**URI, URL and URN**

Uniform Resource Identifier (URI) is a string of characters used to

- identify a resource using name or

- Locate a resource in the network

A URI identifies a resource either by location, or a name, or both. A URI has two specializations

1. URL (Uniform Resource Locator) and

2. URN (Uniform Resource Name)

URN ONLY identifies the resource and does not let us know availability of the resource. A URN has to be of this form "urn:"

URL that specifies where an identified resource is available and the mechanism for retrieving it. URL does not have to be HTTP URL (http://), a URL can also be (ftp://) or (smb://) or (jdbc:)

For example,

- A URN is similar to a person's name, while

- A URL is like a street address.

- The URN defines something's identity, while the URL provides a location.

- Essentially, "what" vs. "where"

To put it differently,

- A URL is a URI

- A URN is a URI

- but URNs and URLs are different, A URI is not necessarily a URL

Few Examples:-

URL: ftp://ftp.is.co.za/rfc/rfc1808.txt

URL: http://www.ietf.org/rfc/rfc2396.txt

URL: ldap://[2001:db8::7]/c=GB?objectClass?one

URL: mailto:John.Doe@example.com

URL: news:comp.infosystems.www.servers.unix

URL: telnet://192.0.2.16:80/

URN (not URL): urn:oasis:names:specification:docbook:dtd:xml:4.1.2

URN (not URL): urn:isbn:0-486-27557-4

**Web URL (Web Uniform Resource Locator's)**

Web URL, uniquely identifies a particular web resource inside a web application

In other words, every web resource should have its unique address in the form of Web URL

Max. number of characters allowed in Web URL is around 2000 characters (exact number depends on Browser. For ex, IE supports 2048 characters)

Web URL Structure:

Protocol://Domain:Port/Path?QueryString#FragmentID

Protocol in case of Web URL is always http or https

Domain Name uniquely identifies a computer in a network in which web application is present. It can be Computer Name/DNS Name (preferred) or IP address

Port number in Web URL uniquely identifies web server application

Default port number for HTTP is 80 & HTTPS is 443

In Tomcat Webserver, default port number for HTTP is changed from 80 to 8080 and default port number for HTTPS is changed from 443 to 8443

Path is the full path of the web resource at web application side.

- It consists of, Web Application Name / Configured URL of a Resource

- "Web Application Name" uniquely identifies One web application inside webserver

- "Configured URL" uniquely identifies web resource inside that web application

Query String is a name & value string pair which passes information in the form of name=value pair to web resources. In URL, It’s an optional information and if present, it starts with question mark followed by one or more name=value pair which are separated by an ampersand(&)

A Fragment ID or Fragment Identifier, as the name implies, it refers to a particular fragment / a section within a web page

Matrix Parameters are a set of “name=value”. They can be present anywhere in URL (generally used with **path**) & URL can consist of N number of Matrix parameters but they should be separate by a semi colon “;“

The important difference between Query Parameters & Matrix Parameters is that,

- Matrix Parameters apply to a particular path element while

- Query Parameters apply to the request as a whole

- This comes into play when making a complex REST-style query to multiple levels of resources and sub-resources

**Note:-**

- Apart from Domain Name rest of the components of Web URL are Optional

- Few Examples:-

http://www.google.com/search?q=Praveen

https://www.google.co.in/search?q=ABC&sitesearch=www.youtube.com

<http://www.example.com/res/categories;name=foo/objects;name=green/?page=1>