**Study Notes: AWS CI/CD with Spring Boot on ECS using CodeBuild & CodePipeline**

**Overview**

* **Goal**: Automate CI/CD for deploying a Spring Boot application on AWS ECS using AWS CodeBuild and CodePipeline.
* **Key Concepts**:
  + Continuous Integration (CI)
  + Continuous Deployment/Delivery (CD)

**Sequence of Steps**

1. **Creating the Spring Boot Application**:
   * Develop a simple Spring Boot app with CRUD operations.
2. **Dockerize the Application**:
   * Create a **Dockerfile** to define how to build the Docker image.
     + Use OpenJDK 17, set working directory, copy jar, expose port, and define the command to run the jar.
3. **Push Docker Image to AWS ECR**:
   * Create an **Elastic Container Registry (ECR)** in AWS.
   * Push the Docker image to ECR after building it.
4. **Automate CI with AWS CodeBuild**:
   * Create a **buildspec.yml** file to define the build process:
     + **Pre-build**: Generate jar file, log into ECR, create commit hash and image tag.
     + **Build**: Build the Docker image, tag it.
     + **Post-build**: Push the Docker image to ECR with both ‘latest’ and unique tags.
5. **Set Up AWS CodeBuild**:
   * Create a CodeBuild project linked to the GitHub repository containing the **buildspec.yml**.
6. **Set Up AWS CodePipeline** (not covered in the provided content):
   * To automate deployment to AWS ECS after the build is successful.

**Important Files**

* **Dockerfile**: Defines how to create the Docker image.
* **buildspec.yml**: Contains instructions for CodeBuild on building and pushing the Docker image.

**AWS Services Utilized**

* **AWS CodeBuild**: For building the Docker image and pushing it to ECR.
* **AWS CodePipeline**: For automating the deployment process (to be set up after CodeBuild).

**Key Considerations**

* Ensure that IAM roles are properly configured with necessary permissions for CodeBuild to access ECR.
* Maintain the **buildspec.yml** and **Dockerfile** in the GitHub repository for seamless CI/CD.

**Next Steps**

* Set up **AWS CodePipeline** to automate continuous deployment to AWS ECS once CodeBuild successfully completes the build.

**Resources**

* AWS Documentation for [CodeBuild](https://docs.aws.amazon.com/codebuild/latest/userguide/welcome.html) and [CodePipeline](https://docs.aws.amazon.com/codepipeline/latest/userguide/welcome.html).
* Javatechie’s AWS playlist for foundational concepts.

