

API:

Letter	Word	Meaning
A	Application	Software that does a task
P	Programming	Program (P) that does the task in the Application (A)
I	Interface	Place (I) to tell the program (P) to run

So what is an API?

An API exists where you can tell (I) a computer program (P) to run in an application (A)

What makes APIs great?

- Just use the program don't write it!
- Platform independent
- Upgrade safe

Exercise! For each API example, determine what is the A (Application) P (Program) and I (Interface).

API Definition: You tell (I) a program (P) to run in an application (A)

Interface (I): From where are you telling the program to run?

Program (P): What task is being done/what does the program do?

Application (A): What software has the program being run?

Level of Difficulty	Example	I (Interface)	P (Program)	A (Application)
Simple	Viber message using cell phone	Cell phone	Messaging	Viber
Simple	Google search using computer	Computer	Search	Google
Moderate/Complex	Create orders in eBay when you get them (no browser)	eBay	Create order	eBay
Moderate/Complex	Create orders in SAP when you get them (no browser)	SAP	Create order	SAP

REQUEST - request is sent

PROGRAM – program is run

RESPONSE – response is received

we add parameter to URL (Uniform Resource Locator) endpoint using “?”

Egg www.url.com/search?q=tune

What is mashup?

Making 1 API from bunch of another API.

What is a web service?

WEB – internet

Service – API

web service – API that uses the internet.

All web services are an API. But not all API are web services. Not all API use internet.

Web service uses – xml or Json to format data over internet.

REST, SOAP, XML / RPC to transfer data.

Intro to http:

4 parts of http.

HTTP	REQUEST	RESPONSE
START LINE	Http version Http 1.1 method – GET, POST, DELETE, PUT etc. query.	Http 1.1 Status code
HEADERS	HOST: e.g., URL domain	COOKIE
BLANK LINE		
BODY	USERNAME, PASSWORD	HTML

Only start line is mandatory.

http parts:

Http startlines:

	Request	Response
Name	Start line, request line	Start line, response line, status line
Http version	http/1.1	http/1.1
Method	Get, post, put, delete etc.	no
API program folder location	Yes /search	no
Parameter	Yes? q=tune	no
Status code	no	200 oks
Format	Method api_program_folder_location+parameter http version	http version + status code
Example	GET /search?q=tune HTTP 1.1	

POST is not idempotent.

HTTP headers:

We can use multiple header lines.

Body contains content which we want to send to API.

We can send our data using API in form of json or xml.

Http body – content sent to / from API

What header line describe type of content in http body? content-type

Content type: data, image, web page, audio, video etc.

Content type used for sending / receiving data using API – XML, JSON.

Stateless:

http stateless – request unknown.

http is stateless by default.

http methods: REST and SOAP. – all are stateless.

REST: representational state transfer

SOAP – Simple object access protocol.

Stateful – file transfer protocol (FTP)

Http is stateless – it does not store data; cookie is used for storing data.

Cookie contains session id.

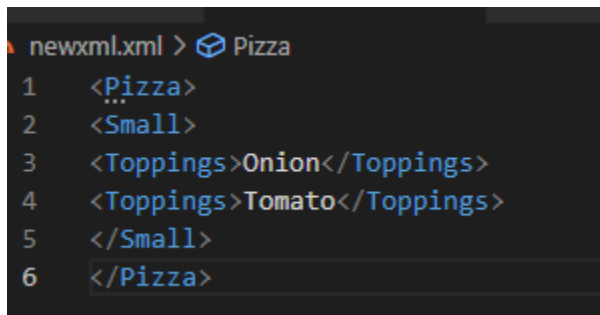
XML: extensible markup language.

HTTP header line: Content-Type: application/xml

HTTP BODY: XML

XML uses tags just like HTML. But tag is just placeholder for specific value.

XML files have extension .xml.



```
newxml.xml > Pizza
1  <Pizza>
2  <Small>
3  <Toppings>Onion</Toppings>
4  <Toppings>Tomato</Toppings>
5  </Small>
6  </Pizza>
```

This xml file when open in browser will appear as.

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
▼<Pizza>
  ▼<Small>
    <Toppings>Onion</Toppings>
    <Toppings>Tomato</Toppings>
  </Small>
</Pizza>
```

JSON:

JavaScript object notation.

Content-Type: application/json

HTTP body: JSON

JSON uses key value pair.

Creating json for above xml file.



```
{ } newjson.json > ...
1  { "Pizza" : [
2    { "Size" : "Small" ,
3      "Toppings" : ["Onion" , "Tomato" ]
4    }
5  ]
6 }
7 |
```

We can view this file in chrome, add jsonview extension to chrome for viewing json data and allow access to local files for extension.

XML is more powerful. JSON is simple, xml is complicated.

SOAP VS REST: