API details:

Authentication : It is like Username and Password to login to a System.

Authorization : It is like opening some website where you don’t have permission or access.

**In REST API, it is like you always access the End point or a Particular Resource, so that is why Authorization is used in API’s and not Authentication.**

Usually OAuth or Token based Authentication is used.

To comply for a SOAP Webservice:

* SOAP Webservice communicates only XML format
* It will have SOAP Envelope, Header (Optional) and the body.
* It should follow the protocol standards laid by W3C (World Wide Web Consortium)

API:

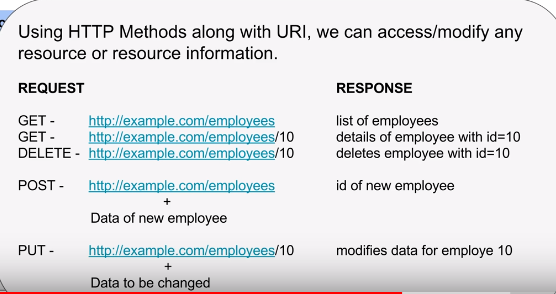
* API Enables communication between two applications.
* The two applications can be developed using two different platforms, languages and Database.
* Medium – HTTP, Format – JSON, XML
* Ex: Online Travel booking system, fetches the data from other applications over the web and gives the details, it is a Webservice API
* Web Service provider is the web server like apache, it gets the request and sends the response.
* In Simple terms, An API which works over the web / internet are called Web Service.
* Ex 2: Suppose am developing an Android/ web application which needs to use GMAP, so we can just integrate Google Map API into our script.
* Ex 3: Top companies they have ready Algorithms, Data structure and using technologies like Deep learning, Machine learning and all. So we can use their API’s and integrate in our programming to achieve our goal.

WEB Services:

* Web Service is like a Client server architecture where you send a request and get a response over the network but API’s need not be over the network, it can be a library or a software in the same application / device.
* Web Service needs to be across the Web, HTTP.
* Two types of web services: SOAP & REST
* Web Service enables communication between applications over the web.
* Provides a standard format/protocol for communication.
* Platform independent communication.
* Third party applications exposed their webservices in the form of API’s and companies like MakemyTrip/ ClearTrip uses these API to fetch the data in real time.
* SOAP and REST are two WebServices.
* **SOAP** -> Simple Object Access Protocol, Medium is HTTP(POST) and the format is XML .
* A web service that complies/follows to the **SOAP Web Services Specifications** is a SOAP Web Service.
* **W3C -> World wide web Consortium ->** A international Community that defines the standards.
* **SOAP** XML message consist of: **Envelope, Header and a Body**
* **REST -> RE**presentational **S**tate **T**ransfer, Medium is HTTP(POST, GET, PUT. DELETE) and the format is XML/JSON/TEXT…
* **REST** is an architectural style.
* **Uniform Resource Identifier** (URI) is a string of characters used to identify a resource either by location (URL), or a name (URN), or both (URL and URN). A URI has two specializations known as URL (Uniform Resource Locator) and URN (Uniform Resource Name)
* Any information that can be named can be a resource: a document or image and so on
* Any resource or a data can be accessed by a URI.
* **Web Services Description Language – WSDL**

Service provider publishes an interface for his web services that describes all attributes of the web services. This XML basaed interface and is called WSDL.

* A web service provider publishes his web service (through wsdl) on an online directory from where consumers can query and search the web services. This online registry/directory is called **UDDI** stands for **Universal Description, Discovery and Integration**.
* C = CREATE = **POST**
* R= READ=**GET**
* U= UPDATE=**PUT**
* D=DELETE=**DELETE**



* **REST is flexible, light weight and easy compared to SOAP**

# Soap UI:

The link for the WSDL which gives information on the country:

Below is for the SOAP project:

<http://webservices.oorsprong.org/websamples.countryinfo/CountryInfoService.wso?wsdl>

1. Copy the above URI and paste it in the new SOAP project.

Project >Test Suite > Test case > Test Step

Below is for the REST Project:

URI: <https://restcountries.eu/rest/v2/all>

Properties :

* Properties can be used as variables to store values that can be referred in testing.

${#Project#PropertyName}

POSTMAN tool:

* Can be installed as a Chrome plugin or Download and install as an application
* Install the KB2533623 on windows 7 if you get kernel dl issue.
* Link of KB : <https://www.youtube.com/redirect?v=FUmzPZYF3Yk&redir_token=n532VXcjNtDh3nAkxGmI8KRLPpN8MTU4MjAwNDA1MkAxNTgxOTE3NjUy&event=video_description&q=https%3A%2F%2Fwww.microsoft.com%2Fen-us%2Fdownload%2Fdetails.aspx%3Fid%3D26764>
* Collections is like a Test suite, which contains Requests and tests.
* Workspace lets you to create our path and directory and our requests will be stored in that.
* URL (Uniform resource Locator) = Domain + URI (Uniform resource identifier)

Domain = [www.google.com](http://www.google.com)

URI=search?sxsrf=ACYBGNSldKGB46bqFr-7M5uXL5oB3jUEtg%3A1581942122640&source=hp&ei=aoVKXtnpJLbXsPrWYoAQ&q=selenium&

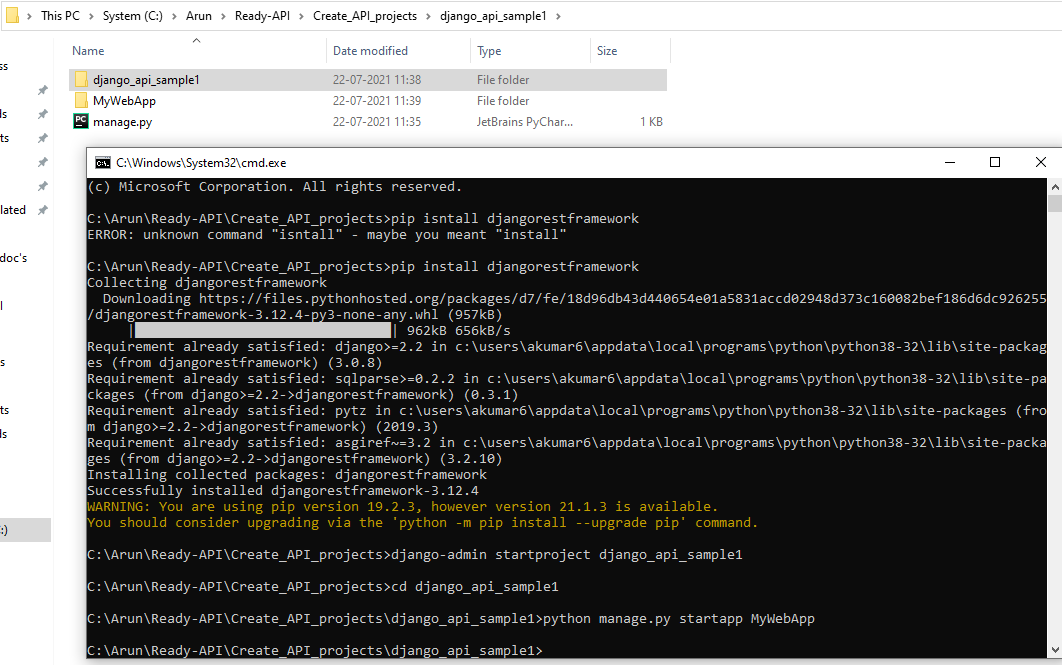
* Before starting our testing we need - Webservice specification document
* URL is called the Endpoint which is Domain + URI

For a API Request to send below are the inputs we need:

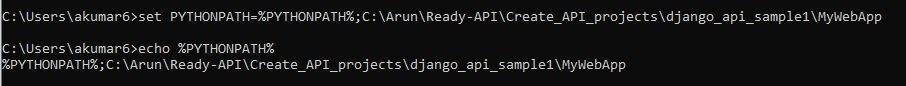
* Request URL
* Resources
* Headers
* Parameters
* Authentication credentials
* Environment

# Create Simple API using Python Django REST Framework.

* pip install djangorestframework
* django-admin startproject SampleProject
* cd SampleProject
* python manage.py startapp MyWebApp



* Set the PYTHONPATH Variable to the folder from where the module is imported, else will get ModuleNotFound Error



Modifiy the views.py, urls.py, settings.py

* python manage.py runserver