Tutorial 10
AWS Deployment

CS551 Advanced Software Engineering

UMKC

Topics to cover

Amazon AWS
AWS Elastic Beanstalk

AWS Introduction

Amazon Web Services (AWS), is a collection of cloud computing services, also called web services, that make up a cloud-computing platform offered by Amazon.com.

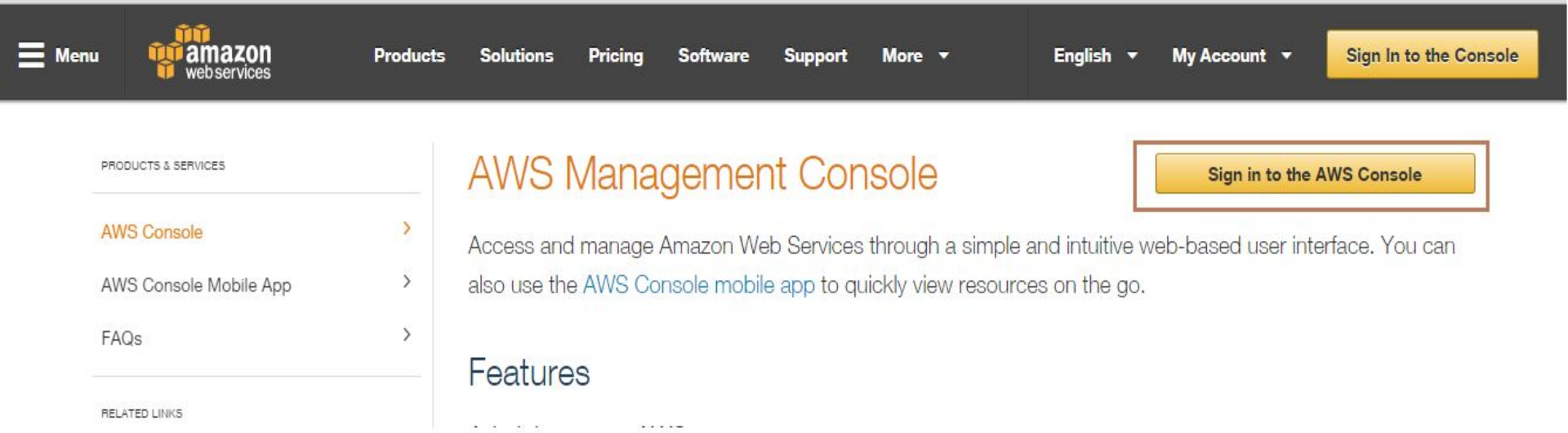
AWS Introduction

- AWS is a collection of services in the cloud, as the definition says.
- AWS provides fast computing resources online (for example, you need 10 minutes to set up a Linux server).
- AWS offers affordable fees. AWS provides easy-to-use services out of the box, which is saves lots of time manually setting up a database, cache, storage, network and other infrastructure services.
- AWS is always available and is highly scalable.

Account Creation

AWS - Console

Open the URL : https://aws.amazon.com/



amazon web services

Sign In or Create an AWS Account

What is your email (phone for mobile accounts)?

E-mail or mobile number:

- ○ **I am a new user.**
- ◉ **I am a returning user and my password is:**

Sign in using our secure server

Forgot your password?

Learn more about AWS Identity and Access Management and AWS Multi-Factor Authentication, features that provide additional security for your AWS Account. View full AWS Free Usage Tier offer terms.

Login Credentials

Use the form below to create login credentials that can be used for AWS as well as Amazon.com.

My name is:

My e-mail address is:

Type it again:

note: this is the e-mail address that we will use to contact you about your account

Enter a new password:

Type it again:

Create account

Fill in the details to create account.

English ▼ Sign Out

Amazon Web Services Sign Up

Contact Information

Company Account Personal Account

* Required Fields

Full Name*

Company Name*

Country* United States

Address* Street, P.O. Box, Company Name, c/o

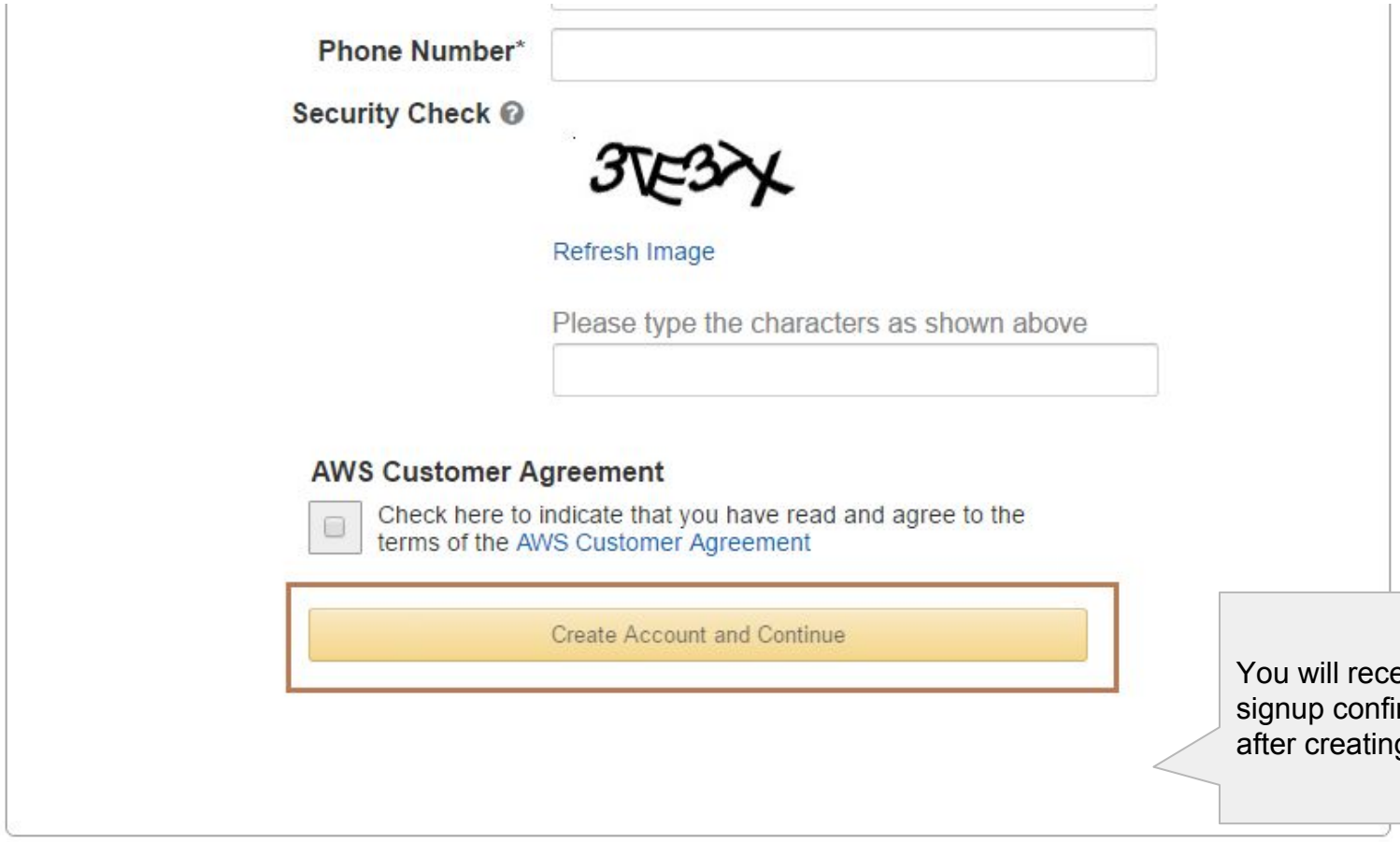
Apartment, suite, unit, building, floor, etc.

City*

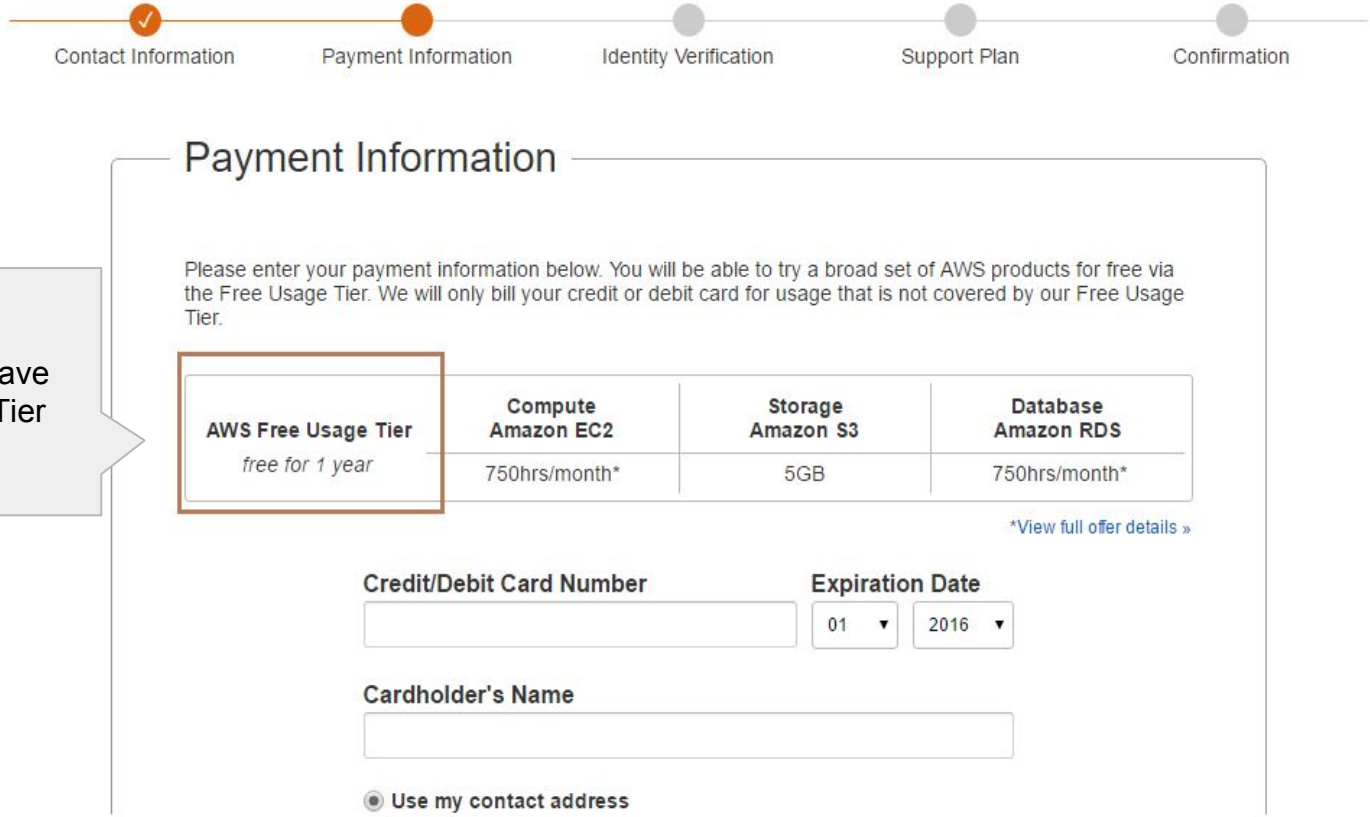
State / Province or Region*

Postal Code*

Phone Number*


Phone Number*
Security Check
3TE3X
Refresh Image
Please type the characters as shown above
AWS Customer Agreement
Check here to indicate that you have read and agree to the terms of the AWS Customer Agreement
Create Account and Continue
You will receive a signup confirmation after creating account

AWS Console-Signup



Make sure you have the Free Usage Tier

Identity Verification

You will be called immediately by an automated system and prompted to enter the PIN number provided.

1. Provide a telephone number

Please enter your information below and click the "Call Me Now" button.

Country Code | **Phone Number** | **Ext**

United States (+1) ▾

Call Me Now

2. Call in progress

3. Identity verification complete

Identity Verification

You will be called immediately by an automated system and prompted to enter the PIN number provided.

1. Provide a telephone number ✓

2. Call in progress ✓

3. Identity verification complete

Your identity has been verified successfully

Continue to select your Support Plan

Support Plan

All customers receive free support. Choosing a paid support plan will allow you to receive one-on-one technical assistance from experienced engineers and access many other support features. Please see below.

Please Select One

- **Basic (Free)**
  Contact Customer Service for account and billing questions, receive help for resources that don't pass system health checks, and access the AWS Community Forums.
- **Developer ($49/month)**
  Get started on AWS - ask technical questions and get a response to your web case within 12 hours during local business hours.
- **Business (Starting at $100/month - Pricing Example) - Recommended**
  24/7/365 real-time assistance by phone and chat, a 1 hour response to web cases, and help with 3rd party software. Access AWS Trusted Advisor to increase performance, fault tolerance, security, and potentially save money.
- **Enterprise**
  15 minute response to web cases, an assigned technical account manager (TAM) who is an expert in your use case, and white-glove case handling that notifies your TAM and the service engineering team of a critical issue.

  If you select this option, you will not be charged immediately. We will contact you to discuss your needs and finalize the signup.

AWS Support Features

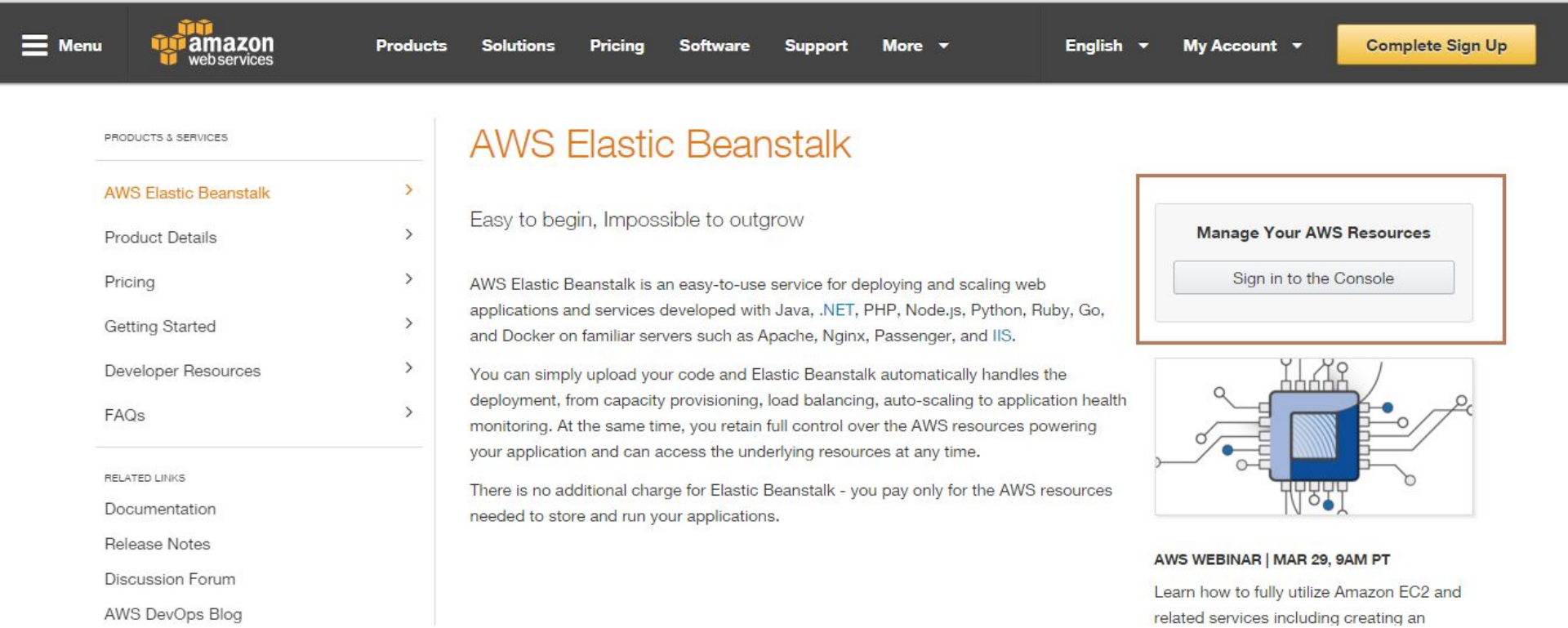
	Basic	Developer	Business	Enterprise
Customer Service - 24x7x365	●	●	●	●
Support Forums	●	●	●	●
Documentation, White Papers, Best Practice Guides	●	●	●	●
AWS Trusted Advisor	4 checks	4 checks	37 checks	37 checks
Access to Technical Support	Support for Health Checks	Email (local business hours)	Phone, Chat, Email, Live Screen Sharing (24/7)	Phone, Chat, Email, Live Screen Sharing (24/7)
Primary Case Handling	Technical Customer Service Associate	Cloud Support Associate	Cloud Support Engineer	Sr. Cloud Support Engineer
Users who can create Technical Support		1 (account credentials only)	Unlimited (IAM supported)	Unlimited (IAM supported)
Response Time		<12 hours	<1 hour	<15 minutes
Architecture Support		Building Blocks	Use Case Guidance	Application Architecture
Best Practice Guidance		●	●	●

The service gets activated after 24 hours and a confirmation will be sent to your email.

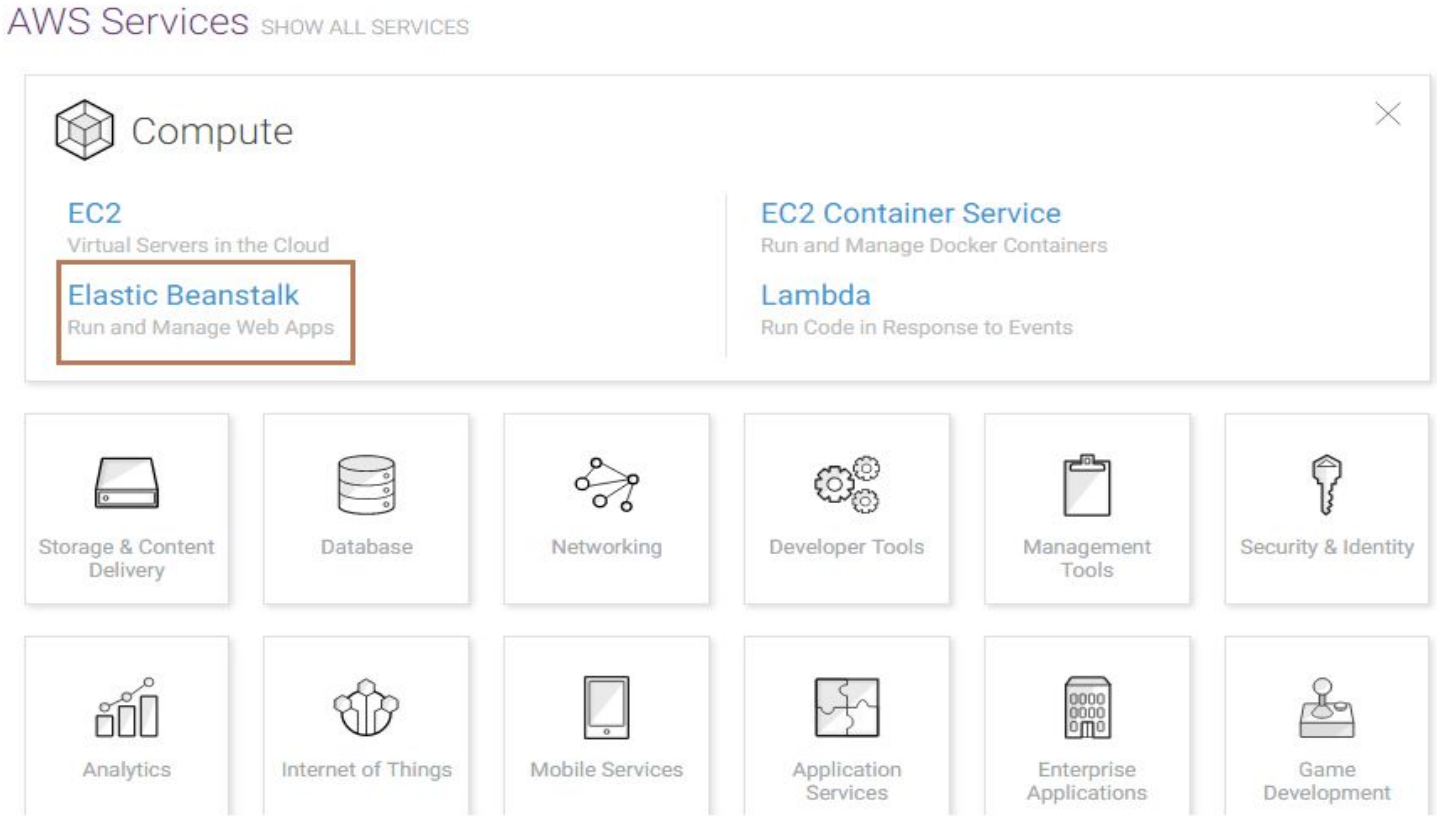
AWS Elastic Beanstalk

Elastic Beanstalk

Open the URL : https://aws.amazon.com/elasticbeanstalk/



AWS Console - Elastic Beanstalk



JAVA on Elastic Beanstalk

When you use the AWS Elastic Beanstalk console to deploy a new application or an application version, you'll need to upload a source bundle. Your source bundle must meet the following requirements:

- Consist of a single `ZIP` file or `WAR` file (you can include multiple `WAR` files inside your `ZIP` file)
- Not exceed 512 MB
- Not include a parent folder or top-level directory (subdirectories are fine)

If you want to deploy a worker application that processes periodic background tasks, your application source bundle must also include a `cron.yaml` file. For more information, see Periodic Tasks.

If you are deploying your application with the Elastic Beanstalk Command Line Interface (EB CLI), the AWS Toolkit for Eclipse, or the AWS Toolkit for Visual Studio, the ZIP or WAR file will automatically be structured correctly. For more information, see The Elastic Beanstalk Command Line Interface (EB CLI), Creating and Deploying Java Applications on AWS Elastic Beanstalk, and AWS Toolkit for Visual Studio.

Supported Platforms

Java with Tomcat

Elastic Beanstalk supports the following Tomcat configurations:

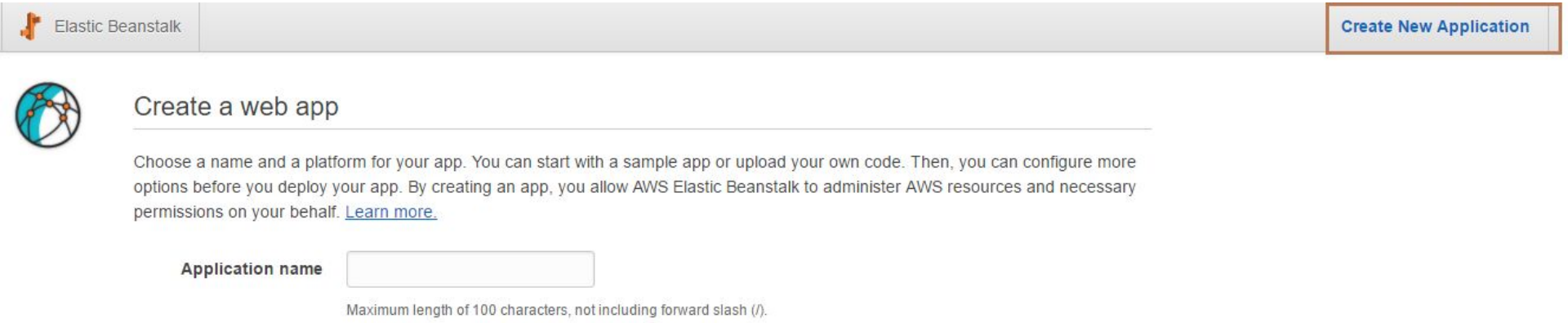
Configuration and *Solution Stack Name*	AMI	Language	Application Server	Web Server
Java 8 with Tomcat 8 version 2.0.8 *64bit Amazon Linux 2015.09 v2.0.8 running Tomcat 8 Java 8*	2015.09	Java 1.8.0_71	Tomcat 8.0.30	Apache 2.2.31
Java 7 with Tomcat 7 version 2.0.8 *64bit Amazon Linux 2015.09 v2.0.8 running Tomcat 7 Java 7*	2015.09	Java 1.7.0_95	Tomcat 7.0.67	Apache 2.2.31
Java 6 with Tomcat 7 version 2.0.8 *64bit Amazon Linux 2015.09 v2.0.8 running Tomcat 7 Java 6*	2015.09	Java 1.6.0_38	Tomcat 7.0.67	Apache 2.2.31

Structuring your JAVA application

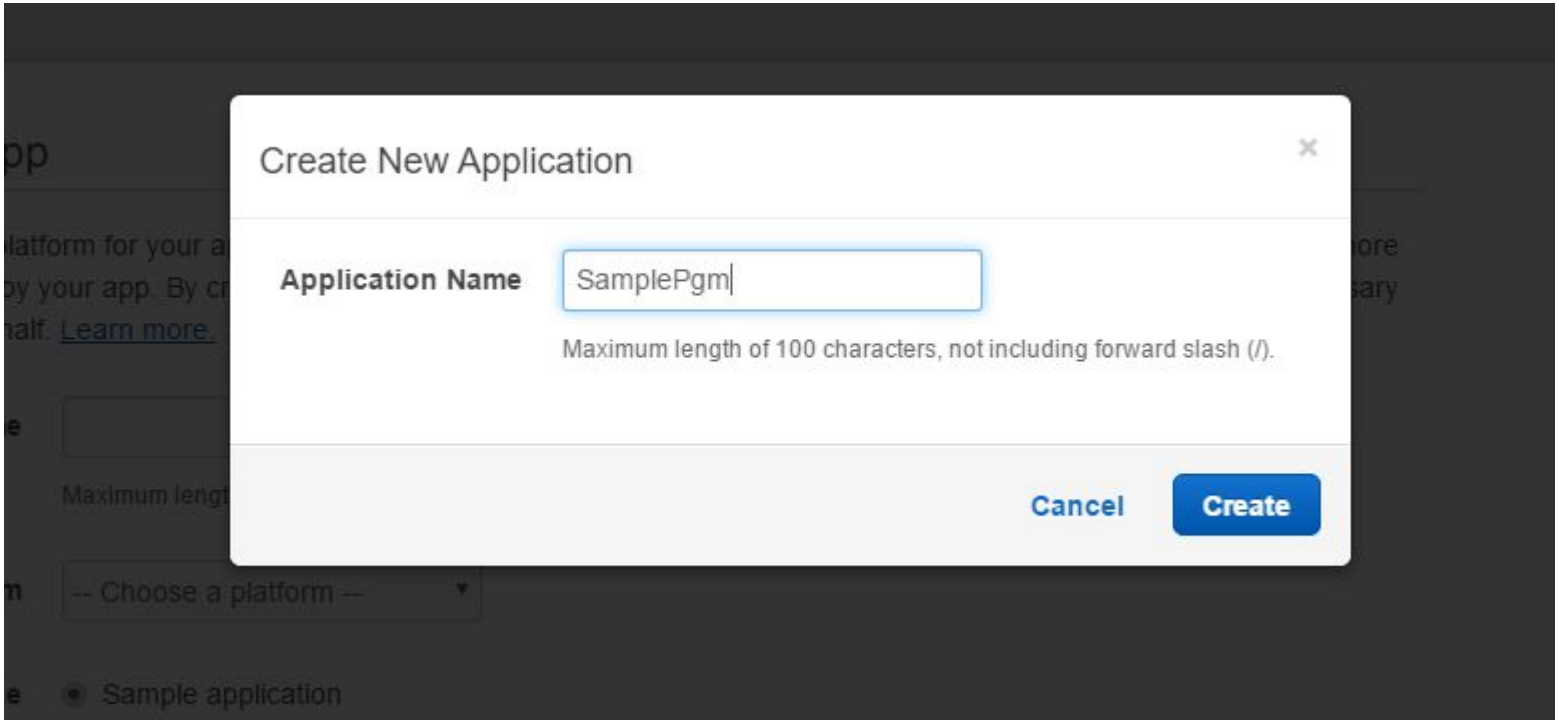
```
~/workspace/my-app/
|-- build.sh              - Build script that compiles classes and creates a WAR
|-- README.MD             - Readme file with information about your project, notes
|-- ROOT.war              - Source bundle artifact created by build.sh
`-- src                   - Source code folder
    |-- WEB-INF           - Folder for private supporting files
    |   |-- classes       - Compiled classes
    |   |-- lib           - JAR libraries
    |   |-- tags          - Tag files
    |   |-- tlds          - Tag Library Descriptor files
    |   `-- web.xml       - Deployment Descriptor
    |-- com               - Uncompiled classes
    |-- css               - Stylesheets
    |-- images            - Image files
    |-- js                - JavaScript files
    `-- default.jsp       - JSP (JavaServer Pages) web page
```

Deploying an application to Elastic Beanstalk

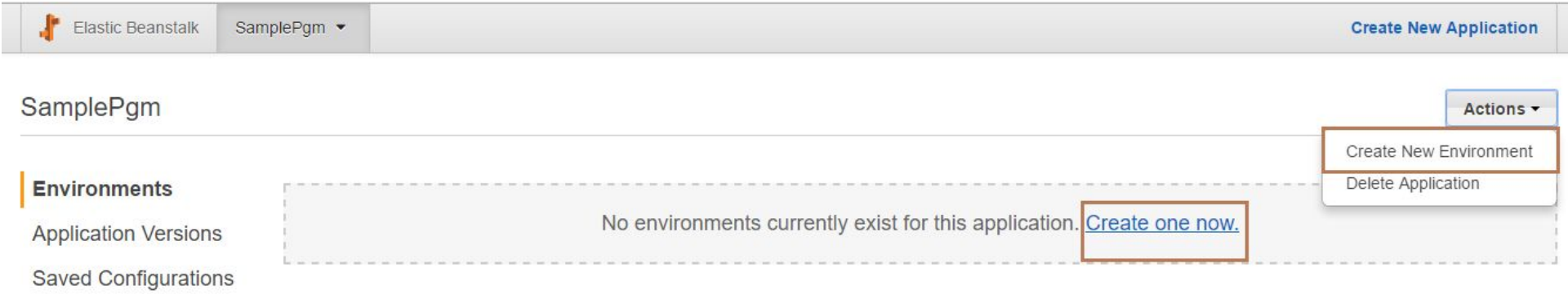
1. Open the Elastic Beanstalk console
2. On the Elastic Beanstalk application navigation bar, click **Create New Application**.



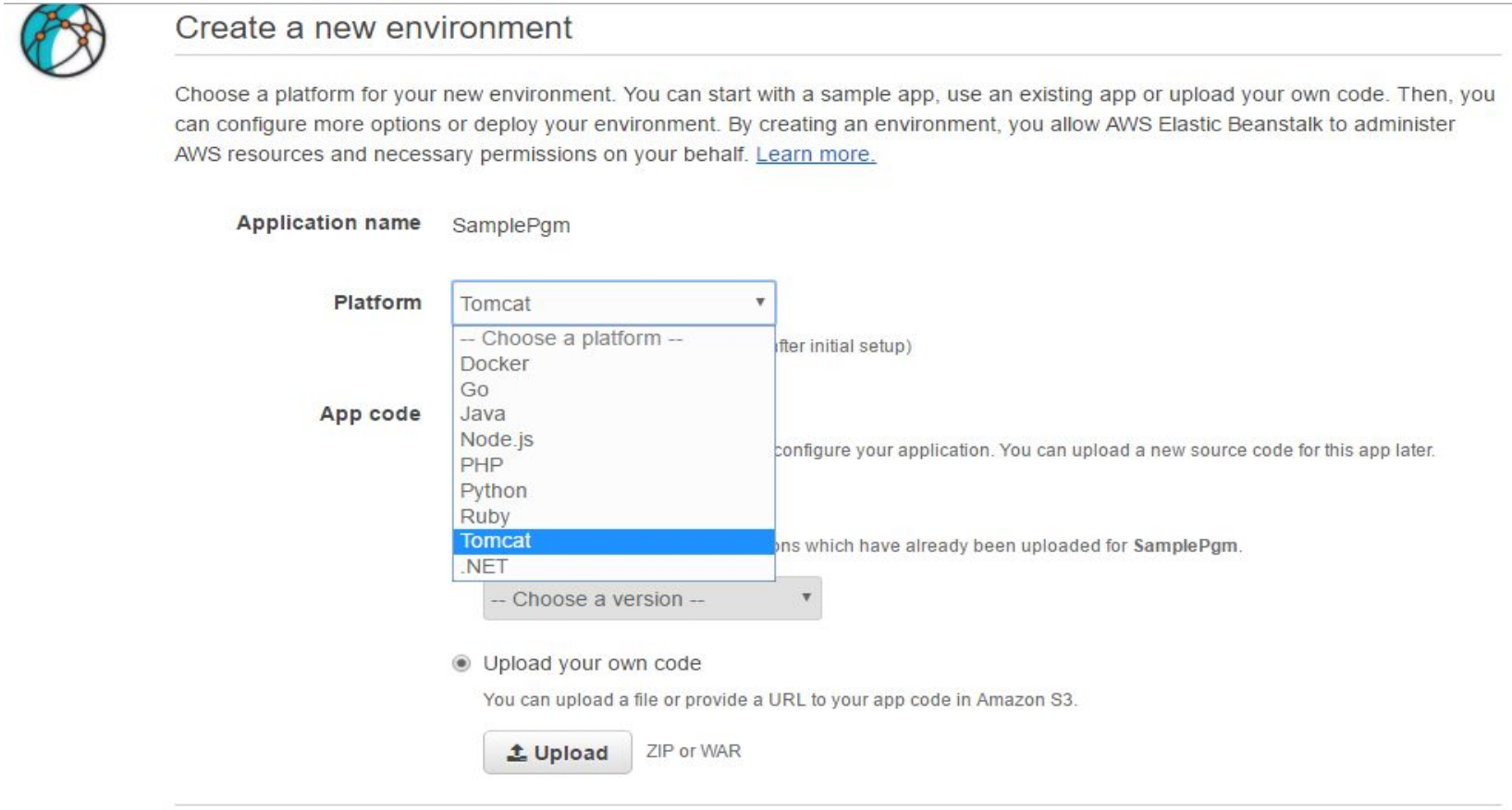
3. Enter the name of the application and, Then click **Create**.



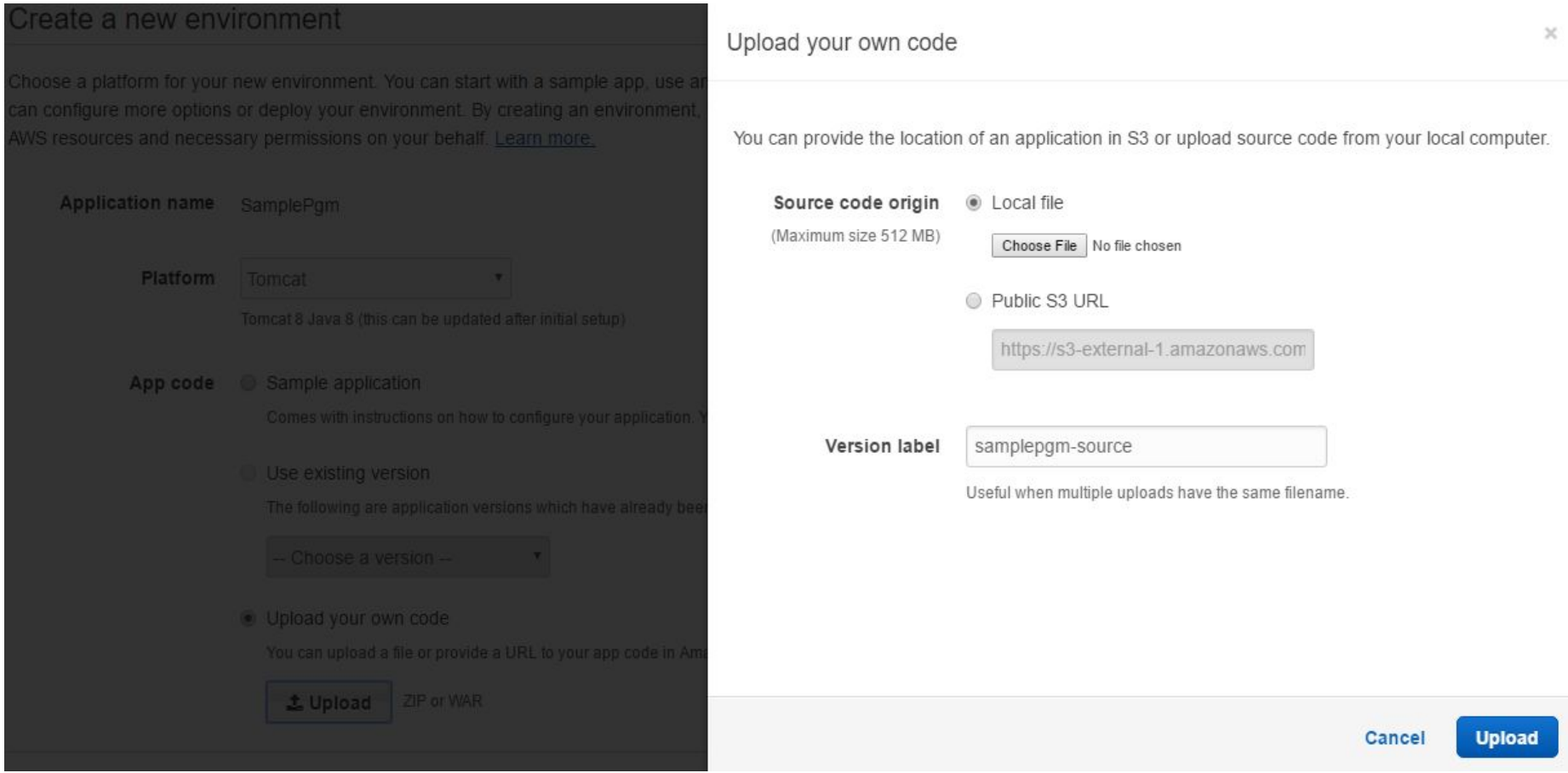
4. In the upper right corner, choose **Create a New Environment**.



5. From the drop down menu select **Tomcat** under platform and select the option **Upload your own code** where the WAR or ZIP is to be uploaded.



6. Choose **Sample Application** or **Upload your own** and upload an application source bundle.



SamplePgm ▸ samplepgm (Environment ID: e-3yb9j7fgvi, URL:)

Creating samplepgm

This will take a few minutes..

12:26am Successfully launched environment: samplepgm

12:26am Environment health has transitioned from Pending to Ok.

12:25am Added instance [i-01765cd3a796ca6fc] to your environment.

12:24am Waiting for EC2 instances to launch. This may take a few minutes.

12:23am Environment health has transitioned to Pending. There are no instances.

12:22am Created security group named:
awseb-e-3yb9j7fgvi-stack-AWSEBSecurityGroup-1WAIUUEJCPM8A

12:22am Created EIP: 52.87.17.173

12:22am Using elasticbeanstalk-us-east-1-037654936661 as Amazon S3 storage bucket for environment data.

12:22am createEnvironment is starting.

Elastic Beanstalk | SamplePgm | Create New Application

SamplePgm ▸ samplepgm (Environment ID: e-3yb9j7fgvi, URL: samplepgm.uq2sf3jmee.us-east-1.elasticbeanstalk.com) Actions

- Dashboard
- Configuration
- Logs
- Health NEW
- Monitoring
- Alarms
- Events
- Tags

Overview

Refresh

Health

Ok

Causes

Running Version

samplepgm-source

Upload and Deploy

Configuration

64bit Amazon Linux 2015.09
v2.0.8 running Tomcat 8 Java 8

Change

Recent Events

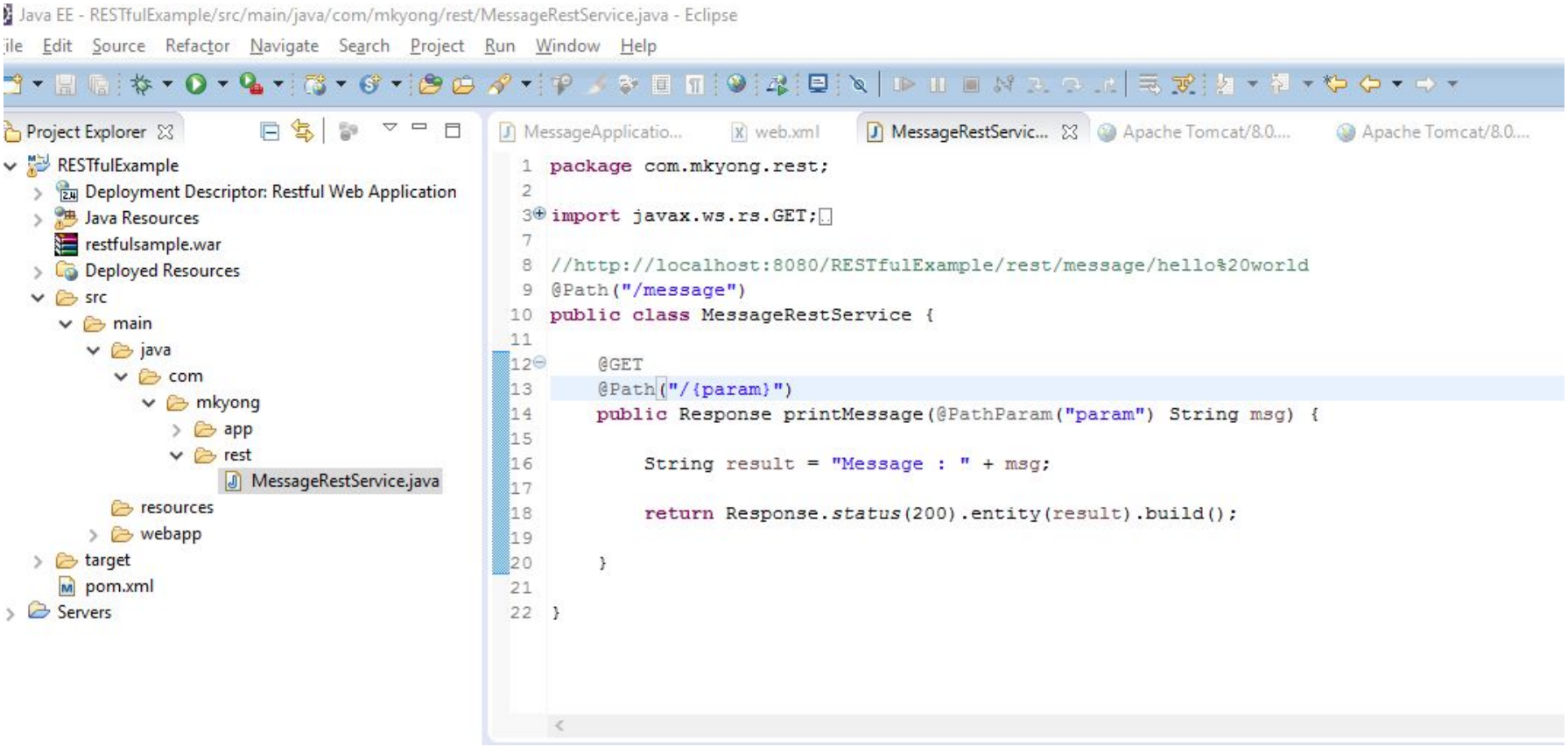
Show All

Time	Type	Details
2016-03-22 00:26:27 UTC-0500	INFO	Successfully launched environment: samplepgm
2016-03-22 00:26:10 UTC-0500	INFO	Environment health has transitioned from Pending to Ok.
2016-03-22 00:25:11 UTC-0500	INFO	Added instance [i-01765cd3a796ca6fc] to your environment.

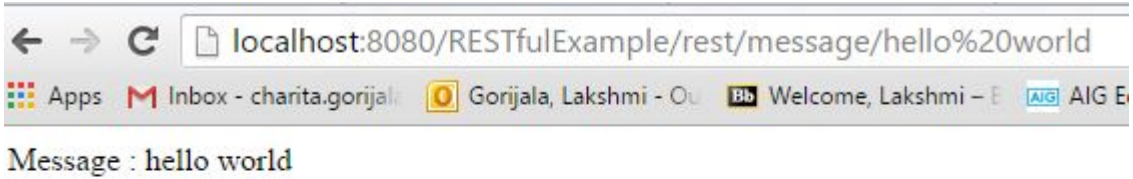
Generating and Uploading war file

Download the source code from http://www.mkyong.com/webservices/jax-rs/resteasy-hello-world-example/

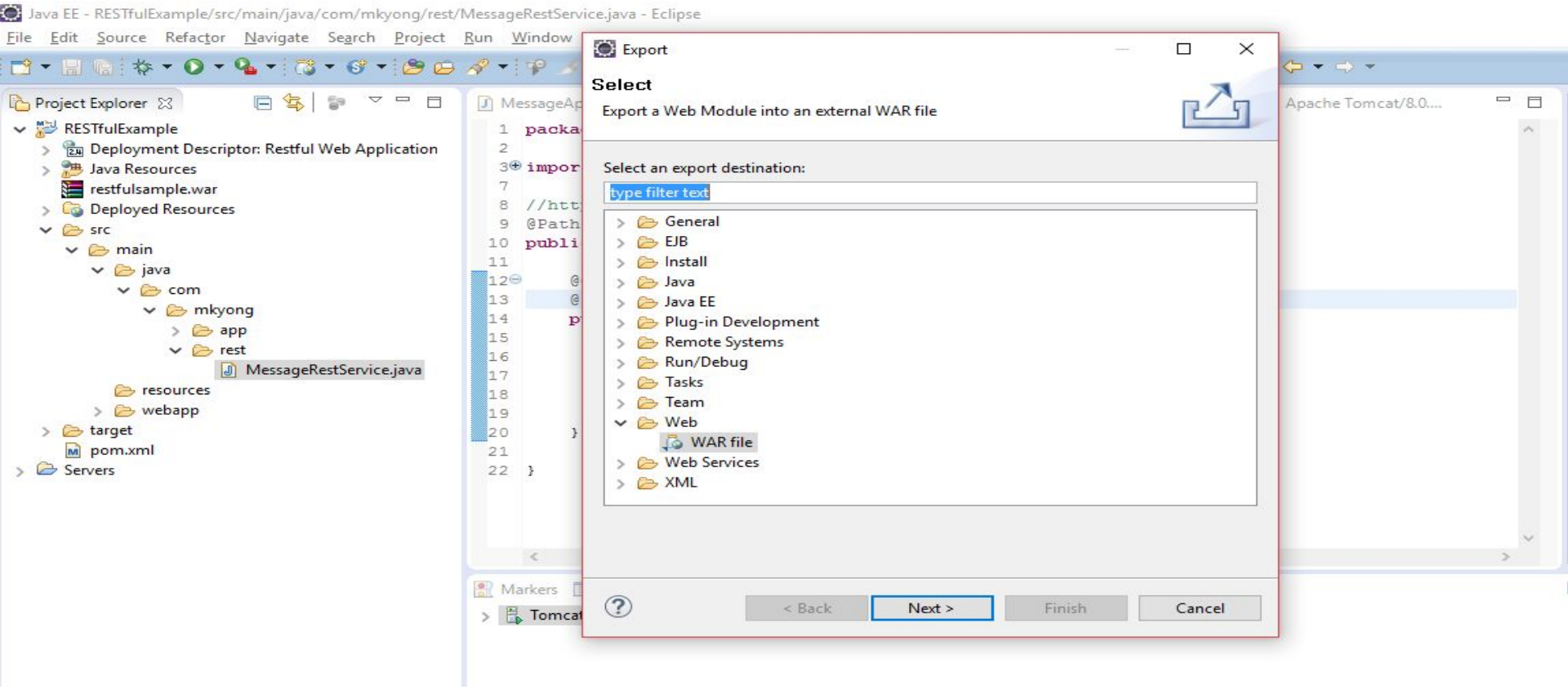
Sample Java REST App

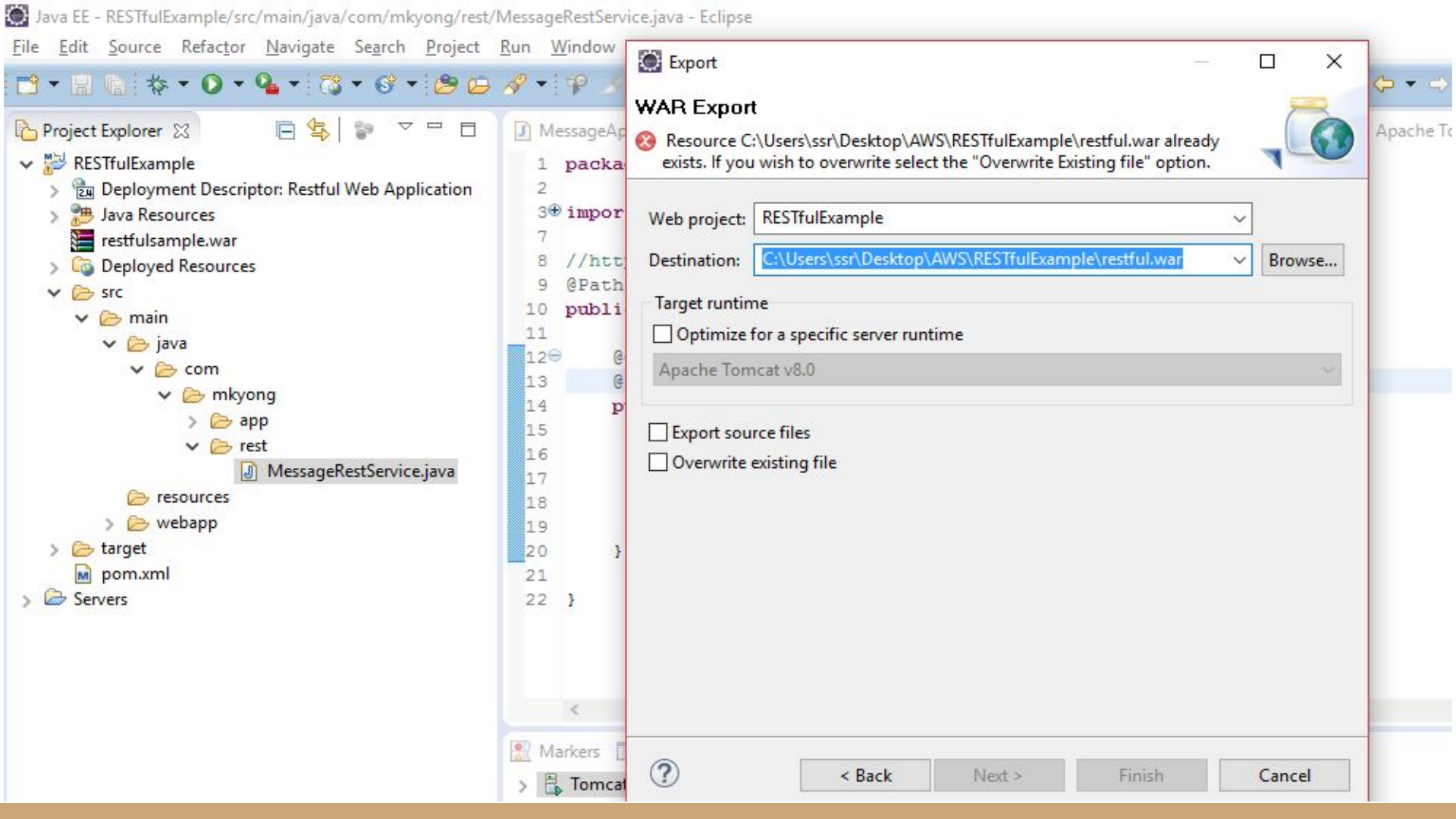


Local Run

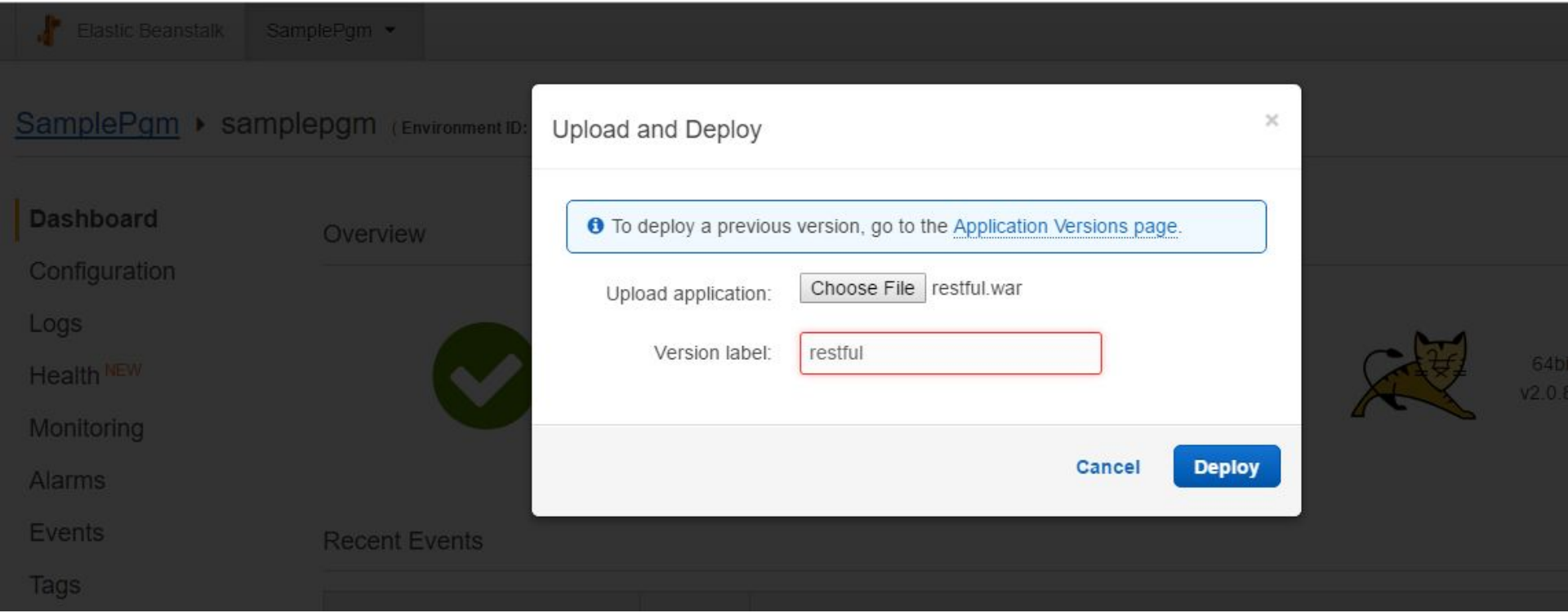

localhost:8080/RESTfulExample/rest/message/hello%20world
Apps
Inbox - charita.gorijal
Gorijala, Lakshmi - Ou
Welcome, Lakshmi – E
AIG E
Message : hello world

Generate WAR file from Eclipse




Java EE - RESTfulExample/src/main/java/com/mkyong/rest/MessageRestService.java - Eclipse
File Edit Source Refactor Navigate Search Project Run Window
Project Explorer
RESTfulExample
Deployment Descriptor: Restful Web Application
Java Resources
restfulsample.war
Deployed Resources
src
main
java
com
mkyong
app
rest
MessageRestService.java
resources
webapp
target
pom.xml
Servers
Export
WAR Export
Resource C:\Users\ssr\Desktop\AWS\RESTfulExample\restful.war already exists. If you wish to overwrite select the "Overwrite Existing file" option.
Web project: RESTfulExample
Destination: C:\Users\ssr\Desktop\AWS\RESTfulExample\restful.war
Browse...
Target runtime
Optimize for a specific server runtime
Apache Tomcat v8.0
Export source files
Overwrite existing file
< Back
Next >
Finish
Cancel
Markers

Upload and Deploy the WAR file



Deployment Successful

SamplePgm ▸ samplepgm (Environment ID: e-3yb9j7fgvi, URL: samplepgm.ug2sf3jmee.us-east-1.elasticbeanstalk.com) Actions

- Dashboard
- Configuration
- Logs
- Health NEW
- Monitoring
- Alarms
- Events
- Tags

Overview Refresh

Health
Ok
Causes

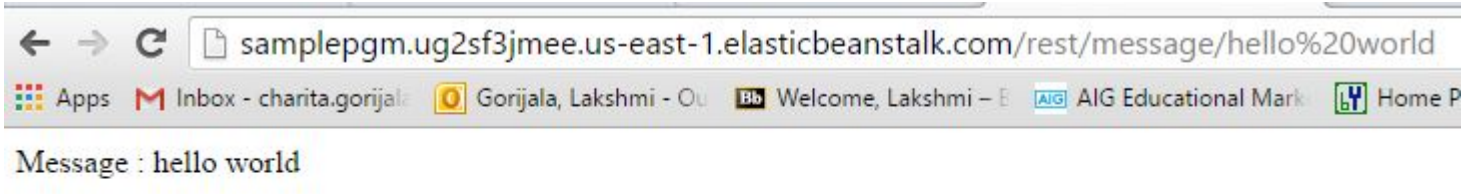
Running Version
restful
Upload and Deploy

Configuration
64bit Amazon Linux 2015.09 v2.0.8 running Tomcat 8 Java 8
Change

Recent Events Show All

Time	Type	Details
2016-03-22 01:43:27 UTC-0500	INFO	Environment update completed successfully.
2016-03-22 01:43:27 UTC-0500	INFO	New application version was deployed to running EC2 instances.

Test the url


samplepgm.ug2sf3jmee.us-east-1.elasticbeanstalk.com/rest/message/hello%20world
Apps
Inbox - charita.gorijal
Gorijala, Lakshmi - Ou
Welcome, Lakshmi – E
AIG Educational Mark
Home P
Message : hello world

Task

Deploy your applications onto your Amazon instances and share the URL.

Submit the code under the Source folder in Github.

References

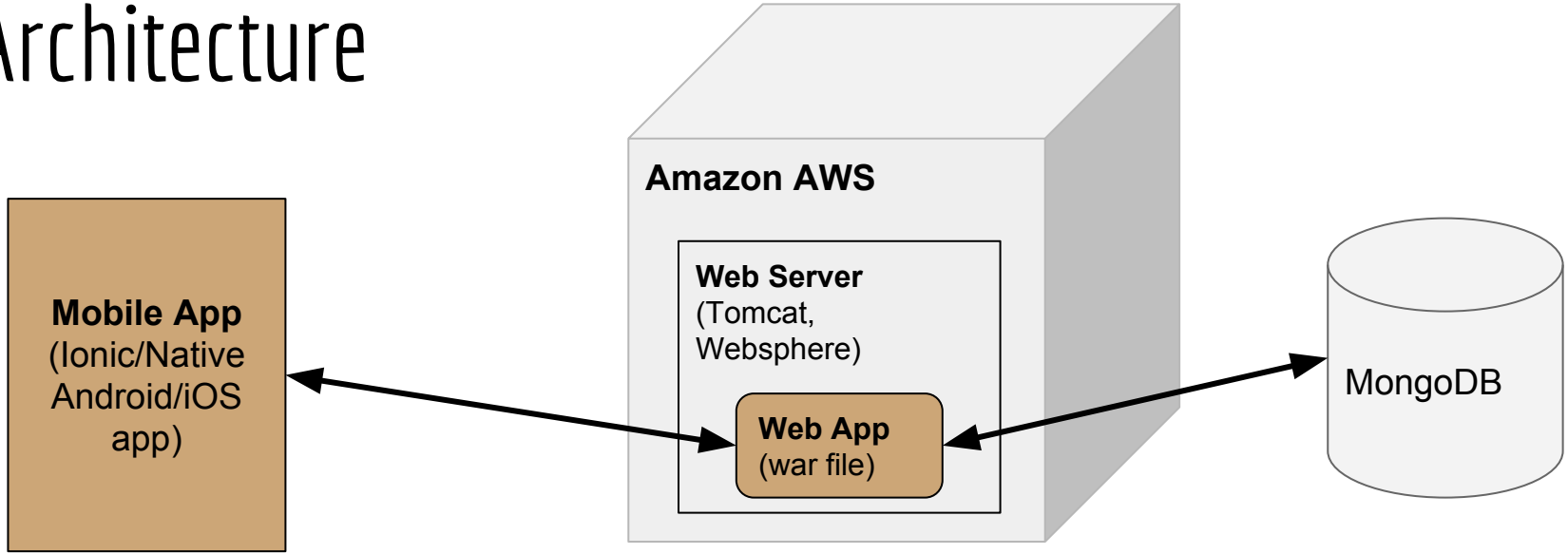
https://www.toptal.com/aws/boost-your-productivity-with-aws

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

http://www.mkyong.com/webservices/jax-rs/resteasy-hello-world-example/

Review : All Tutorials

Architecture



Everything together makes more sense..

Review

1. Git + ZenHub + Visio + Creately
2. Android (Android Studio, Android SDK, AVD, Gradle, Jargon like Activity, Intent, Fragments, layouts, drawable etc)
3. HTML5, CSS, Javascript
4. Angular JS
5. Servlets, WebSphere, Unit testing
6. REST : Servlets with MongoDB
7. Hybrid app : Ionic basics and unit testing
8. Ionic plugins and performance testing
9. Amazon WS

Log.w(“TAs Message”, “THANK YOU”);