

06

Due Date

Section	Due Date	Grading Deadline
Saturday & Online	09:00pm on 07/26/2019	09:00pm on 08/02/2019

Getting Help

Info

Ask all your questions on Piazza. Assign **assignment6** tag to your posts.

Assignment Weightage

Individual Assignment Weightage on Course Grade of this assignment is **5%**.

Objectives

Application Logging & Metrics

IAM Updates

- Update your CloudFormation template to [Update the IAM role attached to EC2 instance for use with CloudWatch Agent](#)

[<https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/create-iam-roles-for-cloudwatch-agent.html>].

AMI Updates

- Update your packer build template to [install](#) [<https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/install-CloudWatch-Agent-on-first-instance.html#download-CloudWatch-Agent-on-EC2-Instance-first>] the [Unified CloudWatch Agent](#) [<https://docs.aws.amazon.com/AmazonCloudWatch/latest/logs/UseCloudWatchUnifiedAgent.html>] in your AMIs.
- You may also need to create a [systemd service](#) [<https://www.digitalocean.com/community/tutorials/how-to-use-systemctl-to-manage-systemd-services-and-units>] to start, stop and restart the CloudWatch agent.
- Your CloudWatch agent must be setup to start automatically when an EC2 instance is launched using your AMI. Note that until CodeDeploy deploys the application on the EC2 instance, CloudWatch agent will not work.

Webapp User Stories

1. As a user, I want all application log data to be available in CloudWatch.
2. As a user, I want metrics on API usage available in CloudWatch. Create a custom metric for every API we have implemented in the web application and count the number of times each API is called. This metrics data should be collected in CloudWatch. You can retrieve custom metrics using either [StatsD](#) [<https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/CloudWatch-Agent-custom-metrics-statsd.html>] or [collectd](#) [<https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/CloudWatch-Agent-custom-metrics-collectd.html>].
3. CloudWatch agent configuration file must be copied over to the EC2 server when application is being deployed by CodeDeploy. You will also need to configure CloudWatch agent before starting your service.

Sample CloudWatch Agent Config

```
1  {
2    "agent": {
3      "metrics_collection_interval": 10,
4      "logfile": "/var/logs/amazon-cloudwatch-agent.log"
5    },
6    "logs": {
7      "logs_collected": {
8        "files": {
9          "collect_list": [
10             {
11               "file_path":
12               "/opt/tomcat/logs/csye6225.log",
13               "log_group_name": "csye6225_su2019",
14               "log_stream_name": "webapp",
15             }
16           ]
17         }
18       },
19       "log_stream_name": "cloudwatch_log_stream"
20     }
21  }
```

Configure CloudWatch Agent

```
1  sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-
2  ctl \
3    -a fetch-config \
4    -m ec2 \
5    -c file:/opt/cloudwatch-config.json \
6    -s
```

Documentation

CloudWatch Logs

- [Create IAM Roles and Users for Use With CloudWatch Agent](https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/create-iam-roles-for-cloudwatch-agent.html)
[https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/create-iam-roles-for-cloudwatch-agent.html]
- [Install CloudWatch Agent Package on an Amazon EC2 Instance](https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/install-CloudWatch-Agent-on-first-instance.html#download-CloudWatch-Agent-on-EC2-Instance-first)
[https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/install-CloudWatch-Agent-on-first-instance.html#download-CloudWatch-Agent-on-EC2-Instance-first]

CloudWatch Metrics

- [Retrieve Custom Metrics with StatsD](https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/CloudWatch-Agent-custom-metrics-statsd.html)
[https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/CloudWatch-Agent-custom-metrics-statsd.html]
- [Retrieve Custom Metrics with collectd](https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/CloudWatch-Agent-custom-metrics-collectd.html)
[https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/CloudWatch-Agent-custom-metrics-collectd.html]

Submission

Danger

Assignment will be considered late if commits are made to `master` and `feature` branch after due date.

1. All work for this assignment must be done on **assignment6** feature branch and merged to master when you are dev complete.
2. All team member's feature and master branches must be in-sync.

Grading Guidelines

Warning

Following guidelines are for information only. They are subject to change at the discretion of the instructor and TA.

