was first standardized in 2013, as ECMA-404. RFC 8259, published in 2017, is the current version of the Internet Standard STD 90, and it remains consistent with ECMA-404. That same year, JSON was also standardized as ISO/IEC 21778:2017. The ECMA and ISO standards describe only the allowed syntax, whereas the RFC covers some security and interoperability considerations.

REST(Representational state transfer):

Representational state transfer (REST) is a software architectural style that defines a set of constraints to be used for creating Web services. Web services that conform to the REST architectural style, called *RESTful* Web services, provide interoperability between computer systems on the Internet. RESTful Web services allow the requesting systems to access and manipulate textual representations of Web resources by using a uniform and predefined set of stateless

operations. Other kinds of Web services, such as SOAP Web services, expose their own arbitrary sets of operations.