Multi-Tier Web Application Stack Setup locally on VMs and on AWS Cloud using EC2

(Hands on Practice from Udemy) Date: Feb 15, 2022

Scenario

Consider a running project which has varieties of services that powers our run time. We are required to create set up of Multitier Java Web Application Stack consists of tomcat application server, MySQL db, memcache, rabbitmq, nginx on Virtual machine by using Oracle Virtual box and on AWS EC2.

Problems

- Not comfortable in making changes in real servers.
- Local setup is complex
- Time consuming
- Not repeatable

Solution

- Listed problems are overcome by creation of Local Set up on VM.
- It should be repeatable
- Automated
- Code (IAAC)
- R&D in your own machine

Tools to be used

- On VM, ORACLE VM Virtual box, Vagrant, Git Bash, VS Code Text editor
- On AWS,

Architecture of Project Services

- NGINX, TOMCAT, Rabbit MQ, Memcached and MYSQL

Steps to be followed:

For VM's

- Download Oracle Virtual box and finish the initial process
- Keep the source code of java web application which runs on tomcat server ready
- Install gitbash on your local machine, install vagrant on that and configure.
- Bring up the vagrant to up virtual machines for below list of each services as per the required OS mentioned
    1) MySQL – CentOS
    2) Memcached – CentOS
    3) Rabbit MQ - CentOS
    4) Tomcat – Ubuntu

5) Nginx – Ubuntu

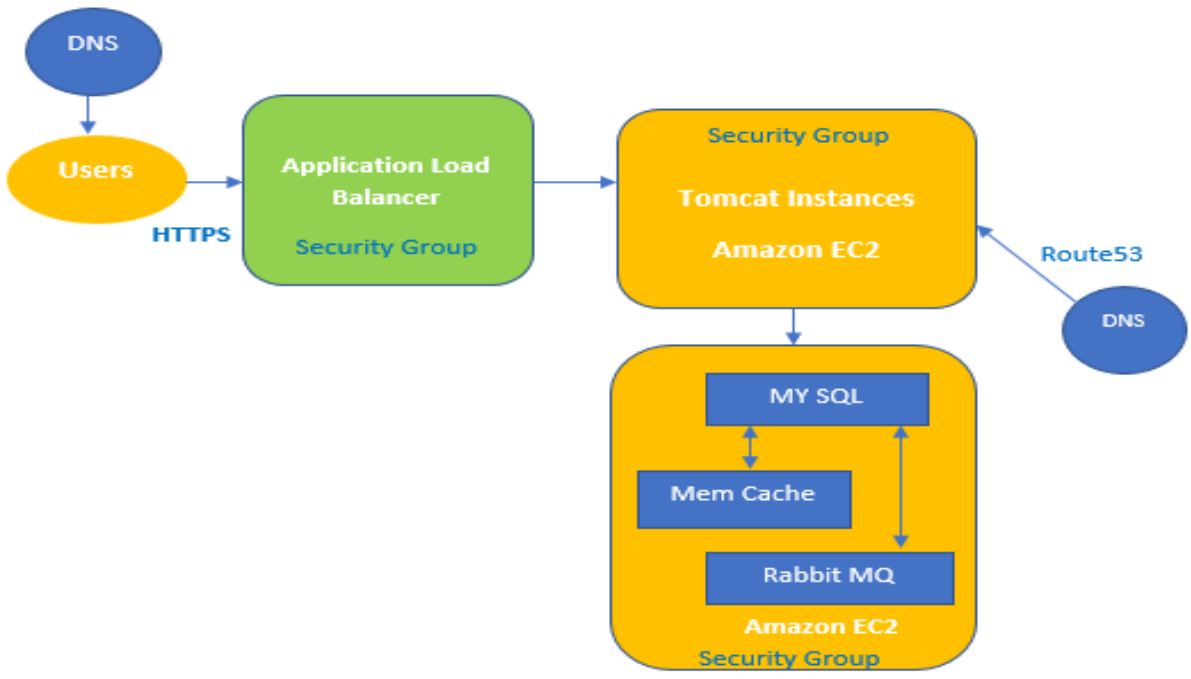
- App build and deploy it on VM.

For AWS EC2

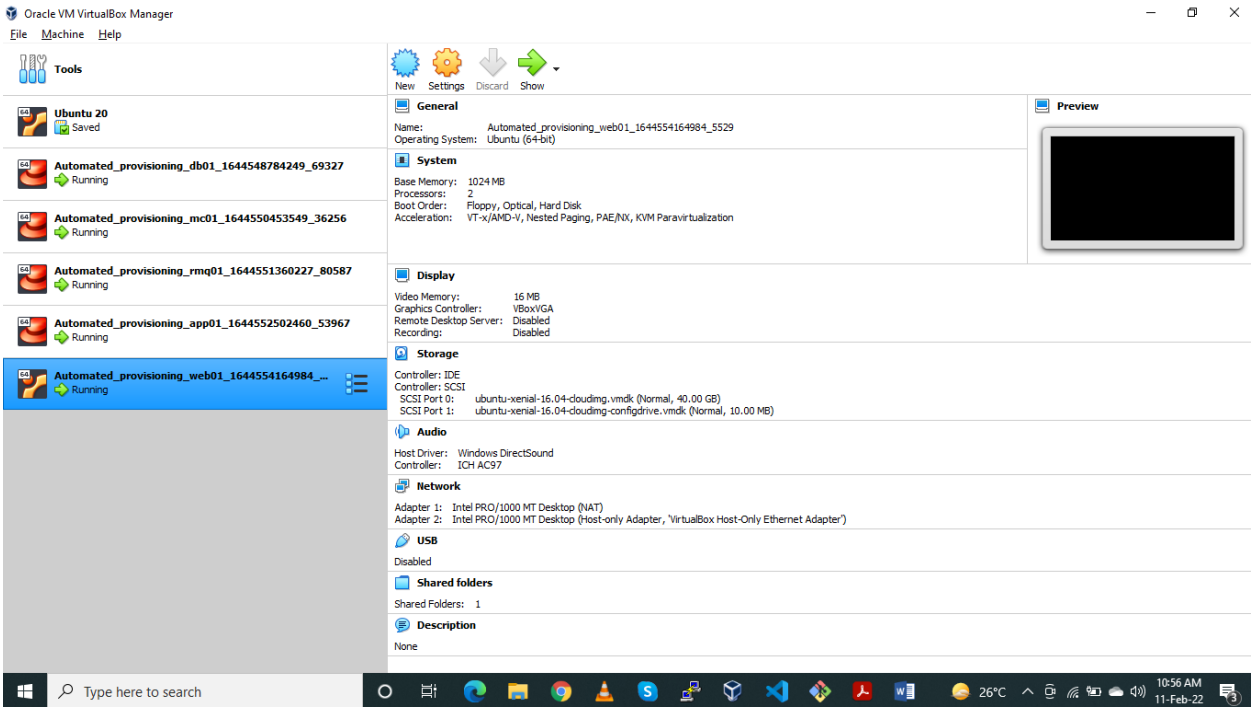
- Login to AWS account
- Create Key pairs
- Create security groups for EC2 machines which is to be configured with different services such as Tomcat, MYSQL, Rabbit MQ and Memcached
- Launch EC2 instances from console with user data (Bash script) for respective services.
- Update IP to name mapping to Route53
- Build application from Source code and get the artifacts in WAR format
- Upload the artifacts in S3 bucket
- Download artifact to tomcat Ec2 instance
- Setup Elastic load balancer with HTTPS from ACM
- Map ELB endpoint to website name in Go daddy DNS
- Verify it once done, by placing the endpoint on web browser and application should be in running status.

Workflow

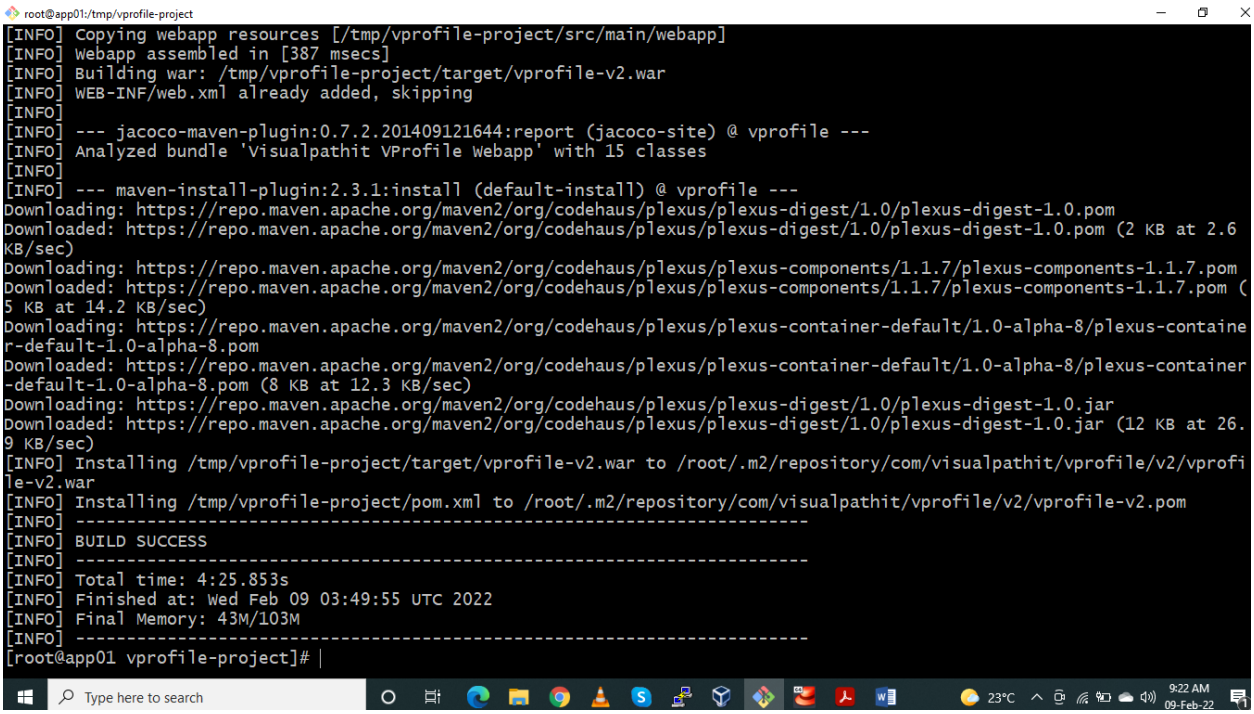
For AWS EC2



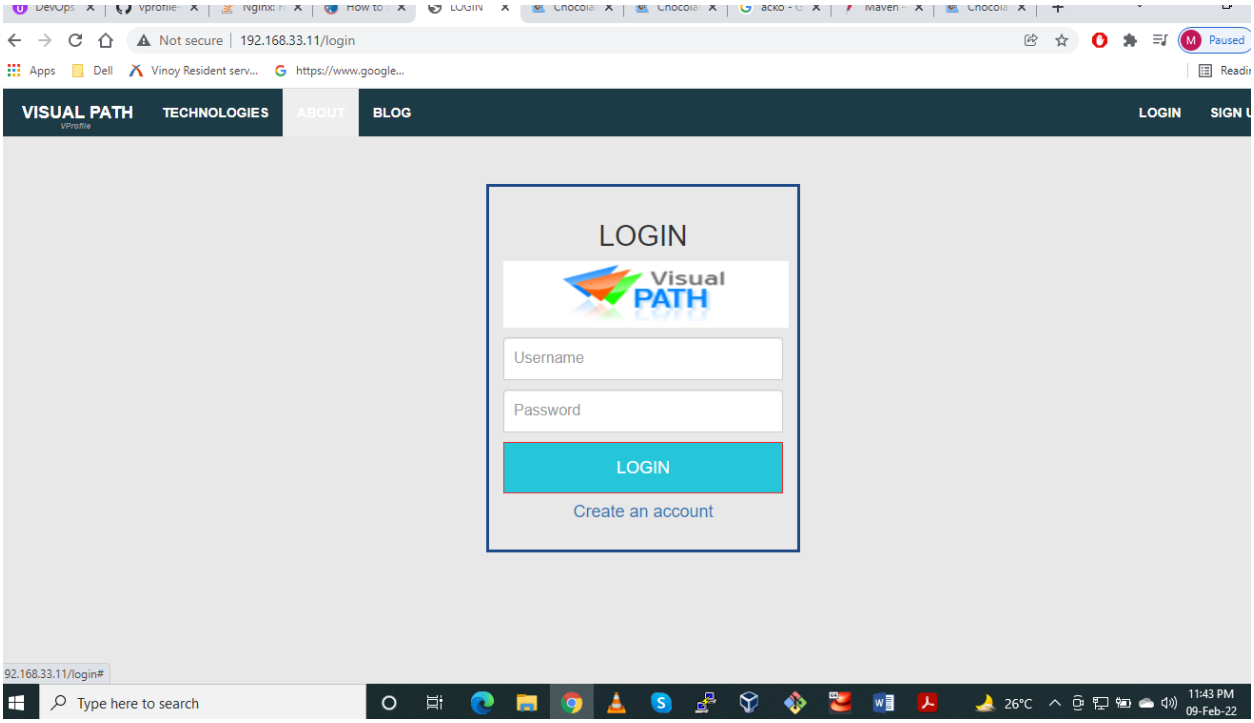
Screenshot of vagrant up, and Virtual box initiates to launces the Virtual machine for mentioned services above



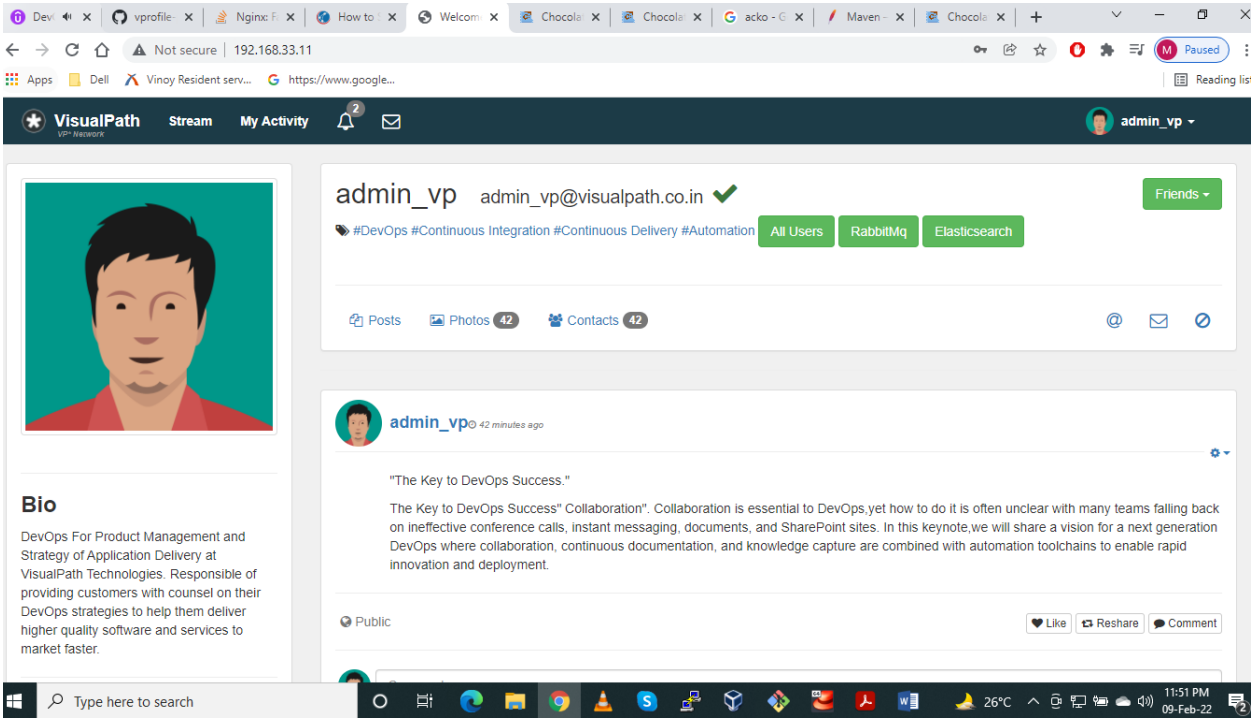
Build output of screen shot from Maven for VM set up on Virtual box



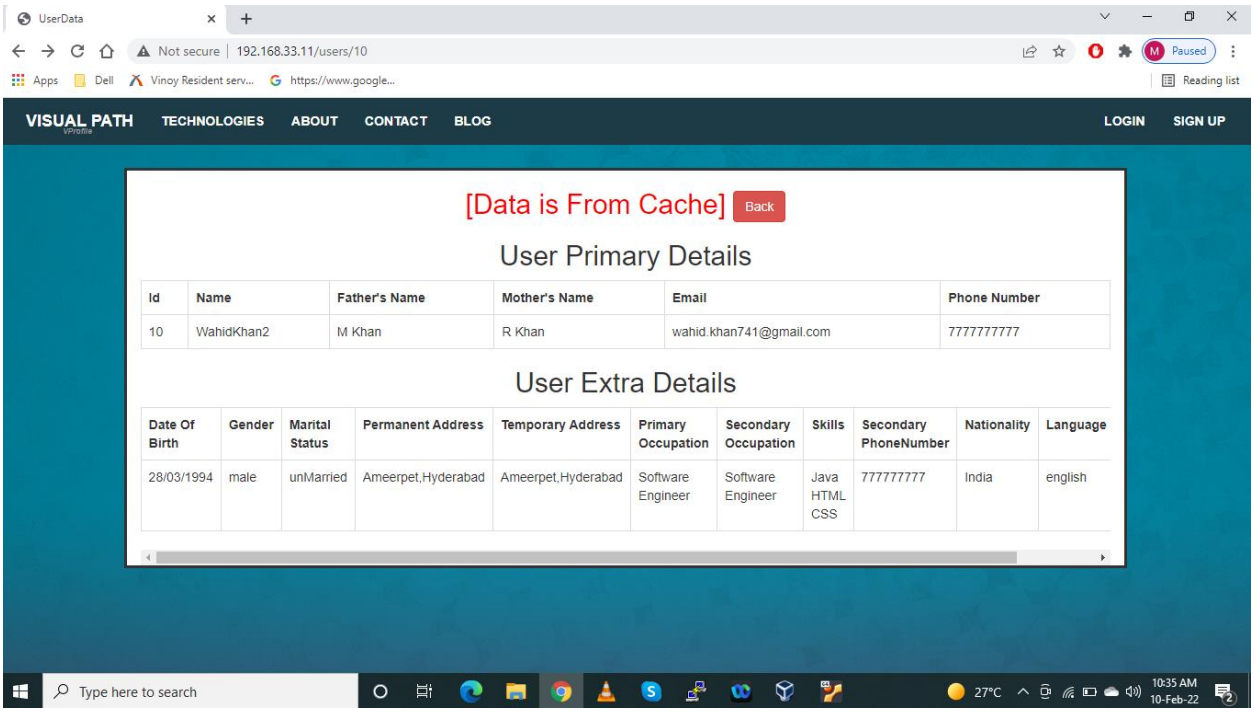
Screenshot of web application through browser with the local host id.



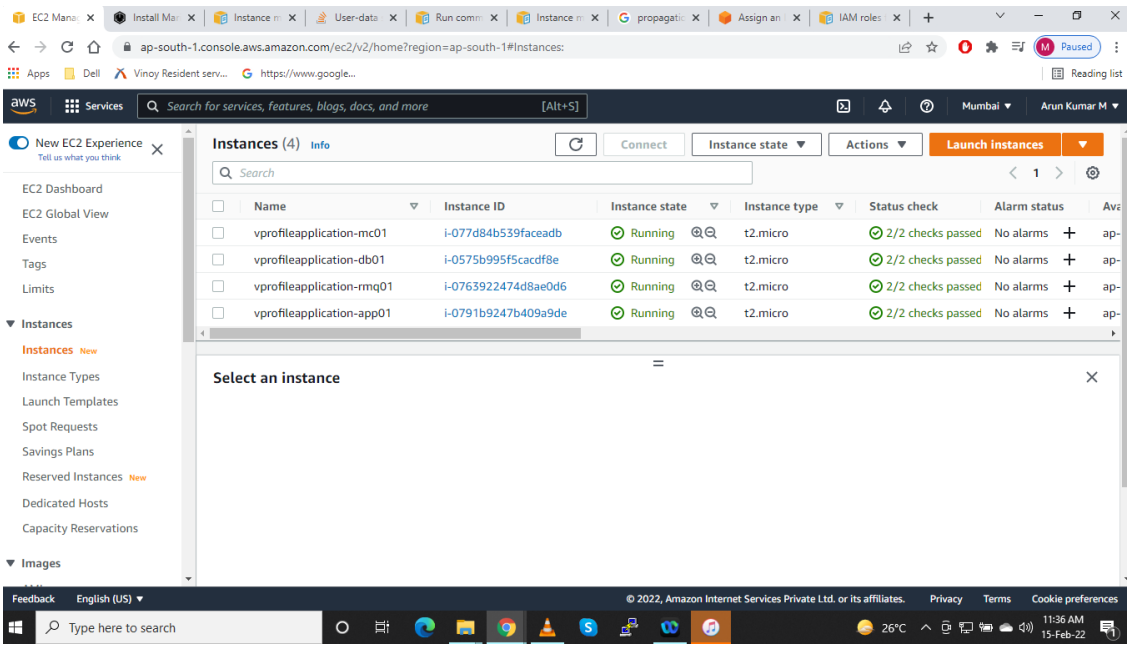
Screenshot of web application once logged in from home page, data pulled from mysql.



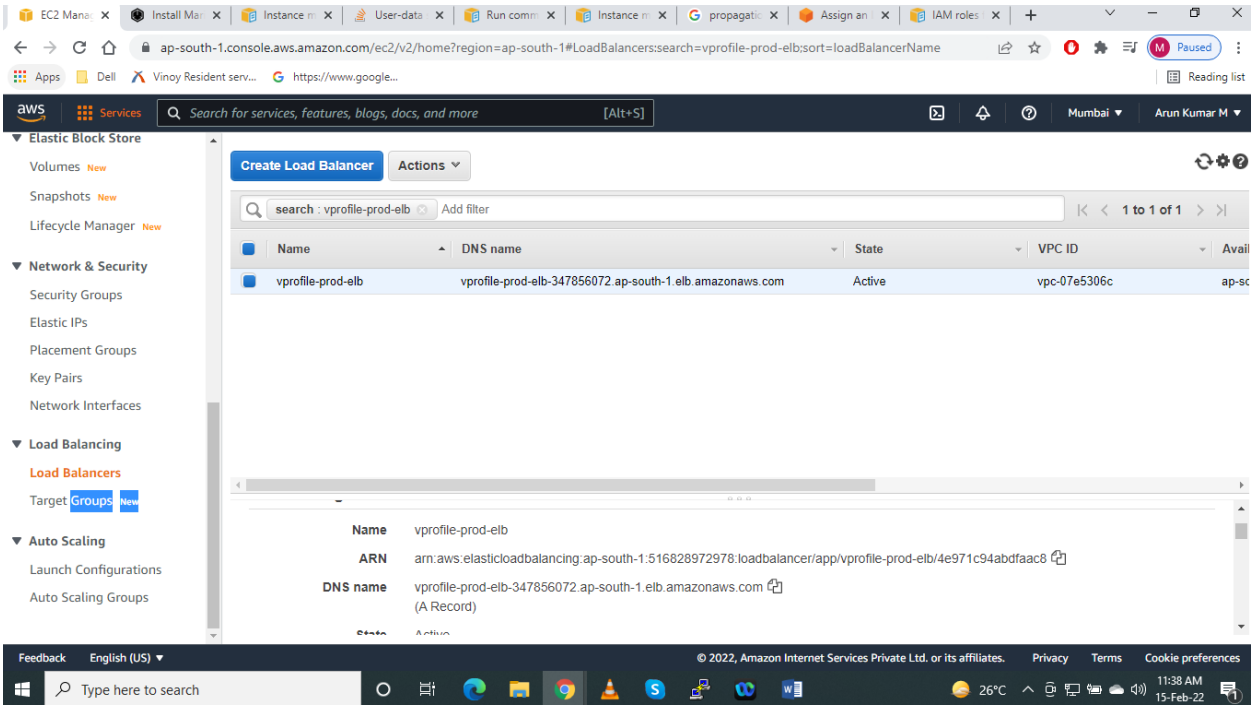
Screenshot of Memcache

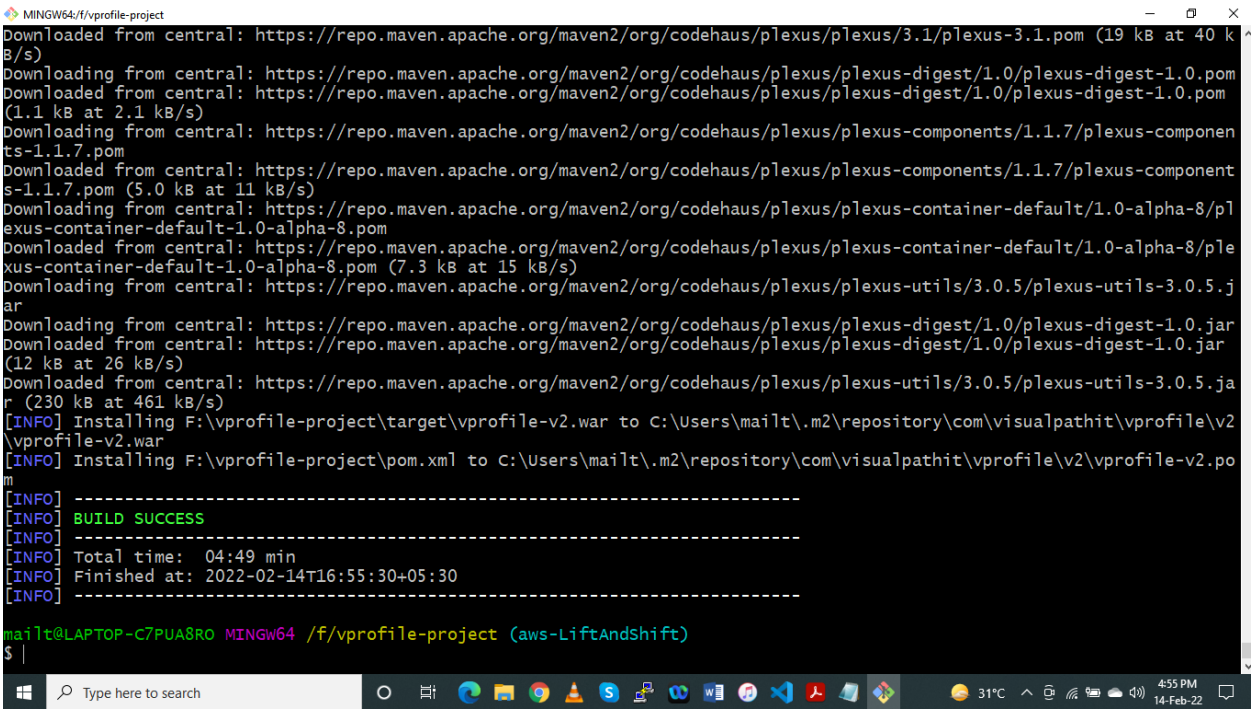


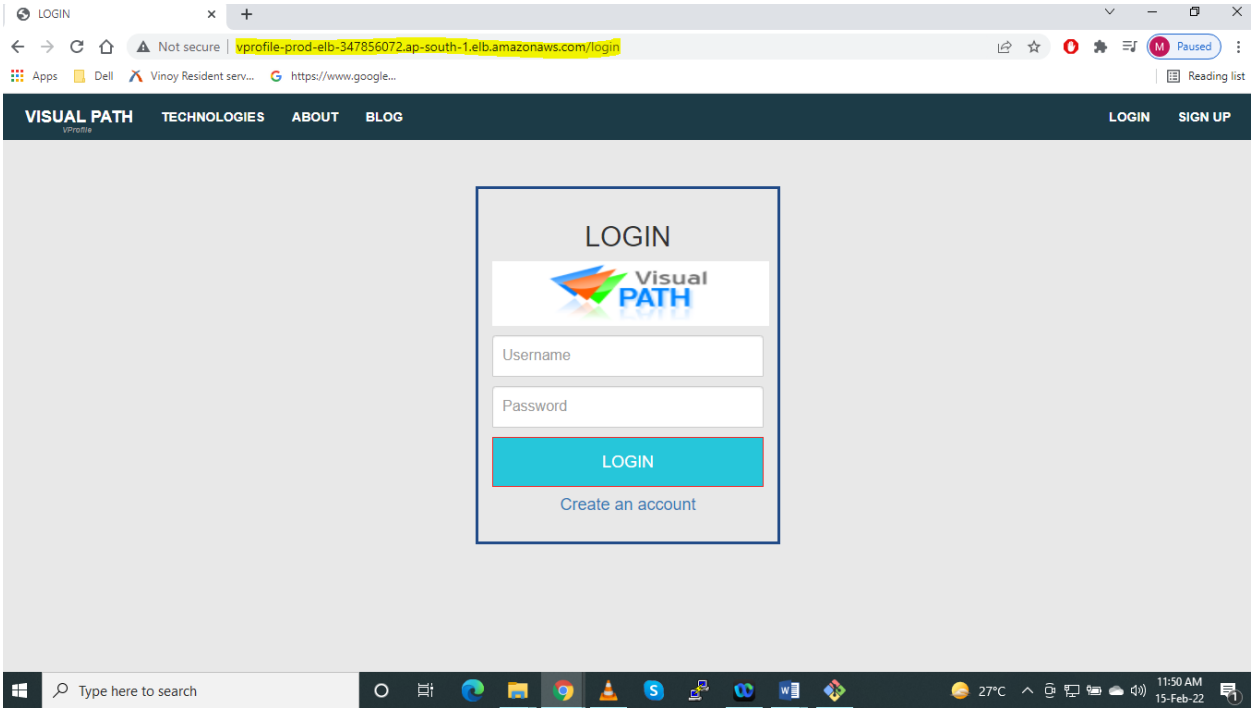
Screenshot of instance created for different services as Tomcat, MySQL database, rabbit MQ and memcached.



Further screenshots of load balancer setup, maven build, web application running from web browser through load balancer endpoint and logged in page.



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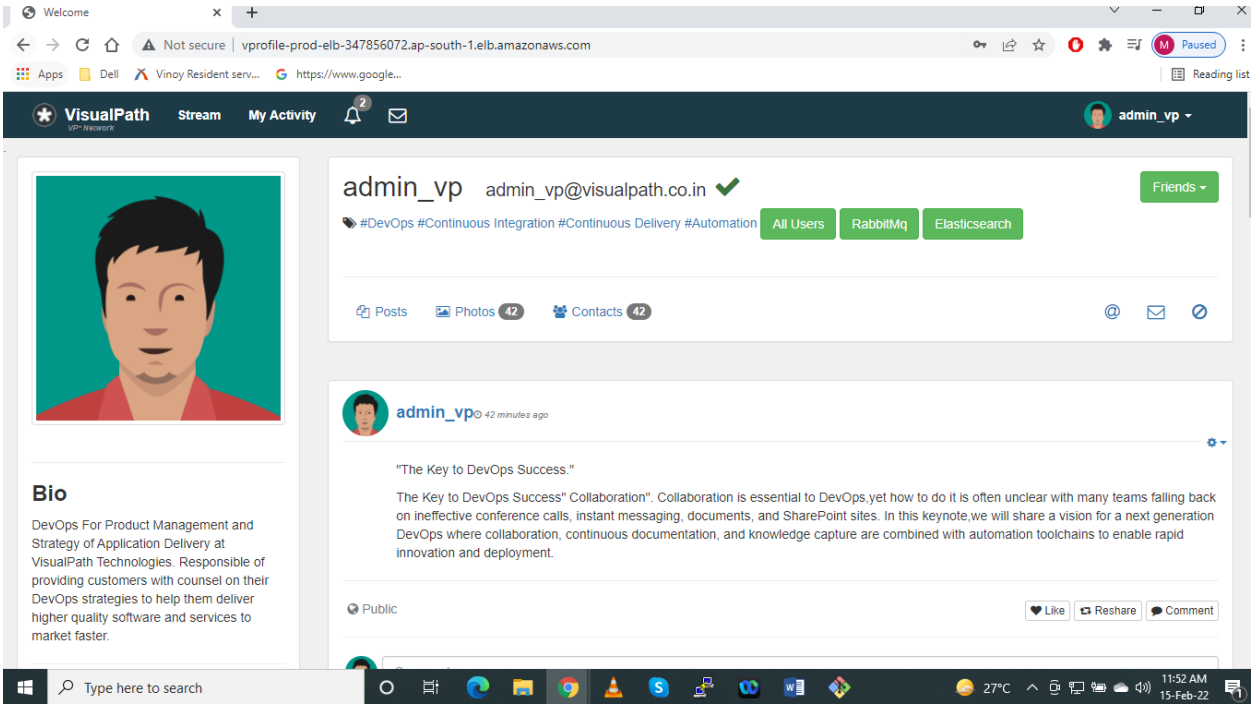
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Elasticsearch
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Contacts 42
admin_vp 42 minutes ago
"The Key to DevOps Success."
The Key to DevOps Success" Collaboration". Collaboration is essential to DevOps,yet how to do it is often unclear with many teams falling back on ineffective conference calls, instant messaging, documents, and SharePoint sites. In this keynote,we will share a vision for a next generation DevOps where collaboration, continuous documentation, and knowledge capture are combined with automation toolchains to enable rapid innovation and deployment.
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DevOps For Product Management and Strategy of Application Delivery at VisualPath Technologies. Responsible of providing customers with counsel on their DevOps strategies to help them deliver higher quality software and services to market faster.
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