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Continuous Integration with CodeBuild

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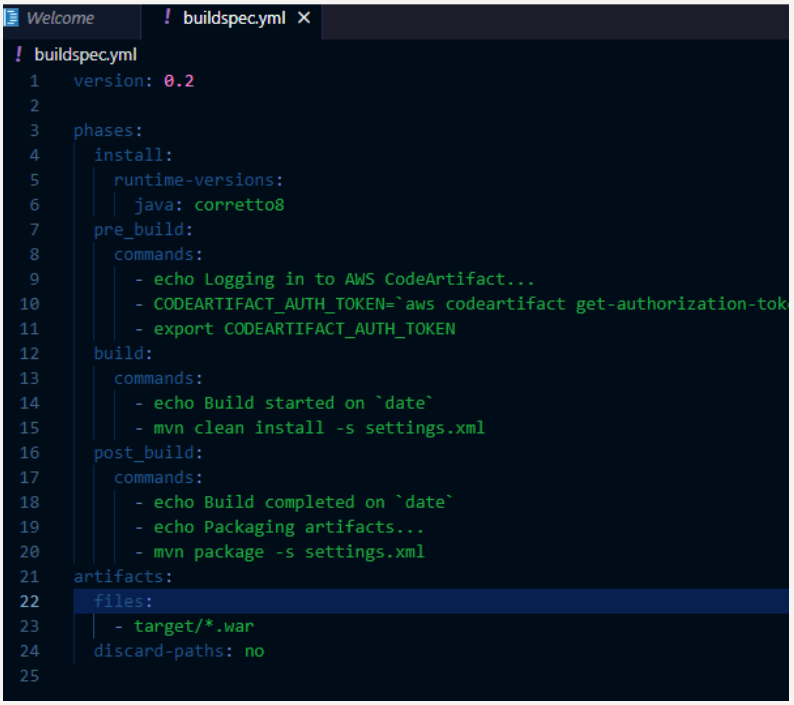


Introducing Today's Project!

I'm doing this project to learn Code Build, and relationship between Code Artifact, GitHub

Key tools and concepts

Services I used were CodeBuild, CodeArtifact, git, GitHub, EC2, S3, IAM, AWS CodeConnections, Maven, Correto, VsCode Key concepts I learnt include creating CodeBuild project with various options, build, test my app. It was part of CI introduction

Project reflection

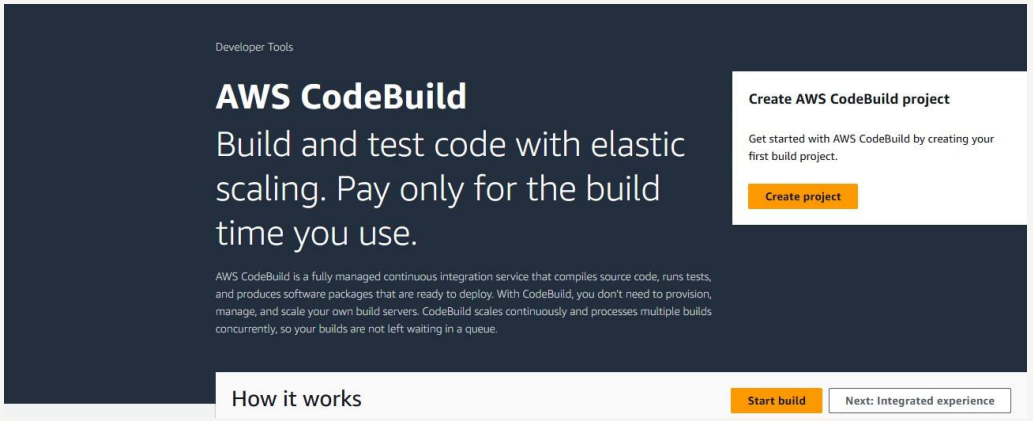
This project took me approximately several hours

This project is part four of a series of DevOps projects where I'm building a CI/CD pipeline! I'll be working on the next project

Setting up a CodeBuild Project

CodeBuild is a continuous integration service, which means you can often and constantly check for errors in code, to catch bugs early on. It will make sure your code is always tested, compiled

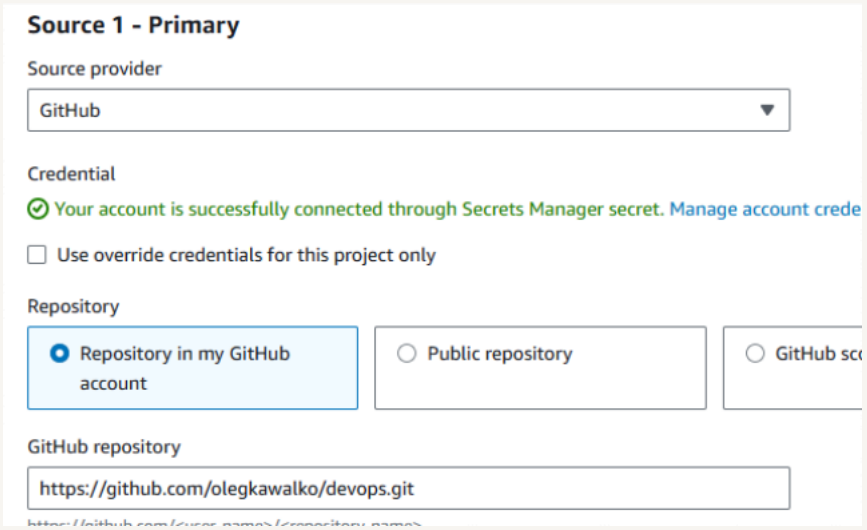
My CodeBuild project's source configuration means from where my codebuild blueprint takes my app and I selected my GitHub repo



Connecting CodeBuild with GitHub

There are multiple credential types for GitHub, like GitHub App, Personal access token, OAuth app I used GitHub App because it is simple. secure due to aws managing the connection

The service that helped connect GitHub to AWS is AWS CodeConnections which provide secure bridge between AWS and external code repos



CodeBuild Configurations

Environment

My CodeBuild project's Environment configuration means, my template is managed by AWS, computing by EC2 which is more flexible and powerfull than lambda, note that Lambda dont have Correto 8 image which EC2 has, OS is Linux

Artifacts

Build artifacts are end products of propery built code They're important because there are end products ready to be deployed . My build process will create bundle called WAR file To store them, I created an S3 bucket

Packaging

When setting up CodeBuild, I also chose to package artifacts in a Zip format because it will make file smaller size, so faster upload time, and storage costs, zip make files groups as one so it makes life simplier and easier

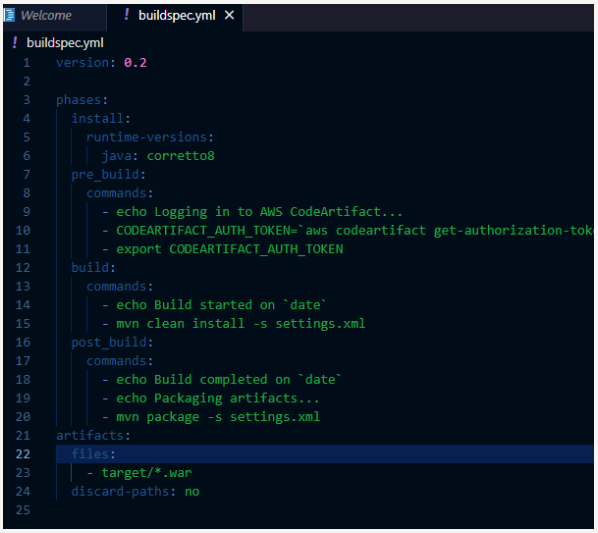
Monitoring

For monitoring, I enabled CloudWatch Logs, which is service to check for monitoring of our building process, and then we can see logs of potential errors

buildspec.yml

My first build failed because it was missing buildspec.yml A buildspec.yml file is needed because it is like manual for building process, CodeBuild needs step-by-step instructions to properly build project

The first two phases in my buildspec.yml file are INSTALL tell to use java PREBUILD setup credentials, The third phase in my buildspec.yml file is BUILD use maven to compile The fourth phase in my buildspec.yml file POSTBUILD package into WAR file

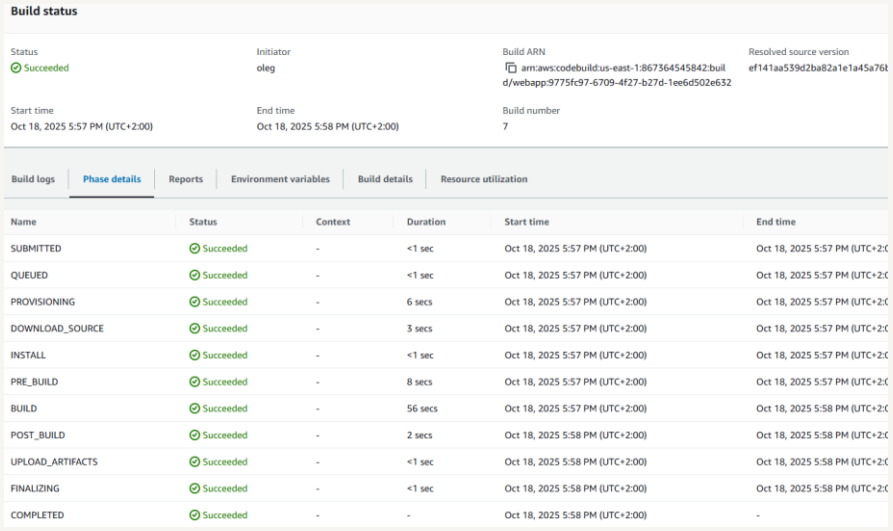


Success!

My second build also failed, but with a different error that said CodeBuild dont have credentials To fix this i need to make IAM Role for CodeBuild to access CodeArtifact

To resolve the second error, I grant CodeBuild IAM Policy to list, read, write from CodeArtifact When I built my project again, I saw SUCCESS

To verify the build, I checked S3 Bucket Seeing the artifact tells me everything went well



In Addition, I make utilize not only building option, but testing of CodeBuild as well

I make java app to procedure tests

src/main/java/com/example/HelloService.java

```
@@ -0,0 +1,9 @@
+ package com.example;
+
+ public class HelloService {
+     public String greet(String name) {
+         return (name == null || name.trim().isEmpty())
+             ? "Hello, Stranger!"
+             : "Hello, " + name + "!";
+     }
+ }
```

src/test/java/com/example/HelloServiceTest.java

```
@@ -0,0 +1,19 @@
+ package com.example;
+
+ import org.junit.Test;
+ import static org.junit.Assert.assertEquals;
+
+ public class HelloServiceTest {
+
+     private final HelloService service = new HelloService();
+
+     @Test
+     public void greet_withName_returnsGreeting() {
+         assertEquals("Hello, Alice!", service.greet("Alice"));
+     }
+
+     @Test
+     public void greet_withBlankName_returnsDefault() {
+         assertEquals("Hello, Stranger!", service.greet(""));
+     }
+ }
```

In pom.xml I added <properties></properties> which tell java version source code in this case 8, and use utf-8, <plugins></plugins> in this case maven-surefire-plugin enables JUNIT tests

```
+  <properties>
+    <maven.compiler.source>8</maven.compiler.source>
+    <maven.compiler.target>8</maven.compiler.target>
+    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
+ </properties>
```

```
+  <plugins>
+          <plugin>
+              <groupId>org.apache.maven.plugins</groupId>
+              <artifactId>maven-surefire-plugin</artifactId>
+              <version>3.1.2</version>
+              <configuration>
+                  <includes>
+                      <include>**/*Test.java</include>
+                  </includes>
+              </configuration>
+          </plugin>
+       </plugins>
```

In yuml file i added mvn test and mvn install -DskipTests=true which skips tests in install phase, and mvn test compile my tests

```
      runtime-versions:
-     java: corretto8
-     commands:
+     java: corretto8
+     commands:
        - echo Installing dependencies...
```

```
+       - echo Installing dependencies...
+       - mvn install -DskipTests=true
    pre_build:
      commands:
        - echo Logging in to AWS CodeArtifact...
        - CODEARTIFACT_AUTH_TOKEN=`aws codeartifact get-a
        - export CODEARTIFACT_AUTH_TOKEN
+       - mvn test
    build:
      commands:
        - echo Build started on `date`
        - mvn clean install -s settings.xml
    post_build:
      commands:
+       - echo Build and test completed successfully!
```

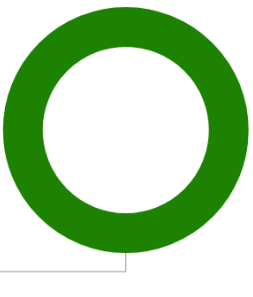
I build locally, then in CodeBuild, and it worked!

```
[INFO]
[INFO] -------------------------------------------------------
[INFO]  T E S T S
[INFO] -------------------------------------------------------
[INFO] Running com.example.HelloServiceTest
[INFO] Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time e
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 2, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] -------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] -------------------------------------------------------
[INFO] Total time:  9.641 s
[INFO] Finished at: 2025-10-18T18:10:12Z
[INFO] -------------------------------------------------------
ubuntu@ip-172-31-94-201:~/devops/my-webapp$
```

Build status

Status	Initiator
Succeeded	oleg
Start time	**End time**
Oct 18, 2025 8:19 PM (UTC+2:00)	Oct 18, 2025 8:20 PM (UTC+2:00)

Summary



Pass rate
100%

Report duration
0.044 seconds

Created
2 minutes ago

Passed Failed/Error Skipped Unknown

▶ Details

Test cases

Test case	Test suite	Status	Prefix
greet_withBlankName_returns Default	com.example.HelloServiceTest	Succeeded	com.example.HelloServiceTest