

final project

WEB SERVICES



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VANIER COLLEGE

# Web service

Web Services is used to established communication between machines. It provides end to end interface. Request is made by the use from one end and get response from the web. It is a object oriented Web-Based interface to the servers.

# Rest API

Representational state transfer is an architectural Style web services. It is not a protocol or a standard. API developers can implement it in number of ways as per their needs. Rest is based on URI and HTTP protocol which use JSON data format to response to the user request. JSON is readable both by human and machine, so it become popular, whereas Rest is Server driven, fast and acquire low bandwidth.

{"first\_num":"1","second\_num":"2","operator":"Add","result":3}

# AJAX

AJAX is used to connect HTML page from client end to server side where API is deployed through java Script, which can be possible with XMLHttpRequest.AJAX is used to load the specific content of HTML page instead of loading whole page. Html page does not need server to execute it directly run from web browser. So, the origin is null. CORS is used to make request to server where the request is originated. To do so we must add cores to API which is deployed on server. CORS is part of the AJAX engine.

# AWS Service

We have used Elastic Beans stock to deploy API on AWS and S3 to upload the HTML, CSS and JavaScript files which are used to link with API through AJAX XMLHttp request.EC2 is cloud platform where interface is made to deploy the API.

# GET request and a POST request

In GET request the parameters are passes in URL whereas in POST request the parameters are passes in body which is not seen in the URL. POST is more secure than GET in terms of security because after passing the parameter in the body it is not visible in the URL but for GET is we pass parameters in the body also it is visible in the URL after passing.

# Postman

Postman is the best platform to test your API and make it better for end-to-end testing. It allows for developers to test their API to make it user-friendly interface . Postman is the only available tool used to test post and get request in the URL and improve the interface after testing.

# common attacks on an APIs

There are many attacks like DOS, SQL injection, XXS and DDOS.DOS stands for denial of service. It is a type of attack where attacker send a greater number of traffic than the server can handle. For example, on online sale like Quebec day when number of users increases more than usual than service can face DOS attack. It also can be called flash cloud; it is a type where genuine user visits the website and visitor increases more than usual and leads to DOS. Sending a lot of requests to server so that server fails to send back the response.

When one attacker send the traffic to a specific website than it is called DOS.

When multi-Attacker send traffic on same website or server than it is called DDOS. This can only be possible if attacker is part of botnet.

SQL injection is a type of injection when attacker pass sql query in username. This can exploit the database sql query and can share all sensitive data. For example SELECT user\_id FROM users WHERE username=’$username’ AND password=’$password’. For attack the database attacker pass SELECT user\_id FROM users WHERE username=’’OR 1=1 #.

XXS attack is more popular these days. It is done through java script,where attacker pass javascript in alert format and content is related to user like in facebook or google can add javascript in comment if other user read the comment automatically his system will get populated with malicious javascript.

Protection against XSS in PHP

XXS attack is more popular these days. It is done through java script, where attacker pass JavaScript in alert format. To prevent this, we must sanitize the data. IN XXS we must use strip Tages before entering database to make data more secure and sanitized.

Protection against SQL Injection in PHP

The prevention against SQL query is to sanitized data, so that malicious or infected data cannot reached to database. This can be done by adding functions like mysqli real\_escape\_string(). It is used to escape special charter in the string.

# API Working

We make three files the build calculator.

1. New.html file to show the frontend connected to JavaScript to file query to send request to API.
2. AjaxCal.js file is used to connect HTML with API through Ajax. When we send request from html page to calculate, JavaScript request Listener is also loaded and call API to do calculations.
3. ProjectWS\_final.php is a file containing php code to calculate the Addition, Subtraction, Multiply, Divide, Power, and Factorial. Give response in JSON format.
4. WBXML file is also in php with code related to calculation but provide response in XML.

**API Elastic Beanstalk link deploy on postman to check the results both in JSON and XML.**

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

**URL:**

[vanierwb-env.eba-ppm3r4qn.ca-central-1.elasticbeanstalk.com/ProjectWS\_final.php?first\_num=3&second\_num=6&operator=Add](http://vanierwb-env.eba-ppm3r4qn.ca-central-1.elasticbeanstalk.com/ProjectWS_final.php?first_num=3&second_num=6&operator=Add)

Steps to upload file on Elastic Beanstalk.

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A screenshot of a computer

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Graphical user interface, application, Word

Description automatically generated

**URL:**

[vanierwb-env.eba-ppm3r4qn.ca-central-1.elasticbeanstalk.com/WebProject/ProjectWS\_final.php?first\_num=3&second\_num=6&operator=Add](http://vanierwb-env.eba-ppm3r4qn.ca-central-1.elasticbeanstalk.com/WebProject/ProjectWS_final.php?first_num=3&second_num=6&operator=Add)

# XML OUTPUT

Graphical user interface, application, Word

Description automatically generated

<http://apivanier-env.eba-iuzhxbbk.ca-central-1.elasticbeanstalk.com/project/WBXML_final.php?first_num=3&second_num=6&operator=Add>

Graphical user interface

Description automatically generated

# AJAX OUTPUT

Graphical user interface, text

Description automatically generated

URL: [Web Services Project (eba-ppm3r4qn.ca-central-1.elasticbeanstalk.com)](http://vanierwb-env.eba-ppm3r4qn.ca-central-1.elasticbeanstalk.com/WebProject/new.html)

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