

Cloud Computing Candidate Assignment:

Project Overview :

The primary objective of this project is to develop a scalable, robust, and secure web application capable of handling high traffic with minimal downtime. The application will be hosted on Amazon Web Services (AWS), utilizing **Elastic Beanstalk**, **EC2**, and **RDS** to ensure dynamic resource scaling, high availability, and efficient resource management. This infrastructure will enable the application to adjust its capacity automatically based on real-time traffic, ensuring optimal performance and cost-effectiveness.

Name of the candidate:

Chitra Sri Krishna Prasanna

AWS/Code

Assignment Technologies:

The project encompasses the following components:

Web Application Development:

- Building a responsive, user-friendly web application for end-users.
- Ensuring efficient load handling and session management.

Elastic Beanstalk for Deployment:

- AWS Elastic Beanstalk will be used to deploy and manage the application automatically.
- Simplifies scaling by adjusting the environment based on traffic demands.

EC2 Instances:

- Using EC2 for compute resources, with the ability to auto-scale as traffic increases.
- EC2 will provide the backbone for processing power, ensuring the application can handle high loads.

RDS (Relational Database Service):

- AWS RDS will be used to store and manage application data.
- Ensures scalability, security, and performance for database transactions.

High Availability and Auto-Scaling:

- Auto-scaling groups will dynamically add or remove EC2 instances based on predefined traffic thresholds.
- Elastic Load Balancing (ELB) will distribute incoming traffic across EC2 instances for reliability.

Monitoring and Optimization:

- AWS CloudWatch will monitor application performance and resource utilization.
- Logs and metrics will be analyzed to optimize resource use, application uptime, and cost-efficiency.

Security and Compliance:

- Implementing AWS security best practices, including IAM roles, VPC security groups, and encryption.
- Ensuring compliance with industry standards to protect sensitive data.

Assignment Setup:

Create application in AWS Elastic Beanstalk :

The screenshot shows the AWS Elastic Beanstalk 'Configure environment' console page. The browser address bar displays the URL: `us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment`. The AWS console header includes the 'aws' logo, a 'Services' menu, a search bar, and navigation icons for RDS, VPC, S3, Elastic Beanstalk, IAM, and EC2. The user's profile is 'krishnaprasanna' in the 'N. Virginia' region.

The main content area is titled 'Configure environment' with an 'Info' link. A left-hand sidebar lists the steps of the configuration process:

- Step 1: **Configure environment** (active)
- Step 2: Configure service access
- Step 3 - optional: Set up networking, database, and tags
- Step 4 - optional: Configure instance traffic and scaling
- Step 5 - optional: Configure updates, monitoring, and logging
- Step 6: Review

The 'Configure environment' section contains three main panels:

- Environment tier** (Info link): Amazon Elastic Beanstalk has two types of environment tiers to support different types of web applications.
 - ☒ **Web server environment**: Run a website, web application, or web API that serves HTTP requests. [Learn more](#)
 - ☐ **Worker environment**: Run a worker application that processes long-running workloads on demand or performs tasks on a schedule. [Learn more](#)
- Application information** (Info link):
 - Application name**: A text input field with a placeholder. Below it, it states 'Maximum length of 100 characters.'
 - Application tags (optional)**: A section with a right-pointing triangle icon.
- Environment information** (Info link): Choose the name, subdomain and description for your environment. These cannot be changed later.

The footer of the console shows 'CloudShell' and 'Feedback' links. The bottom of the image shows a Windows taskbar with various application icons, a search bar, and system tray icons including the date and time (18:33, 09-10-2024).

Configure environment:

Configure environment | Elastic

us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment

aws

Services

Search

[Alt+S]

RDS

VPC

S3

Elastic Beanstalk

IAM

EC2

N. Virginia

krishnaprasanna

Step 5 - optional

Configure updates, monitoring, and logging

Step 6

Review

Application information

Application name

manhwa titles

Maximum length of 100 characters.

Application tags (optional)

Environment information

Info

Choose the name, subdomain and description for your environment. These cannot be changed later.

Environment name

Manhwatitles-env

Must be from 4 to 40 characters in length. The name can contain only letters, numbers, and hyphens. It can't start or end with a hyphen. This name must be unique within a region in your account.

Domain

manhwatitles

.us-east-1.elasticbeanstalk.com

Check availability

manhwatitles.us-east-1.elasticbeanstalk.com is available

Environment description

CloudShell

Feedback

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Privacy

Terms

Cookie preferences

CAD/INR

-0.28%

Search

ENG IN

18:33

09-10-2024

Platform selected - Node.js:

The screenshot displays the AWS Elastic Beanstalk console in the 'Configure environment' step. The browser address bar shows the URL: `us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment?applicationName=my%20project`. The AWS navigation bar at the top includes the 'Services' menu, a search bar, and the current region 'N. Virginia' with the user 'krishnaprasanna'.

The main content area is titled 'Environment description' and contains a large text input field. Below this, the 'Platform' section is expanded, showing the following configuration options:

- Platform type:** 'Managed platform' is selected. A description states: 'Platforms published and maintained by Amazon Elastic Beanstalk. [Learn more](#)'. The 'Custom platform' option is greyed out with the note: 'Platforms created and owned by you. This option is unavailable if you have no platforms.'
- Platform:** A dropdown menu showing 'Node.js'.
- Platform branch:** A dropdown menu showing 'Node.js 20 running on 64bit Amazon Linux 2023'.
- Platform version:** A dropdown menu showing '6.2.1 (Recommended)'.

The bottom of the console shows the 'CloudShell' button, a 'Feedback' link, and the copyright notice '© 2024, Amazon Web Services, Inc. or its affiliates.' along with links for 'Privacy', 'Terms', and 'Cookie preferences'. The Windows taskbar at the very bottom shows the system clock at 14:39 on 29-09-2024 and the language set to 'ENG IN'.

Web application code uploaded:

The screenshot shows the AWS Elastic Beanstalk console in the 'Configure environment' wizard. The browser address bar shows the URL: `us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment`. The AWS navigation bar at the top includes the 'Services' menu, a search bar, and the user's profile 'krishnaprasanna' in 'N. Virginia'.

The main content area displays the 'Upload your code' step, which is selected. It includes the following options and fields:

- ☐ Sample application
- ☐ Existing version
Application versions that you have uploaded.
- ☒ Upload your code
Upload a source bundle from your computer or copy one from Amazon S3.

Below these options, there is a 'Version label' section with a text input field containing 'Version label'. Below that, the 'Source code origin. Maximum size 500 MB' section shows:

- ☒ Local file
Upload application
- ☒ File name: **ghackk project.zip**
File must be less than 500MB max file size
- ☐ Public S3 URL

At the bottom, the 'Presets' section is visible, with a sub-section for 'Configuration presets'.

The Windows taskbar at the bottom shows the system clock as 18:35 on 09-10-2024, along with various application icons and a weather widget indicating 'Tomorrow's low Near record'.

Service role created and applied

EC2 key pair created and applied

EC2 role created and applied

The screenshot shows the AWS Management Console for Elastic Beanstalk in the us-east-1 region. The 'Configure service access' step is active, showing options to use an existing service role, key pair, and instance profile.

Step 2: Configure service access

Service access
IAM roles, assumed by Elastic Beanstalk as a service role, and EC2 instance profiles allow Elastic Beanstalk to create and manage your environment. Both the IAM role and instance profile must be attached to IAM managed policies that contain the required permissions. [Learn more](#)

Service role
☐ Create and use new service role
☒ Use an existing service role

Existing service roles
Choose an existing IAM role for Elastic Beanstalk to assume as a service role. The existing IAM role must have the required IAM managed policies.

EC2 key pair
Select an EC2 key pair to securely log in to your EC2 instances. [Learn more](#)

EC2 instance profile
Choose an IAM instance profile with managed policies that allow your EC2 instances to perform required operations.

[View permission details](#)

[Cancel](#) [Skip to review](#) [Previous](#) [Next](#)

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Subnets selected as required in the regions:

Set up networking, database, ...

us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment

aws

Services

Search

[Alt+S]

RDS

VPC

S3

Elastic Beanstalk

IAM

EC2

N. Virginia

krishnaprasanna

☒

us-east-1b

subnet-03aaf3457...

172.30.1.0/24

☐

us-east-1c

subnet-05547dee0...

172.30.2.0/24

☐

us-east-1d

subnet-0976401ca...

172.30.3.0/24

☐

us-east-1a

subnet-0d0ccfa90...

172.30.0.0/24

☐

us-east-1e

subnet-0f6ae2507...

172.30.4.0/24

☒ Enable database

Restore a snapshot - optional

Restore an existing snapshot from a previously used database.

Snapshot

None

Database settings

Choose an engine and instance type for your environment's database.

Engine

Engine version

Instance class

CloudShell

Feedback

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IND - BAN

Starting soon

Search

Windows Taskbar

18:36

09-10-2024

Database connected:

Set up networking, database, and more

us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment

aws Services Search [Alt+S]

RDS VPC S3 Elastic Beanstalk IAM EC2

N. Virginia krishnaprasanna

Restore a snapshot - *optional*

Restore an existing snapshot from a previously used database.

Snapshot

None

Database settings

Choose an engine and instance type for your environment's database.

Engine

postgres

Engine version

16.3

Instance class

db.t3.small

Storage

Choose a number between 5 GB and 1024 GB.

10 GB

Username

CloudShell Feedback

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IND - BAN Starting soon

Search

ENG IN 18:36 09-10-2024

Set Username and password :

Set up networking, database, ...

us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment

aws Services Search [Alt+S]

RDS VPC S3 Elastic Beanstalk IAM EC2

Instance class

db.t3.small

Storage

Choose a number between 5 GB and 1024 GB.

10 GB

Username

prasanna

Password

.....

Availability

Low (one AZ)

Database deletion policy

This policy applies when you decouple a database or terminate the environment coupled to it.

☐ Create snapshot

Elastic Beanstalk saves a snapshot of the database and then deletes it. You can restore a database from a snapshot when you add a DB to an Elastic Beanstalk environment or when you create a standalone database. You might incur charges for storing database snapshots.

☐ Retain

The decoupled database will remain available and operational external to Elastic Beanstalk.

☒ Delete

Elastic Beanstalk terminates the database. The database will no longer be available.

CloudShell Feedback

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IND - BAN Starting soon

Search

ENG IN 18:36 09-10-2024

Configure the environment and review after all the steps :
Create and submit:

Configure environment - review

us-east-1.console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/create-environment

Services Search [Alt+S]

RDS VPC S3 Elastic Beanstalk IAM EC2

N. Virginia krishnaprasanna

Ignore health check
false

Instance replacement
false

Platform software

Lifecycle
false

Log streaming
Deactivated

Proxy server
nginx

Logs retention
7

Rotate logs
Deactivated

Update level
minor

X-Ray enabled
Deactivated

Environment properties

Key	Value
No environment properties There are no environment properties defined	

Cancel Previous Submit

CloudShell Feedback

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30°C Mostly clear

Search

ENG IN 18:39 09-10-2024

Your application takes time to deploy ...wait for a while:

The screenshot displays the AWS Elastic Beanstalk console interface. At the top, a blue banner states: "Elastic Beanstalk is launching your environment. This will take a few minutes." Below this, the breadcrumb navigation shows "Elastic Beanstalk > Environments > Manhwatitles-env". The main content area is titled "Manhwatitles-env" and includes an "Info" link. On the right side of the main content, there are buttons for "Actions" (with a refresh icon) and "Upload and deploy".

The "Environment overview" section provides the following details:

- Health: Unknown
- Environment ID: e-i2pjm3zhrj
- Domain: manhwatitles.us-east-1.elasticbeanstalk.com
- Application name: manhwa titles

The "Platform" section on the right shows:

- Platform: Node.js 20 running on 64bit Amazon Linux 2023/6.2.2
- Running version: -
- Platform state: Supported (indicated by a green checkmark)

Below the overview, there are tabs for "Events", "Health", "Logs", "Monitoring", "Alarms", "Managed updates", and "Tags". The "Events" tab is currently selected, showing "Events (2)".

The left sidebar contains the "Elastic Beanstalk" menu with options like "Applications", "Environments", and "Change history". Under "Environments", the "Environment: Manhwatitles-env" is selected, showing options like "Go to environment", "Configuration", "Events", "Health", "Logs", "Monitoring", "Alarms", and "Managed updates".

The bottom of the screen shows the Windows taskbar with the date and time as 18:40 on 09-10-2024, and the system tray indicating 30°C and "Mostly clear" weather.

Check the events log so you will get you know what's happening....:

The screenshot displays the AWS Elastic Beanstalk console interface. The top navigation bar shows the AWS logo, a search bar, and the user's profile (N. Virginia, krishnaprasanna). The left sidebar contains navigation links for Applications, Environments, Change history, and a dropdown for 'Application: manhwa titles' with sub-links for Application versions and Saved configurations. Below this, a dropdown for 'Environment: Manhwatitles-env' provides links to Go to environment, Configuration, Events, Health, Logs, Monitoring, Alarms, and Managed updates. The main content area shows the 'Events' tab for the selected environment. A green banner at the top of the events list states 'Environment successfully launched.' The events list contains 12 entries, each with a timestamp, an 'INFO' icon, and a description of the event. The events are ordered chronologically from top to bottom, starting with 'Application available at manhwatitles.us-east-1.elasticbeanstalk.com' and ending with 'createEnvironment is starting.'

Timestamp	Event Type	Description
October 9, 2024 18:48:52 (UTC+5:30)	INFO	Application available at manhwatitles.us-east-1.elasticbeanstalk.com.
October 9, 2024 18:48:48 (UTC+5:30)	INFO	Environment health has been set to GREEN
October 9, 2024 18:48:48 (UTC+5:30)	INFO	Added EC2 instance 'i-0040890d9ed6f5be6' to Auto Scaling Group 'awseb-e-i2pjm3zhrij-stack-AWSEBAutoScalingGroup-mk68TucSRvN0'.
October 9, 2024 18:48:48 (UTC+5:30)	INFO	Adding instance 'i-0040890d9ed6f5be6' to your environment.
October 9, 2024 18:48:37 (UTC+5:30)	INFO	Instance deployment completed successfully.
October 9, 2024 18:47:54 (UTC+5:30)	INFO	Waiting for EC2 instances to launch. This may take a few minutes.
October 9, 2024 18:47:39 (UTC+5:30)	INFO	Created RDS database named: awseb-e-i2pjm3zhrij-stack-awsebrdsdatabase-dbzahkcw2rdg
October 9, 2024 18:40:42 (UTC+5:30)	INFO	Created EIP: 18.207.57.130
October 9, 2024 18:40:26 (UTC+5:30)	INFO	Creating RDS database named: awseb-e-i2pjm3zhrij-stack-awsebrdsdatabase-dbzahkcw2rdg. This may take a few minutes.
October 9, 2024 18:40:26 (UTC+5:30)	INFO	Created security group named: sg-02e1f4f999caac53d
October 9, 2024 18:39:58 (UTC+5:30)	INFO	Using elasticbeanstalk-us-east-1-825765422003 as Amazon S3 storage bucket for environment data.
October 9, 2024 18:39:56 (UTC+5:30)	INFO	createEnvironment is starting.

After the deployment now you will get the domain link ,click on it :

The screenshot displays the AWS Elastic Beanstalk console interface. At the top, a blue banner states: "Elastic Beanstalk is launching your environment. This will take a few minutes." Below this, the breadcrumb navigation shows "Elastic Beanstalk > Environments > Manhwatitles-env". The main heading is "Manhwatitles-env" with an "Info" link. To the right of the heading are buttons for "Actions" and "Upload and deploy".

The "Environment overview" section contains the following details:

Environment overview	
Health	Environment ID
Unknown	e-i2pjm3zhrj
Domain	Application name
manhwatitles.us-east-1.elasticbeanstalk.com	manhwa titles

The "Platform" section on the right shows:

Platform	
Platform	Change version
Node.js 20 running on 64bit Amazon Linux 2023/6.2.2	
Running version	-
Platform state	Supported

Below the overview and platform sections are tabs for "Events", "Health", "Logs", "Monitoring", "Alarms", "Managed updates", and "Tags". The "Events" tab is currently selected, showing "Events (2)".

The left sidebar contains the "Elastic Beanstalk" menu with options: Applications, Environments, and Change history. Under "Environments", the "Environment: Manhwatitles-env" is selected, showing options: Go to environment, Configuration, Events, Health, Logs, Monitoring, Alarms, and Managed updates.


The bottom of the screen shows the Windows taskbar with the date "09-10-2024" and time "18:40".

Web application created:

Environment overview - events x Fantasy Manhwa List x +

Not secure manhwatitles.us-east-1.elasticbeanstalk.com


Fantasy Manhwa List



The Gamer

Genre: Action, Supernatural


A student gains the ability to live life as a game.



Solo Leveling

Genre: Action, Fantasy


A weak hunter discovers a hidden power that allows him to level up.



Tower of God

Genre: Action, Adventure, Fantasy


A boy enters a mysterious tower to find a girl who means everything to him.





Noblesse


Genre: Action, Supernatural

A powerful noble awakens from an 820-year slumber to face the modern world.









30°C Mostly clear


Search

ENG IN 18:51 09-10-2024


Environment overview - events

Fantasy Manhwa List


Not secure manhwatitles.us-east-1.elasticbeanstalk.com




The Beginning After the End
Genre: Action, Fantasy, Adventure
A reincarnated king strives to live a peaceful life in a world full of magic and beasts.




Omniscient Reader
Genre: Fantasy, Action, Adventure
An ordinary office worker finds himself in the world of his favorite web novel.




Dungeon Reset
Genre: Action, Adventure, Comedy
A player in a dungeon game gets reset, retaining his memory and abilities to start over.




Ranker Who Lives a Second Time
Genre: Action, Adventure, Fantasy
A man seeks to climb the tower in his quest for revenge after the death of his brother.




A Returner's Magic Should Be Special
Genre: Fantasy, Adventure, Action



Eleceed
Genre: Action, Supernatural, Comedy




The Legendary Moonlight Sculptor
Genre: Action, Adventure, Fantasy



Rebirth of the Urban Immortal Cultivator
Genre: Action, Fantasy

30°C
Mostly clear

Search



ENG
IN

18:51
09-10-2024

Assignment Resources/ Reference:

AWS Elastic Beanstalk

<https://aws.amazon.com/elasticbeanstalk/>

Amazon S3

<https://aws.amazon.com/s3/>

Amazon EC2

<https://aws.amazon.com/ec2/>

Amazon RDS

<https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Welcome.html>

IAM

<https://docs.aws.amazon.com/IAM/latest/UserGuide/introduction.html>

AWS Key Management Service

<https://docs.aws.amazon.com/kms/latest/developerguide/overview.html>

Thank you