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## **Week 5 Notes and Resources**

### **Key Concepts**

#### **AWS X-Ray**

[AWS X-Ray](#) helps developers analyze distributed applications. With X-Ray, you can understand how your application and its underlying services are performing to identify and troubleshoot the root cause of

performance issues and errors. X-Ray provides an end-to-end view of requests as they travel through your application, and shows a map of your application's underlying components.

To start publishing data to X-Ray, the following things are needed:

- \* Configure the X-Ray SDK in your application
- \* Ensure appropriate X-Ray permissions
- \* Run the X-Ray Daemon on the server

Once tracing is enabled, you can enhance the tracing by integrating X-Ray with Flask and then further extend tracing with custom subsegments.

For more information on how to integrate X-Ray with a Python application, see AWS X-Ray SDK for Python. You can also review the X-Ray reference docs for Boto3.

Note: AWS Lambda runs the X-Ray Daemon automatically.

## AWS Lambda

AWS Lambda lets you run code without provisioning or managing servers. AWS Lambda executes your code only when needed and scales automatically, from a few requests per day to thousands per second. You pay only for the compute time you consume - there is no charge when your code is not running.

In the course project, Lambda is being triggered by Amazon S3. Once triggered, the Lambda function interacts with an RDS instance within a VPC and also with AWS Rekognition APIs on the internet.

Because your code is only running on-demand, in order to troubleshoot, you'll need to take advantage of monitoring. You can troubleshoot Lambda with Amazon Cloudwatch and also troubleshoot Lambda with AWS X-Ray.

With Lambda, there are 2 types of permissions to be aware of. First, your code running in a Lambda function is granted permissions by using an IAM Role. Second, the service triggering your Lambda function can be granted the permissions to do so with a Lambda Function Policy. When configuring triggers using the AWS Management Console, the console will create the necessary Lambda Function Policy for you when you enable the trigger.

If you want some more details about what's available to your code as it runs inside AWS Lambda, you can find out more about the Lambda execution environment in the docs.

## What you accomplished this week

- You traced the performance of the application with AWS X-Ray
- You offloaded the image labeling task from the server to an asynchronous task executed by AWS Lambda