**Software Delivery Pipeline Manual Book**

1. **Set up the environment.**
   * Ensure you have the AWS CDK installed and initialized in your local environment.

npm install -g aws-cdk

* + And for the Python environment, make sure you have the necessary CDK libraries.

1. **Finish the CDK python file**
   * Write the CDK Application
     + Define Imports: Import required AWS CDK libraries for managing AWS resources.
   * Define AWS Resources
     + **S3 Bucket**: This bucket is used to store the build artifacts

artifact\_bucket = s3.Bucket(self, "ArtifactBucket")

* + - **CodeCommit Repository:** A Git repository to store the source code of the Java project.

code\_repo = codecommit.Repository(

self, "JavaProjectRepo",

repository\_name="java-project",

code=codecommit.Code.from\_asset("path/to/java-project.zip")

)

* + - **CodeBuild Project:** Defines the build project that uses the source from CodeCommit and outputs to the S3 bucket.

build\_project = codebuild.Project(

self, "JavaBuildProject",

source=codebuild.Source.code\_commit(repository=code\_repo),

build\_spec=codebuild.BuildSpec.from\_source\_filename('buildspec.yml'),

...

)

* + - **IAM Role for CodePipeline:** A role that CodePipeline assumes to access other AWS services.

pipeline\_role = iam.Role(

self, "CodePipelineServiceRole",

assumed\_by=iam.ServicePrincipal("codepipeline.amazonaws.com"),

...

)

* + - **CodePipeline:** Orchestrates the workflow of pulling code from CodeCommit, building it via CodeBuild, and handling artifacts.

pipeline = codepipeline.Pipeline(

self, "DeliveryPipeline",

...

)

* + - **Stages in Pipeline:** Define the stages and actions in the pipeline

source\_output = codepipeline.Artifact()

build\_output = codepipeline.Artifact()

pipeline.add\_stage(...); pipeline.add\_stage(...);

1. Finish the Deployment of the stack
   * Run “cdk deploy” to deploy this stack to your AWS account.
   * Validate: Check AWS Console to ensure all resources are created and linked correctly.
   * Test the Pipeline: Make a commit to the CodeCommit repository and observe if the pipeline triggers a build and stores artifacts in S3.