

# Concurrent Web Server and AWS Client (September 2019)

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**Abstract**—This document defines the Web Services Architecture. It identifies the functional components and defines the relationships between those components to effect the desired properties of the overall architecture. It also defines the architecture of a web service stored remotely in an Amazon EC2 virtual machine.

## I. INTRODUCTION

Elaboration of a Web server (Apache type) that receives multiple simultaneous (concurrent) requests and gives a response in the form of an HTML or jpg image, in addition to the above an IOE framework was built from the POJO.

POJOs are instances of classes that do not extend, or implements nothing, which allows for legibility and reuse of a program. Web servers can be of two kinds:

- Static: files are sent as they are soul- had dinner.
- Dynamic: They carry out operations with the data before send a reply to the client

Typically web servers such as Apache are used for the bigger application development but on this occasion we are going to describe the development of a web server in java.

## II. CLASS DIAGRAM

This class diagram describes the logical structure of the project, divided into two main components.

- Project: Containing the main classes, essential for the operation of the application. (AppServer, Controller, Web)
- Node: This component contains the classes that handle the URLs. (URLHandler, Handler)

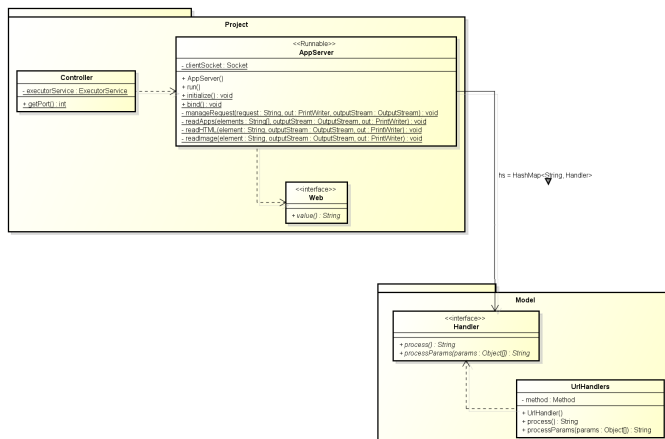


Fig. 1. Class Diagram

## III. SOFTWARE ARCHITECTURE

- Presentation: you will find the web application that is the interface with which the user interacts, this web application is finds deployed in heroku requests a resource either html, png or some method.
- Service: The service layer contains the frameworks and the web server, this calls the controller and connects with the application that provides the service that gives answer of a method or a resource, depending on the request.

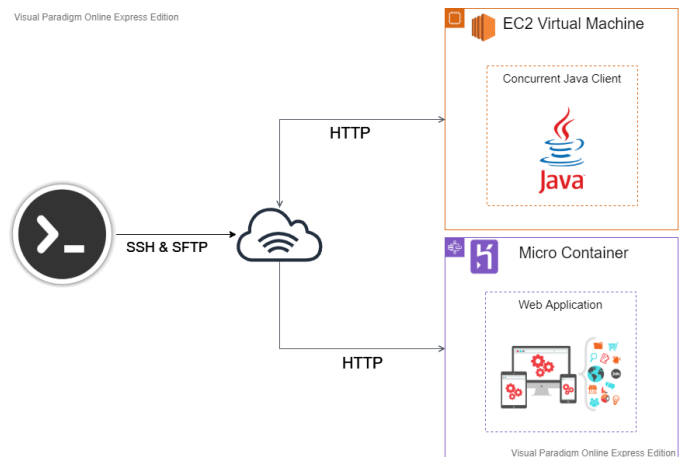


Fig. 2. Software Architecture Diagram

## IV. DEPLOYMENT DIAGRAM

The deployment of the web service was made in heroku according to the established requirements, this service is listened by port 4567, Heroku's default port, is divided into two modules, the first is the interaction that the user performs through the browser and the second module has as a component the web service and how it interacts with the other components.

The concurrent service deployment is done through port 5000; while the client is deployed in an AWS EC2 virtual machine, it will make HTTP requests to the server.

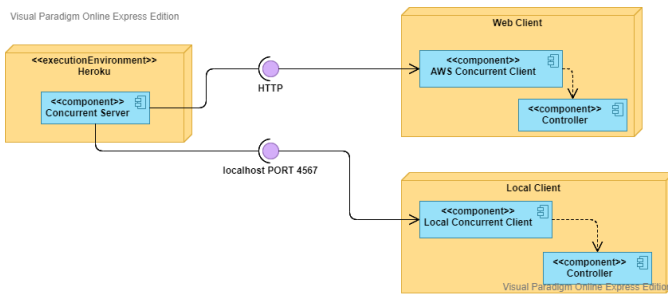


Fig. 3. Deployment Diagram

## V. APPLICATION WEB

The web application was deployed in heroku which receives requests for port 4567, this application is built with Maven and use of POJOs Petitions you receive:

- Html
- JPG
- Add two numbers
- Test case
- or sergios-framework.herokuapp.com

## VI. ENTERPRISE ARCHITECTURE

Through an account in AWS Educate, we created a virtual machine EC2 which allows us to remotely maintain the client who makes concurrent requests to the server stored in Heroku. It proceeds to show the authorship of the account and the connection to it.

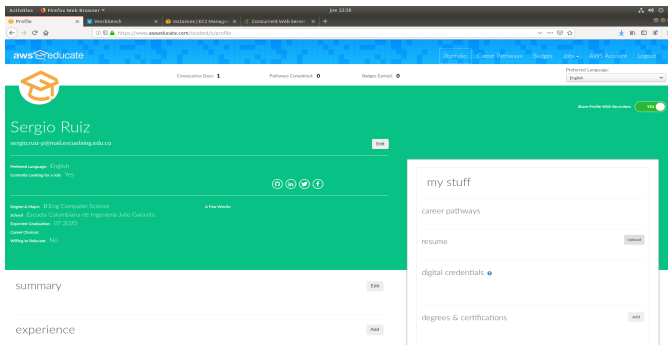


Fig. 4. AWS Educate Account

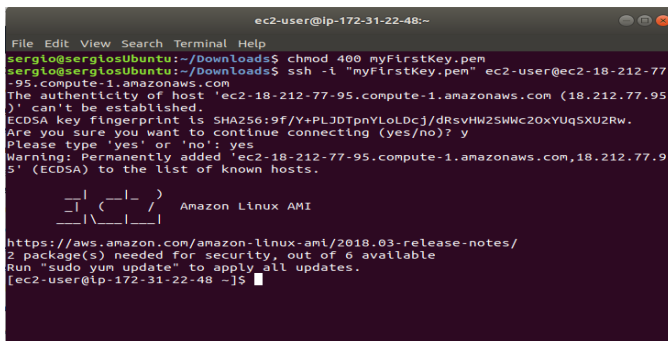


Fig. 5. Successful Connection to AWS Console

## VII. CONCURRENT TESTING

Tests were performed locally and with the remote client at AWS. The tests try to perform N number of concurrent requests to the server and calculate its response time.

- Local Testing

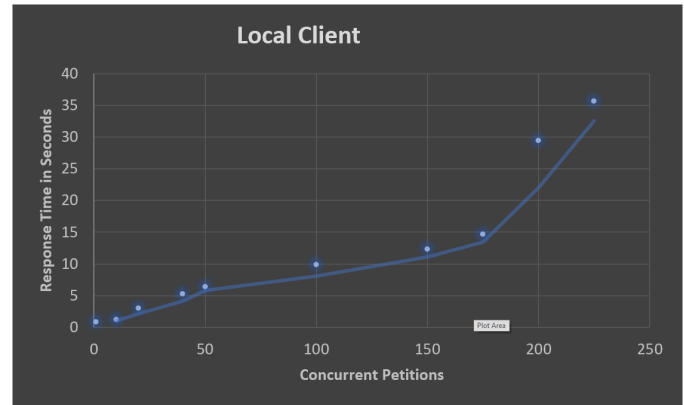


Fig. 6. Deployment Diagram

- AWS Client

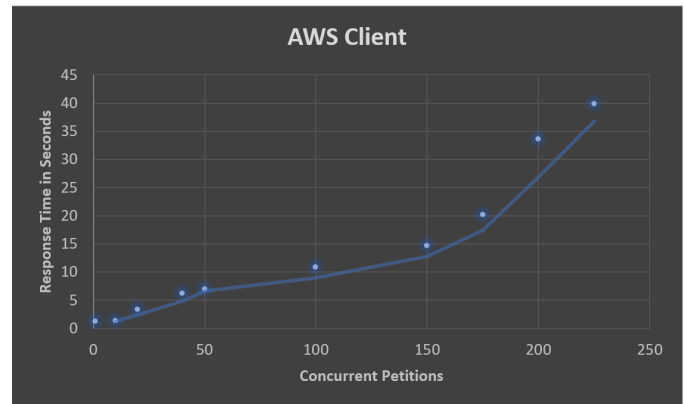


Fig. 7. Deployment Diagram

## VIII. CONCLUSION

The use of POJOs notation allows us to understand how a web server is structured and how through these notes we can perform HTTP requests. Likewise, a web server could be made with the corresponding framework that allowed us to understand how work from the most basic functions, as it is, initialize the classes to generate the corresponding request made by the user.

## IX. REFERENCES

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