



# Continuous Integration with CodeBuild

S

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```
! buildspec.yml
1  version: 0.2
2
3  phases:
4    install:
5      runtime-versions:
6        | java: corretto8
7    pre_build:
8      commands:
9        | - echo Initializing environment
10       | - export CODEARTIFACT_AUTH_TOKEN=`aws codeartifact get-authorization-token --domain r
11
12  build:
13    commands:
14      | - echo Build started on `date`
15      | - mvn -s settings.xml compile
16  post_build:
17    commands:
18      | - echo Build completed on `date`
19      | - mvn -s settings.xml package
20 artifacts:
21   files:
22     | - target/nextwork-web-project.war
23   discard-paths: no
24
```

# Introducing Today's Project!

In this project, we will demonstrate how to use AWS CodeBuild to automate the build process in the CI/CD pipeline. Building means compressing our web app's files into a single zip file that we can later deploy.

## Key tools and concepts

Services we used were CodeBuild, CodeConnection, S3, CodeArtifact, EC2, GitHub and VS Code. Key concepts we learnt include the build process, resolving Git issues, `buildspec.yml` file and also using CodeConnections to connect AWS with GitHub.

## Project reflection

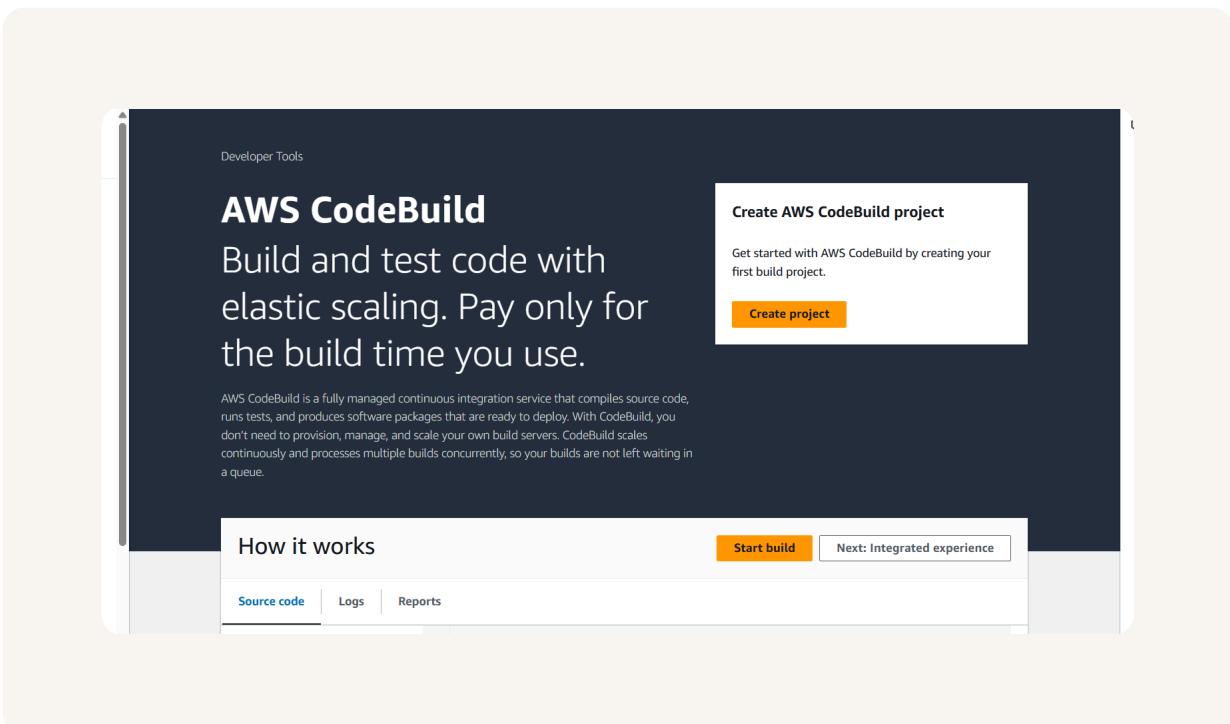
This project took us approximately 3 hrs including documentation. The most challenging part was resolving the build failures. It was most rewarding to see successful build at the end.

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

# Setting up a CodeBuild Project

CodeBuild is a continuous integration service, which means it helps you to compile and package code. Engineering teams use it because CI services automate this process for us - if CI doesn't exist, engineer would have to manually do this themselves.

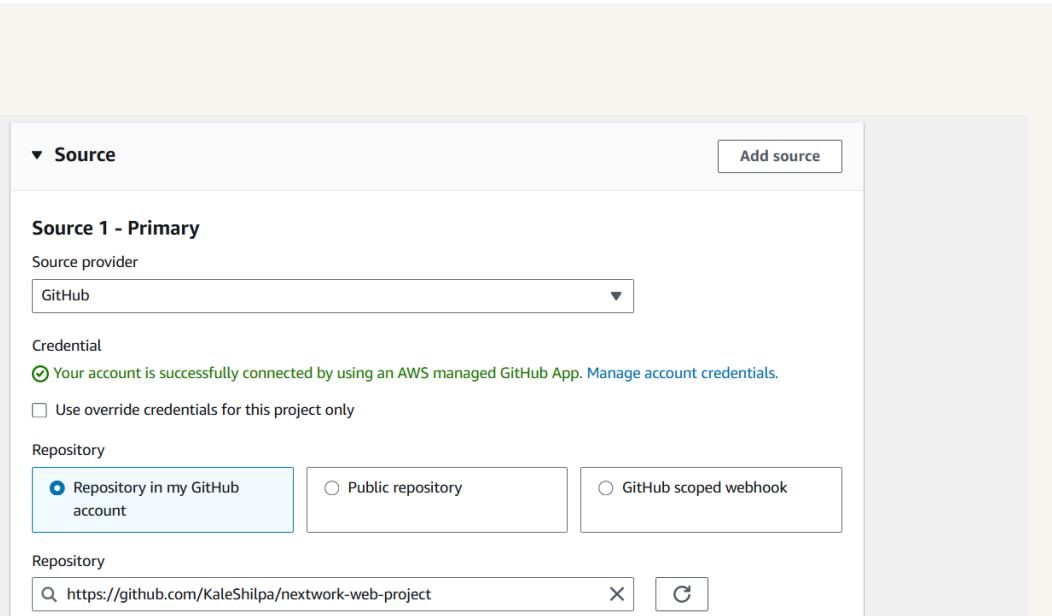
My CodeBuild project's source configuration means where the code lives and we selected GitHub that's our web apps source code repository.



# Connecting CodeBuild with GitHub

There are multiple credential types for GitHub, like GitHub App, Personal Access Tokens and OAuth app. We used GitHub App because it's most simple and secure way to set up a connection between GitHub and AWS - AWS handles the background for us.

The service that helped connect our AWS env. with GitHub is AWS CodeConnections. It also lets us connect our env. with other thirdparty platforms. In this case it made sure we had a secure connection with GitHub.



# CodeBuild Configurations

## Environment

Our CodeBuild project's Environment configuration means the env. setup for the compute power(i.e. EC2 instance) that will be compressing the files when we run our CodeBuild project. It includes settings like provisioning model, compute, running mode.

## Artifacts

Build artifacts are resources that gets created as part of CodeBuild build process. They're important because they represents artifacts that needs to be used later on in CI/CD pipeline. To store these artifacts-compressed file , we created S3 bucket.

## Packaging

When setting up CodeBuild, we also chose to package artifacts in a zip file because it helps in package management as files are all organized neatly in a single executable file.

## Monitoring

For monitoring, we enabled CloudWatch Logs, which is a monitoring service which will note down commands that are run and any errors that happen. This is helpful for troubleshooting.

# buildspec.yml

Our first build failed because our CodeBuild could not find buildspec.yml in our source code root directory. A buildspec.yml file is needed because tells CodeBuild how to run the build process.

The first two phases in my buildspec.yml file installs Java and gets access to CodeArtifact. The third phase in my buildspec.yml file compiles the webapp. The fourth phase in my buildspec.yml file packages the webapp into a compressed artifact.

```
! buildspec.yml
1 version: 0.2
2
3 phases:
4   install:
5     runtime-versions:
6       java: corretto8
7   pre_build:
8     commands:
9       - echo Initializing environment
10      - export CODEARTIFACT_AUTH_TOKEN=`aws codeartifact get-authorization-token --domain r
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12 build:
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19       - mvn -s settings.xml package
20 artifacts:
21   files:
22     - target/nextwork-web-project.war
23   discard-paths: no
24
```

# Success!

Our second build also failed, but with a different error that said we fail to run an error while executing the command (`mvn -s settings.xml compile`) to compile our webapp. To fix this we need to add a new policy to CodeBuild that grants code access.

To resolve the second error, we attached a policy for accessing CodeArtifact to our CodeBuild role. When we built our project again, we saw a success! With the privileges to CodeArtifact granted by the role, CodeBuild now has access to repo.

To verify the build, we checked our artifacts bucket in S3. Seeing the artifact tells me that CodeBuild was a success. The build process compiled the code from source repository i.e GitHub, compressed it into a file and stored that file in S3 bucket.

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Build status					
Status  Succeeded	Initiator DevOps-IAM-Admin				
	Build ARN  arn:aws:codebuild:eu-central-1:619071342657:build/nextwork-devops-cic:d9bf3f3fc-d796-4fca-a8dc-2363d9d23854				
Start time Jul 30, 2025 12:44 PM (UTC+2:00)	End time Jul 30, 2025 12:46 PM (UTC+2:00)				
	Build number 4				
<a href="#">Build logs</a> <a href="#">Phase details</a> <a href="#">Reports</a> <a href="#">Environment variables</a> <a href="#">Build details</a> <a href="#">Resource utilization</a>					
Name	Status	Context	Duration	Start time	End time
SUBMITTED	 Succeeded	-	<1 sec	Jul 30, 2025 12:44 PM (UTC+2:00)	Jul 30, 2025 12:44 PM (UTC+2:00)
QUEUED	 Succeeded	-	<1 sec	Jul 30, 2025 12:44 PM (UTC+2:00)	Jul 30, 2025 12:44 PM (UTC+2:00)
PROVISIONING	 Succeeded	-	8 secs	Jul 30, 2025 12:44 PM (UTC+2:00)	Jul 30, 2025 12:45 PM (UTC+2:00)
DOWNLOAD_SOURCE	 Succeeded	-	3 secs	Jul 30, 2025 12:45 PM (UTC+2:00)	Jul 30, 2025 12:45 PM (UTC+2:00)



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