

Practical-2 Platform as a service using AWS.

NAME: Sania Rodrigues

ROLL.NO: A008

Writeup:-

• PLATFORM AS A SERVICE

Platform as a Service (PaaS) is a complete cloud environment that includes everything developers need to build, run, and manage applications—from servers and operating systems to all the networking, storage, middleware, tools, and more.

How does PaaS work?

Unlike IaaS or SaaS service models, PaaS solutions are specific to application and software development and typically include:

Cloud infrastructure: Data centers, storage, network equipment, and servers
Middleware software: Operating systems, frameworks, development kits (SDK), libraries, and more

User interface: A graphical user interface (GUI), a command line interface (CLI), an API interface, and in some cases, all three

Benefits of PaaS

- Faster time to market
- Low maintenance
- Easy scalability
- Flexible access
- Cost-effective pricing

• ELASTIC BEANSTALK

Elastic Beanstalk is a service for deploying and scaling web applications and services. Upload your code and Elastic Beanstalk automatically handles the deployment—from capacity provisioning, load balancing, and auto scaling to application health monitoring.

Use cases

Quickly launch web applications

Deploy scalable web applications in minutes without the complexity of provisioning and managing underlying infrastructure.

Create mobile API backends for your applications

Use your favorite programming language to build mobile API backends, and Elastic Beanstalk will manage patches and updates.

Replatform critical business applications

Migrate stateful applications off legacy infrastructure to Elastic Beanstalk and connect securely to your private network.



Platforms for Programming Languages Provided By Elastic Beanstalk are

- GO
- Java
- Node.js
- PHP
- Python
- Ruby

Platforms for Application Servers Provided by Elastic Beanstalk are

- Tomcat
- Docker

• COMPONENTS OF BEANSTALK

AWS Elastic Beanstalk Components

1. Application Handling:

Elastic Beanstalk adopts the project code directly, naming the application after the project's home directory.

2. Application Environments:

Supports multiple environments (e.g., DEV, UAT, PROD) for running applications at different stages.

3. Automated Health Checks:

AWS conducts automatic health checks on Elastic Beanstalk applications, monitoring EC2 deployments.

4. Health status indicators: Red (failure), Yellow (partial failure), Grey (updating), Green (success), Isolated (environments and applications are isolated).

5. Scalability and Load Balancing:

Utilizes Auto-Scaling for dynamic application scalability.

Elastic Load Balancer (ELB) balances web request loads across application instances. 6. Language Support:

Supports Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker applications on familiar servers.

7. Pricing:

No additional charges for Elastic Beanstalk; users pay for services and resources provisioned by the service.

8. Automatic Provisioning:

Relieves users from selecting services and configuring security groups; handles automatic provisioning.

9. Scalability Assurance:

Leverages Auto Scaling, theoretically capable of handling any amount of internet traffic, as claimed by AWS.

- IAM

Identity and access management (IAM) is a framework of business processes, policies and technologies that facilitates the management of electronic or digital identities. With an IAM framework in place, information technology (IT) managers can control user access to critical information within their organizations. Systems used for IAM include single sign-on systems, two-factor authentication, multifactor authentication and privileged access management.

IAM systems can be deployed on premises, provided by a third-party vendor through a cloud based subscription model or deployed in a hybrid model.

On a fundamental level, IAM encompasses the following components:

how individuals are identified in a system (understand the difference between identity management and authentication);

how roles are identified in a system and how they are assigned to individuals; adding, removing and updating individuals and their roles in a system;

assigning levels of access to individuals or groups of individuals; and

protecting the sensitive data within the system and securing the system itself. IAM Features: Brief Overview

➤ Shared Access:

Facilitates easy resource sharing among project teams.

➤ Cost-Free Access:

IAM feature is free; charges incurred only when accessing other AWS services using IAM users.

➤ Centralized Control:

Provides centralized control over user and group creation, management, and data access within the AWS account.

➤ Permission Granting:

Root account, with administrative rights, grants specific permissions to IAM users for accessing services.

➤ Multifactor Authentication:

Enhances account security with a third-party six-digit code, required along with the password for account logins.

- Implement paas using elastic beanstalk for the following.

1. Server

2. Java

3. Python

4. Node.js

Beanstalk

IAM(Identity Access Management)- Roles can be assigned with this

Creating an application

CREATE ENV

In Elastic Beanstalk

- EXECUTING APPLICATIONS
- UPLOADING APPLICATIONS

Services

Q elasticche X

Search results for 'elastic'

Services (12)

Marketplace (1,310)

Features (27)

Resources **New**

Blogs (1,899)

Documentation (24,813)


Knowledge Articles (907)

Tutorials (18)


Events (22)

Services


See all 12 results ▶

 **Elastic Transcoder** ☆


Easy-to-Use Scalable Media Transcoding

 **Elastic Beanstalk** ☆

Run and Manage Web Apps

 **Elastic Container Service** ☆


Highly secure, reliable, and scalable way to run containers

 **Elastic Container Registry** ☆

Fully-managed Docker container registry : Share and deploy container software, publ...


Marketplace

See all 1,310 results in Marketplace ↗


 **Elastic Cloud (Elasticsearch Service)** ↗

Sold by: Elastic

Free Trial Quick Launch


 **Rackspace Elastic Engineering** ↗

Sold by: Rackspace Technology

 **Amazon Linux 2 AMI (HVM), SSD Volume Type (64-bit x86) Operating System** ↗

Version: 2.0.20240109.0 | Sold by: Amazon Web Services

Free Tier

 **Amazon Linux 2 AMI (HVM), SSD Volume Type (64-bit arm) Operating System** ↗

Version: 2.0.20240109.0 | Sold by: Amazon Web Services

Get started

Easily deploy your web application in minutes.

Create application

Application information [Info](#)

Application name

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

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

.eu-north-1.elasticbeanstalk.com

[Check availability](#)

Environment description

Platform [Info](#)

Platform type

☒ Managed platform

Platforms published and maintained by Amazon Elastic Beanstalk. [Learn more](#) 

☐ Custom platform

Platforms created and owned by you. This option is unavailable if you have no platforms.

Platform

Java



Platform branch

Corretto 21 running on 64bit Amazon Linux 2023



Platform version

4.2.0 (Recommended)



Application code [Info](#)

☐ 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.

Version label

Unique name for this version of your application code.

Version label

Source code origin. Maximum size 500 MB


☐ Local file

☒ Public S3 URL

`https://s3.us-east-1.amazonaws.com`

Platform [Info](#)

Platform type

- ☒ **Managed platform**
Platforms published and maintained by Amazon Elastic Beanstalk. [Learn more](#) 
- ☐ **Custom platform**
Platforms created and owned by you. This option is unavailable if you have no platforms.

Platform

Java ▼

Platform branch

Corretto 21 running on 64bit Amazon Linux 2023 ▼

Platform version

4.2.0 (Recommended) ▼

Application code [Info](#)

- ☒ **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.

Creating a role for an application.

Services (11)

Features (21)

Resources **New**

Documentation (49,070)


Knowledge Articles (545)


Marketplace (745)

Blogs (1,739)

Search results for 'iam'

Services

 **IAM** ☆
Manage access to AWS resources

 **IAM Identity Center** ☆
Manage workforce user access to multiple AWS accounts and cloud applications

[See all 11 results ▶](#)

▼ Access management

User groups

Users

Roles

Policies

Identity providers

Account settings

Create role

- ☒ AWS service
Allow AWS services like EC2, Lambda, or others to perform actions in this account.

Commonly used services

EC2

Service or use case

EC2

Choose a use case for the specified service.

Use case

- ☒ EC2
Allows EC2 instances to call AWS services on your behalf.

Click next

Role Mywebapprole created.
[View role](#)

[IAM](#) > Roles

Roles (3) [Info](#)


An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

< 1 > @

<	Role name	Trusted entities	Last activity
<	AWSServiceRoleForSupport	AWS Service: support (Service Linker)	-
<	AWSServiceRoleForTrustedAdvisor	AWS Service: trustedadvisor (Service Linker)	-
	Mywebapprole	AWS Service: ec2	-


Roles Anywhere [Info](#)

Authenticate your non-AWS workloads and securely provide access to AWS services.




Access AWS from your non AWS workloads

Operate your non AWS workloads using the same authentication and authorization strategy that you use within AWS.



X.509 Standard

Use your own existing PKI infrastructure or use [AWS Certificate Manager Private Certificate Authority](#) to authenticate identities.



Temporary credentials

Use temporary credentials with ease and benefit from the enhanced security they provide.

[Go to the previous window](#)

EC2 instance profile

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

Mywebapprole ▼



[View permission details](#)

Click on create role

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

Service role name

Enter the name for an IAM role that Elastic Beanstalk will create to assume as a service role. Beanstalk will attach the required managed policies to it.

aws-elasticbeanstalk-service-role

[View permission details](#)

EC2 key pair

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

Choose a key pair ▼



EC2 instance profile

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

Mywebapprole ▼



[View permission details](#)

Refresh the instance profile cyclic button

Refresh the instance profile cyclic button

Virtual Private Cloud (VPC)

VPC

Launch your environment in a custom VPC instead of the default VPC. You can create a VPC and subnets in the VPC management console.
[Learn more](#)

vpc-0ede570da8526f7b5 | (172.31.0.0/16)

Create custom VPC

Instance settings

Choose a subnet in each AZ for the instances that run your application. To avoid exposing your instances to the Internet, run your instances in private subnets and load balancer in public subnets. To run your load balancer and instances in the same public subnets, assign public IP addresses to the instances. [Learn more](#)

Public IP address

Assign a public IP address to the Amazon EC2 instances in your environment.

☐ Activated

Instance subnets

Filter instance subnets

	Availability Zone	Subnet	CIDR	Name
<input type="checkbox"/>	eu-north-1b	subnet-01570739f...	172.31.32.0/20	
<input type="checkbox"/>	eu-north-1a	subnet-05547b7c4...	172.31.16.0/20	
<input checked="" type="checkbox"/>	eu-north-1c	subnet-0aa0df663...	172.31.0.0/20	

Three times next

Review [Info](#)

Step 1: Configure environment

[Edit](#)

Environment information

Environment tier

Web server environment

Application name

Purva

Environment name

Purva-env

Application code

Sample application

Platform

arn:aws:elasticbeanstalk:eu-north-1::platform/Corretto 21
running on 64bit Amazon Linux 2023/4.2.0

Step 2: Configure service access

[Edit](#)

Service access [Info](#)

Configure the service role and EC2 instance profile that Elastic Beanstalk uses to manage your environment. Choose an EC2 key pair to securely log in to your EC2 instances.

Service role

arn:aws:iam::533267007968:role/ser
vice-role/aws-elasticbeanstalk-
service-role

EC2 instance profile

Mywebapprole

Step 3: Set up networking, database, and tags

[Edit](#)

Networking, database, and tags [Info](#)

Click next next next

At last will get this window

Elastic Beanstalk is launching your environment. This will take a few minutes.

Elastic Beanstalk > Environments > Purva-env

Purva-env Info

Environment overview

Health

Unknown

Environment ID

e-2fntpmtyup

Domain

Purva

Platform

Platform

Corretto 21 running on 64bit Amazon Linux 2023/4 2.0

Running version

Platform state

Supported

Actions

Upload and deploy

Change version

Events

Health

Logs

Monitoring

Alarms

Managed updates

Tags

Events (2) Info

Filter events by text, property or value

< 1 >

Time	Type	Details
February 1, 2024 09:24:42 (UTC+5:30)	INFO	Using elasticbeanstalk-eu-north-1-533267007968 as Amazon S3 storage bucket for environment data.
February 1, 2024 09:24:41 (UTC+5:30)	INFO	createEnvironment is starting.

Instances (1) Info

Find Instance by attribute or tag (case-sensitive)

Any state

Instance state = running

Clear filters

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check
<input type="checkbox"/>	Purva-env	i-08bd7710525c73f6d	Running	t3.micro	2/2 checks passed

Environment overview

Health

Ok

Domain

Purva-env.eba-26383stz.eu-north-1.elasticbeanstalk.com

Click on domain url in environment overview

Click submit

Go to EC2 and check if running

Should get this message

Congratulations

AWS Elastic Beanstalk Corretto application is now running on your own dedicated environment in the AWS Cloud

This environment is launched with Elastic Beanstalk Corretto Platform

What's Next?

- [AWS Elastic Beanstalk overview](#)
- [AWS Elastic Beanstalk concepts](#)

Creating TOMCAT server

Configure an elastic beanstalk in AWS

GO TO ELASTIC BEANSTALK HOME PAGE

GET started page

Create application

Elastic Beanstalk > Applications

Applications (1) [info](#)

Actions

Create application

< 1 >

Application name	▲	Environments	Date created	▼	Last modified	▼	ARN	▼
Purva		Purva-WW	February 1, 2024 07:58:47 (UTC+5:30)		February 1, 2024 07:58:47 (UTC+5:30)		arn:aws:elasticbeanstalk:ap-south-1:123456789012:application/purva	

Application information

Application name

Maximum length of 100 characters.

Description

Elastic Beanstalk > Applications > purvatomcat

Application purvatomcat environments (0) [Info](#)

[Actions](#) [Create new environment](#)

Environment name	Health	Date created	Domain	Running versions	Platform	Platform state
No environments						
No environments currently exist for this application.						
Create environment						

Environment tier [Info](#)

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](#)

Application name

purvatomcat

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

Purvatomcat-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

Leave blank for autogenerated value

.eu-north-1.elasticbeanstalk.com

[Check availability](#)

Environment description

This is an app which will execute tomcat

From the web download calendar.war file from github

https://github.com/manulachathurika/Apache_Stratos_Tomcat_Applications/blob/master/Calendar.war

Select local file from option and choose file from your device

Platform

Tomcat

Platform branch

Tomcat 10 with Corretto 17 running on 64bit Amazon Linux 2023

Platform version

5.1.3 (Recommended)

Application code [Info](#)

☐ 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.

Version label


Unique name for this version of your application code.

version1

Source code origin. Maximum size 500 MB

☒ Local file

Upload application

 Choose file

File must be less than 500MB max file size

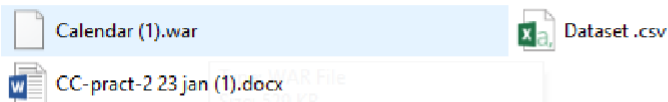
☐ Public S3 URL

Click next

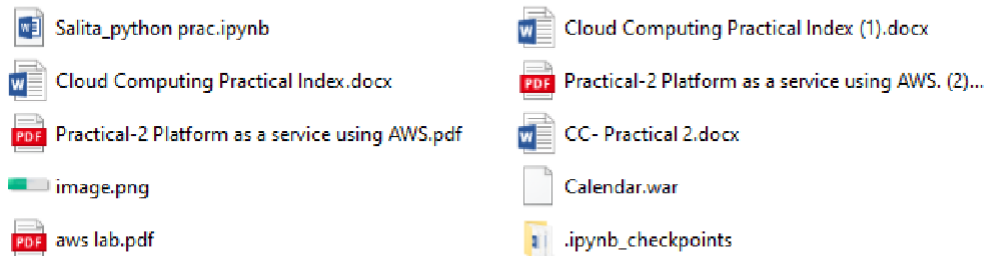
Go to IAM – Roles- Create new role

Use case EC2

Today (3)



Earlier this week (10)



Last week (10)



Identity and Access Management (IAM)



 Search IAM

Dashboard

▼ Access management

User groups

Users

Roles

Policies

Identity providers

Account settings

Create role

Select trusted entity [Info](#)

Trusted entity type

☒ **AWS service**

Allow AWS services like EC2, Lambda, or others to perform actions in this account.

☐ **AWS account**

Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.

☐ **Web identity**

Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.

☐ **SAML 2.0 federation**

Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.

☐ **Custom trust policy**

Create a custom trust policy to enable others to perform actions in this account.

Use case

Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

Service or use case

EC2

Choose a use case for the specified service.

Use case

☒ **EC2**

Allows EC2 instances to call AWS services on your behalf.

Permissions policies (3/909) Info

Choose one or more policies to attach to your new role.

<div><div></div><div>beanstalk</div></div>		
<div><div></div><div></div></div>	Policy name <div></div>	
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AdministratorAccess-AWSElasticBeanstalk</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkCustomPlatformforEC2Role</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkEnhancedHealth</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkManagedUpdatesCustomerRolePolicy</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkMulticontainerDocker</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkReadOnly</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkRoleCore</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkRoleCWL</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkRoleECS</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkRoleRDS</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkRoleSNS</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkRoleWorkerTier</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkWebTier</div></div>
<div><div></div></div>	<div><div></div></div>	<div><div></div><div>AWSElasticBeanstalkWorkerTier</div></div>

Give role name

Role details

Role name

Enter a meaningful name to identify this role.

tomcatrole

Maximum 64 characters. Use alphanumeric and '+=, @-_' characters.

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.

aws-elasticbeanstalk-service-role



EC2 key pair

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

Choose a key pair



EC2 instance profile

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

tomcatrole



[View permission details](#)

In configure services refresh instance profile button

In virtual private cloud select

Set up networking, database, and tags - *optional* [Info](#)

Virtual Private Cloud (VPC)

VPC

Launch your environment in a custom VPC instead of the default VPC. You can create a VPC and subnets in the VPC management console.

[Learn more](#)

vpc-0ede570da8526f7b5 | (172.31.0.0/16)

[Create custom VPC](#)

Instance settings

Choose a subnet in each AZ for the instances that run your application. To avoid exposing your instances to the Internet, run your instances in private subnets and load balancer in public subnets. To run your load balancer and instances in the same public subnets, assign public IP addresses to the instances. [Learn more](#)

Public IP address

Assign a public IP address to the Amazon EC2 instances in your environment.

☐ Activated

Instance subnets

<input type="checkbox"/>	Availability Zone	Subnet	CIDR	Name
<input type="checkbox"/>	eu-north-1b	subnet-01570739f...	172.31.32.0/20	
<input type="checkbox"/>	eu-north-1a	subnet-05547b7c4...	172.31.16.0/20	
<input checked="" type="checkbox"/>	eu-north-1c	subnet-0aa0df663...	172.31.0.0/20	

Now 3 times next-> the submit

After launched, click on the domain name

Review [Info](#)

Step 1: Configure environment

Edit

Environment information

Environment tier	Application name
Web server environment	purvatomcat
Environment name	Application code
Purvatomcat-env	Calendar (1).war
Platform	
arn:aws:elasticbeanstalk:eu-north-1::platform/Tomcat 10 with Corretto 17 running on 64bit Amazon Linux 2023/5.1.3	

Step 2: Configure service access

Edit

Service access [Info](#)

Configure the service role and EC2 instance profile that Elastic Beanstalk uses to manage your environment. Choose an EC2 key pair to securely log in to your EC2 instances.

Service role	EC2 instance profile
arn:aws:iam::533267007968:role/ser vice-role/aws-elasticbeanstalk- service-role	tomcatrole

Step 3: Set up networking, database, and tags

Edit

Must get this

GWT Calendar

Click on day to get date popup. Example Datepicker. Built with the tomcat war builder.
<http://code.google.com/p/gwt-examples/>

< February >				< 2024 >		
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

