CLOUD COMPUTING ARCHITECTURE LAB

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BATCH- 05

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Experiment 6: Deploy an application using AWS Elastic Beanstalk (PaaS)

Ques 1: List the features and advantages of AWS Elastic Beanstalk?

AWS Elastic Beanstalk is a platform-as-a-service (PaaS) offering from AmazonWeb Services (AWS) that makes it easy to deploy, manage, and scale applications in the cloud. Some of its key features and advantages include:

i. Easy application deployment: Elastic Beanstalk allows developers toquickly deploy applications without having to worry about the underlying infrastructure. The platform provides a variety of pre-configured environments for popular languages and frameworks,as well as the ability to customize environments to meet specific needs.

ii. Automatic scaling: Elastic Beanstalk can automatically scale your application up or down based on demand. This means you don't haveto worry about provisioning or managing resources, as the platform takes care of it for you.

iii. Monitoring and logging: Elastic Beanstalk provides built-in monitoring and logging capabilities that allow you to keep track ofyour application's performance and troubleshoot issues.

iv. Integration with other AWS services: Elastic Beanstalk integrates withother AWS services, such as Amazon RDS for databases, Amazon S3 for storage, and Amazon CloudWatch for monitoring.

v. Cost-effective: Elastic Beanstalk is cost-effective because you onlypay for the AWS resources that your application uses, such as EC2 instances and storage.

vi. Flexible: Elastic Beanstalk provides

flexibility in terms of deploymentoptions, allowing you to deploy your application using various methods, including AWS Management Console, AWS Command Line Interface (CLI), and APIs.

Overall, Elastic Beanstalk is a powerful tool that can help developers easily deploy and manage applications in the cloud, while also taking advantage of thescalability and flexibility of AWS.

Ques 2: Explain in detail Web Server and Worker Environment of Elastic Beanstalk.

Amazon Elastic Beanstalk is a service that allows developers to deploy and manage web applications in the cloud. It provides a platform for deploying, scaling, and monitoring web applications that are built using various programming languages and frameworks. In this platform, there are two important components that work together to make it all happen: the web serverand the worker environment.

Web Server Environment

A web server environment in Elastic Beanstalk is a runtime environment that can run a web application. It provides the necessary infrastructure for hosting

web applications, including the operating system, web server software, and anyother dependencies required by the application. The web server environment isdesigned to handle incoming web traffic and distribute it to the application servers that are running the web application.

When a user sends a request to the web application, the web server environmentreceives the request and passes it on to the application servers. The application servers then process the request and send a response back to the web server environment, which in turn sends the response back to the user.

Elastic Beanstalk supports several web server environments, including Apache HTTP Server, Nginx, and Microsoft IIS. Developers can choose the environment that best suits their application, and Elastic Beanstalk takes care ofthe rest.

A web server environment is a type of Elastic Beanstalk environment that is optimized for web applications. When you create a web server environment, Elastic Beanstalk automatically provisions web servers to run your application.The web servers run the application code and serve web

requests to users. The platform can automatically scale the web server environment based on the number of requests to your application, and it can also provide automatic load balancing to distribute traffic across multiple instances. A web server environment can be used to run web applications written in various programming languages and frameworks, including Java, Python, Node.js, Ruby, PHP, and .NET. Elastic Beanstalk provides pre-configured environments for these languages and frameworks, making it easy to deploy and run your application.

Worker Environment

A worker environment in Elastic Beanstalk is a runtime environment that can run background tasks or jobs. It provides the necessary infrastructure for running tasks, including the operating system, any dependencies required by thetask, and a message queue. The worker environment is designed to process tasksasynchronously, without interfering with the performance of the web server environment.

When a task is added to the message queue, the worker environment retrievesthe task and executes it.

Tasks can be added to the queue manually or automatically, depending on the needs of the application.

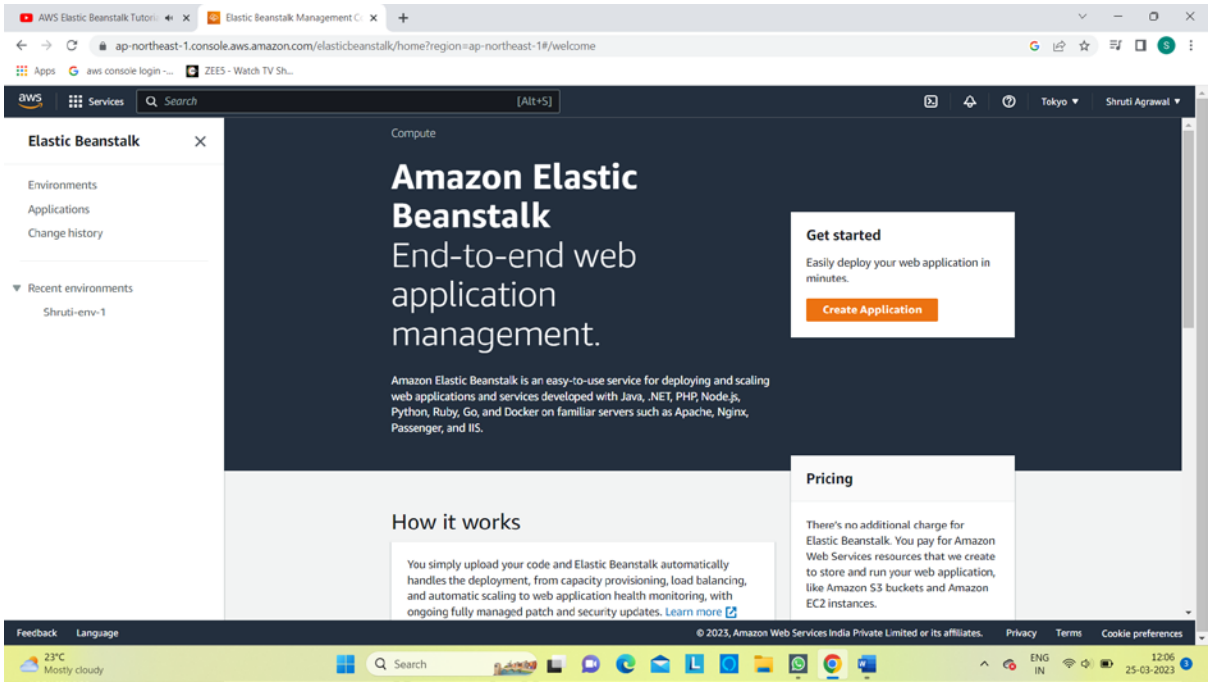
Elastic Beanstalk supports several worker environments, including Amazon SQS, RabbitMQ, and Apache ActiveMQ. Developers can choose the environment that best suits their application, and Elastic Beanstalk takes care ofthe rest.

A worker environment is a type of Elastic Beanstalk environment that is optimized for running background jobs and processing tasks. In a worker environment, Elastic Beanstalk provisions instances to run worker code that performs tasks such as processing messages from a queue, generating reports, orperforming data analysis. Worker environments can be used to perform tasks that are CPU-intensive or that require more memory than a web server environment can provide. In a worker environment, you can use a messaging service such as Amazon Simple Queue Service (SQS) or Apache Kafka to manage the tasks that need to be performed. Elastic Beanstalk can automaticallyscale the worker environment based on the number of tasks that need to be processed.

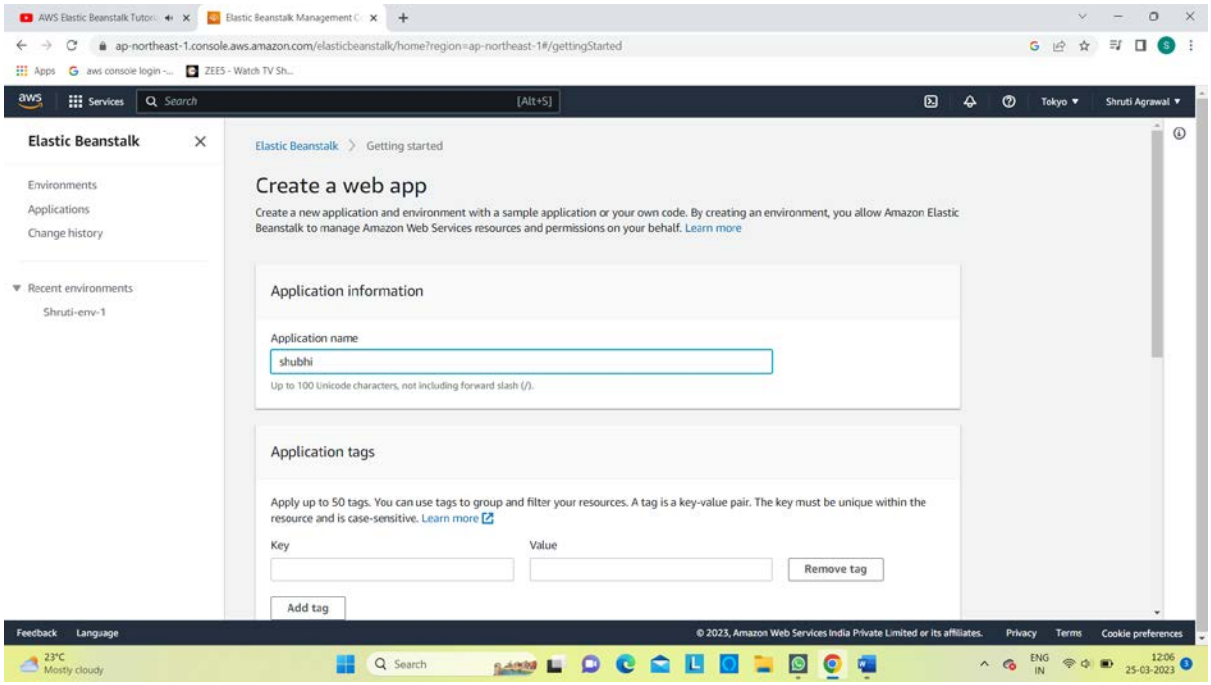
In summary, Elastic Beanstalk's web server environment and worker environment work together to provide a complete platform for deploying and managing web applications. The web server environment handles incoming webtraffic and distributes it to the application servers, while the worker environmentruns background tasks and jobs asynchronously. By providing these two environments, Elastic Beanstalk simplifies the process of deploying and managing web applications in the cloud, allowing developers to focus onbuilding great applications.

Step 1: Login to the aws console and goto Elastic bean stalk service (EBS)

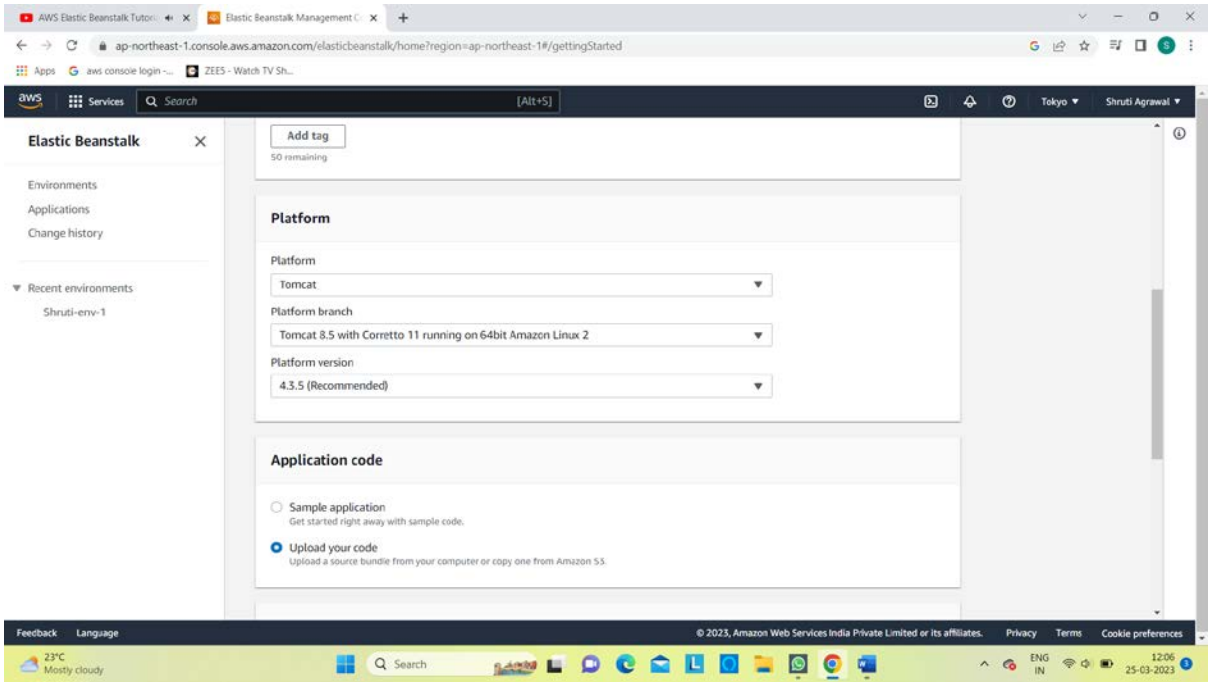
Step 2: Click on “create application”

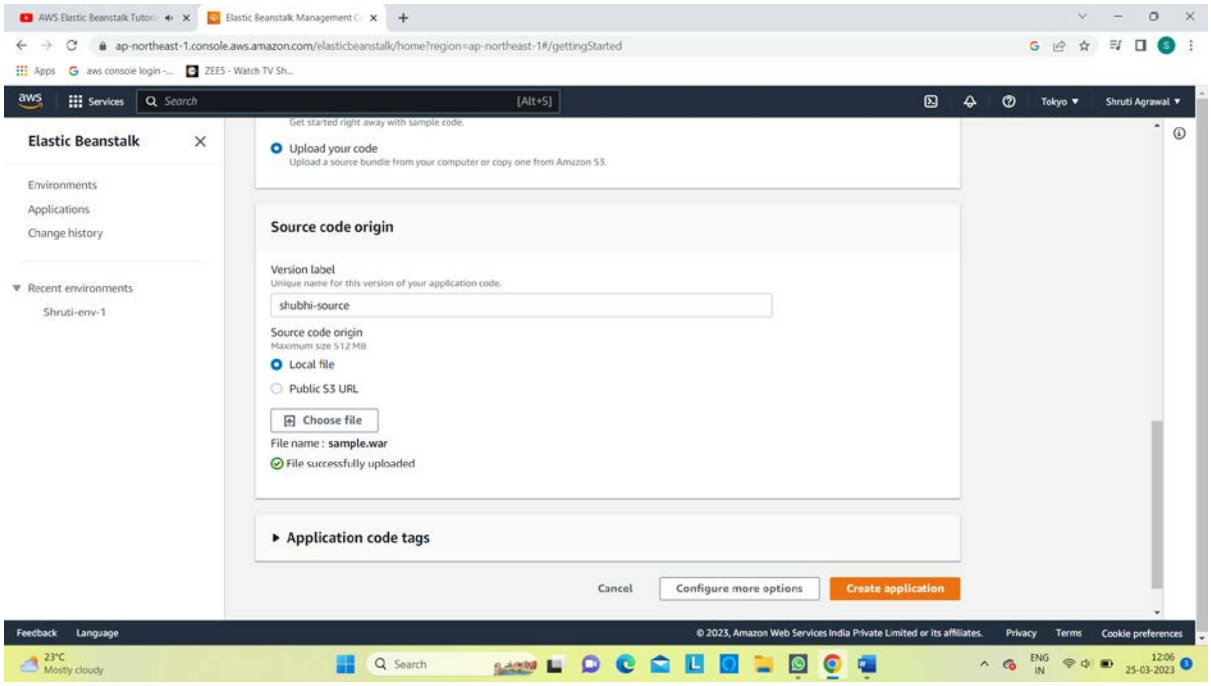


Step 3: Select the environment

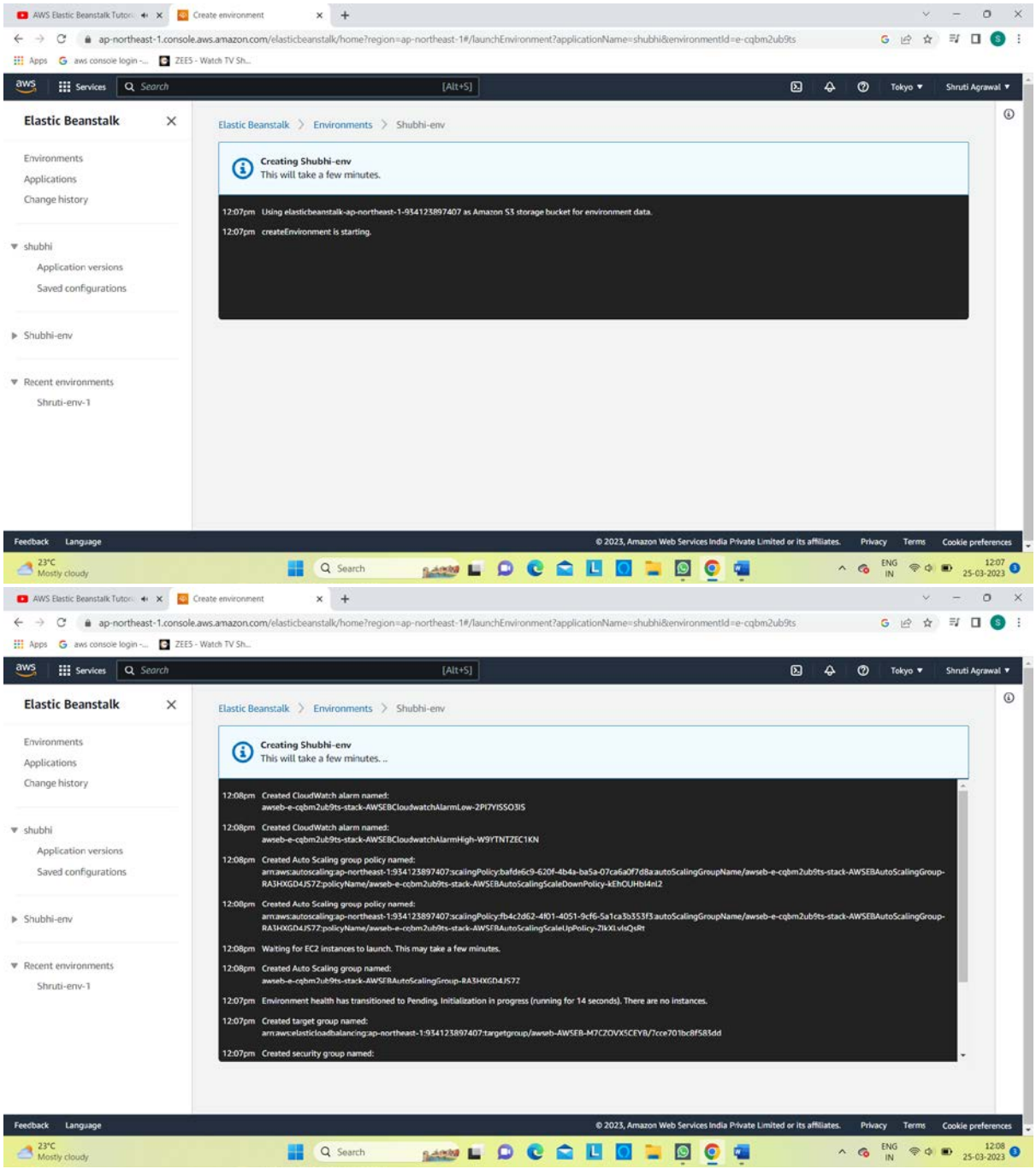


Step 4: In the “Application code” section upload your web project

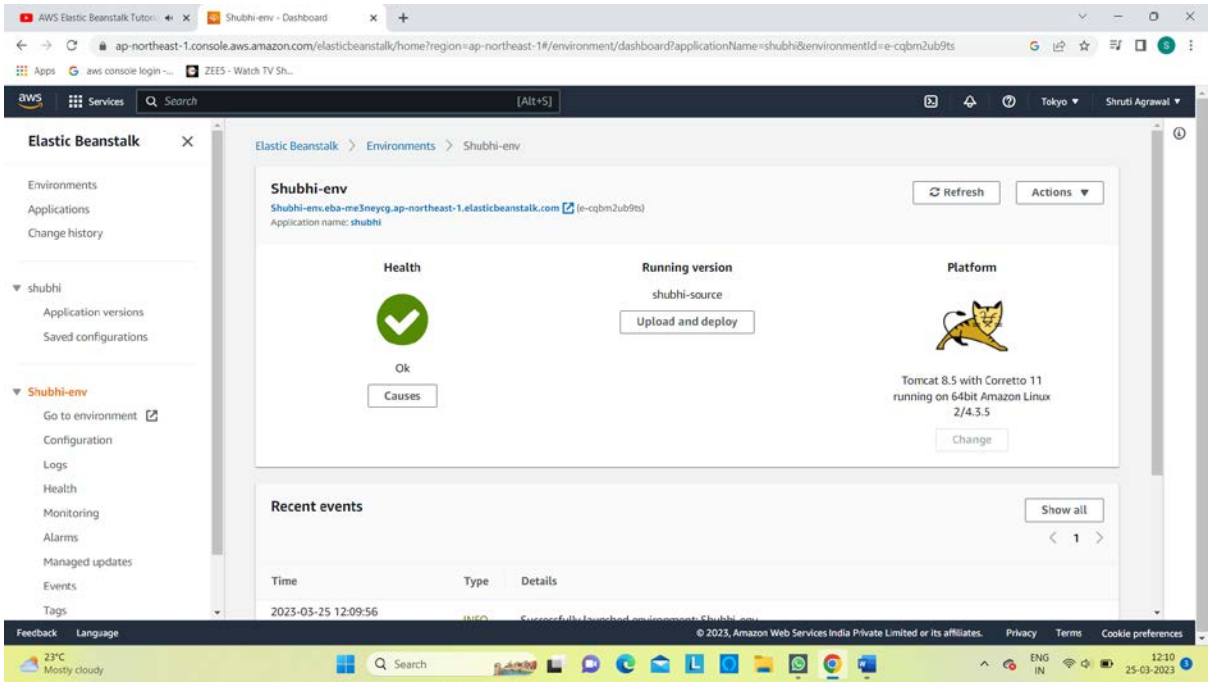




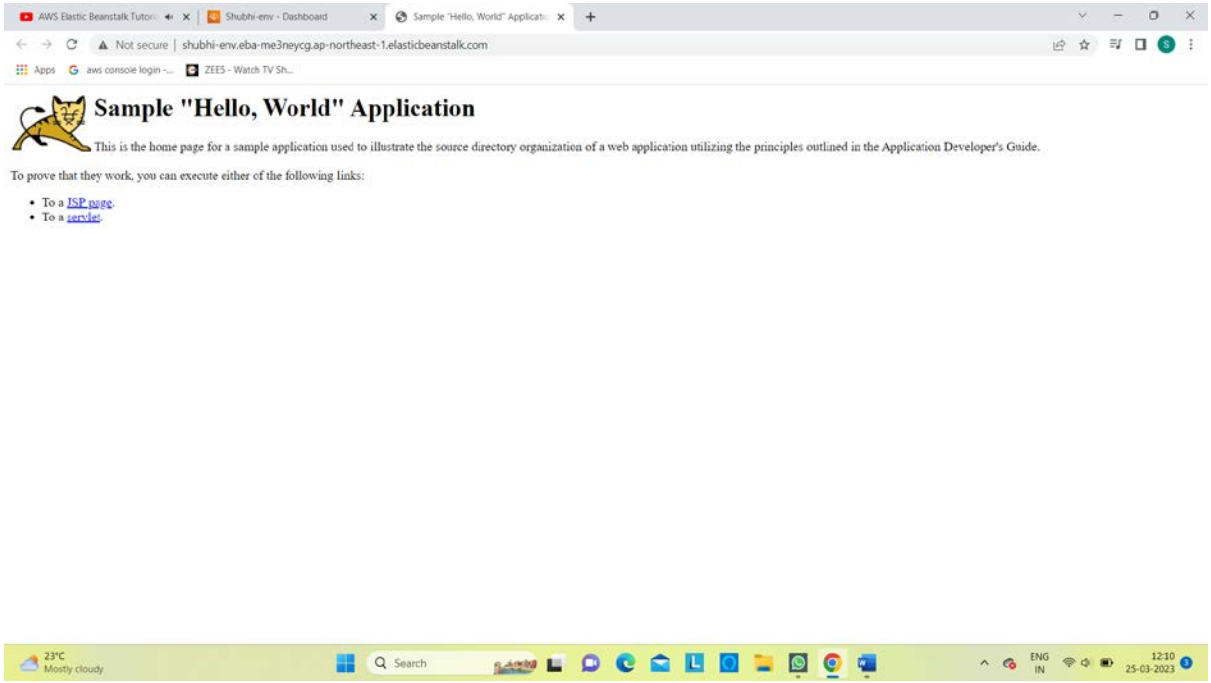
Step 5: Click on create environment to start the deployment of the Paas application.



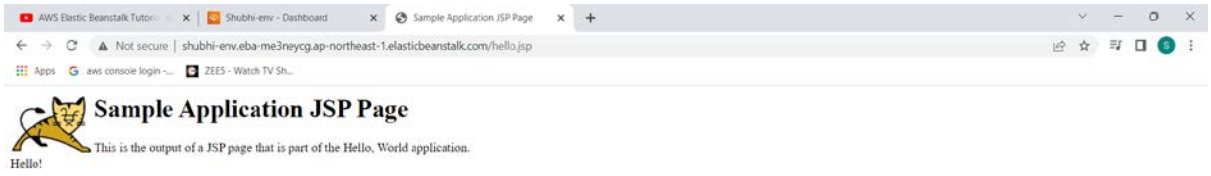
Step 6: Go to Elasticbeanstalk-> environments and copy the application url.

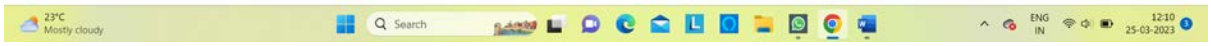


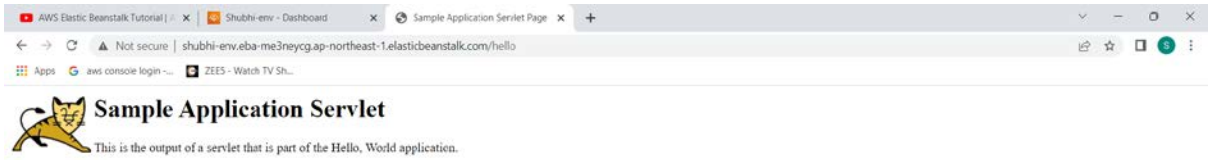
Step 7: Copy the url in a browser to access the application.



Now, click on JSP page and Servlet page to check.







Step 8: In Environments->select the application & choose terminate application