What is REST architecture?

REST stands for REpresentational State Transfer. REST is web standards based architecture and uses HTTP Protocol. It revolves around resource where every component is a resource and a resource is accessed by a common interface using HTTP standard methods. REST was first introduced by Roy Fielding in 2000.

In REST architecture, a REST Server simply provides access to resources and REST client accesses and modifies the resources. Here each resource is identified by URIs/ global IDs. REST uses various representation to represent a resource like text, JSON, XML. JSON is the most popular one.

HTTP methods

Following four HTTP methods are commonly used in REST based architecture.

* **GET** − Provides a read only access to a resource.
* **POST** − Used to create a new resource.
* **DELETE** − Used to remove a resource.
* **PUT** − Used to update a existing resource or create a new resource.

Introduction to RESTFul web services

A web service is a collection of open protocols and standards used for exchanging data between applications or systems. Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks like the Internet in a manner similar to inter-process communication on a single computer. This interoperability (e.g., between Java and Python, or Windows and Linux applications) is due to the use of open standards.

Web services based on REST Architecture are known as RESTful web services. These webservices uses HTTP methods to implement the concept of REST architecture. A RESTful web service usually defines a URI, Uniform Resource Identifier a service, provides resource representation such as JSON and set of HTTP Methods.

Creating RESTFul Webservice

In next chapters, we'll create a webservice say user management with following functionalities −

**JAX-RS** stands for JAVA API for RESTful Web Services. JAX-RS is a JAVA based programming language API and specification to provide support for created RESTful Web Services. Its 2.0 version was released on the 24th May 2013. JAX-RS uses annotations available from Java SE 5 to simplify the development of JAVA based web services creation and deployment. It also provides supports for creating clients for RESTful Web Services.

## Specifications

Following are the most commonly used annotations to map a resource as a web service resource.

|  |  |
| --- | --- |
| **Sr.No.** | **Annotation & Description** |
| 1 | **@Path**  Relative path of the resource class/method. |
| 2 | **@GET**  HTTP Get request, used to fetch resource. |
| 3 | **@PUT**  HTTP PUT request, used to create resource. |
| 4 | **@POST**  HTTP POST request, used to create/update resource. |
| 5 | **@DELETE**  HTTP DELETE request, used to delete resource. |
| 6 | **@HEAD**  HTTP HEAD request, used to get status of method availability. |
| 7 | **@Produces**  States the HTTP Response generated by web service. For example, APPLICATION/XML, TEXT/HTML, APPLICATION/JSON etc. |
| 8 | **@Consumes**  States the HTTP Request type. For example, application/x-www-formurlencoded to accept form data in HTTP body during POST request. |
| 9 | **@PathParam**  Binds the parameter passed to the method to a value in path. |
| 10 | **@QueryParam**  Binds the parameter passed to method to a query parameter in the path. |
| 11 | **@MatrixParam**  Binds the parameter passed to the method to a HTTP matrix parameter in path. |
| 12 | **@HeaderParam**  Binds the parameter passed to the method to a HTTP header. |
| 13 | **@CookieParam**  Binds the parameter passed to the method to a Cookie. |
| 14 | **@FormParam**  Binds the parameter passed to the method to a form value. |
| 15 | **@DefaultValue**  Assigns a default value to a parameter passed to the method. |
| 16 | **@Context**  Context of the resource. For example, HTTPRequest as a context. |