포팅 메뉴얼

1. 사용 도구

- 이슈 관리 : Jira
- 형상 관리 : GitLab
- 커뮤니케이션 : MatterMost, Notion, Google sheet
- 디자인 : Figma
- CI/CD : 젠킨스

2. 개발 도구

Frontend

- **프레임워크**: Next.js, React
- **언어** : TypeScript, JavaScript
- 라이브러리 및 의존성 모음

```
"@egjs/react-flicking": "^4.12.0",
  "@emotion/cache": "^11.14.0",
  "@emotion/react": "^11.14.0",
  "@emotion/styled": "^11.14.0",
  "@floating-ui/react": "^0.27.5",
  "@fullcalendar/core": "^6.1.17",
  "@fullcalendar/daygrid": "^6.1.17",
  "@fullcalendar/interaction": "^6.1.17",
  "@fullcalendar/react": "^6.1.17",
  "@headlessui/react": "^2.2.0",
  "@mui/material": "^7.0.1",
  "@mui/x-date-pickers": "^7.28.2",
  "@radix-ui/react-dialog": "^1.1.6",
  "@react-spring/web": "^9.7.5",
  "@reduxjs/toolkit": "^2.6.1",
  "@types/d3": "^7.4.3",
  "@use-gesture/react": "^10.3.1",
  "axios": "^1.8.4",
  "d3": "^7.9.0",
  "date-fns": "^2.30.0",
  "date-fns-tz": "^2.0.0",
  "eslint-config-prettier": "^10.1.1",
  "eslint-plugin-prettier": "^5.2.4",
  "firebase": "^11.5.0",
  "next": "15.2.3",
  "next-redux-wrapper": "^8.1.0",
  "prettier": "^3.5.3",
  "qs": "^6.14.0",
  "react": "18.2.0",
  "react-calendar": "^5.1.0",
  "react-clock": "^5.1.0",
  "react-datepicker": "^8.2.1",
  "react-dom": "18.2.0",
  "react-hook-form": "^7.54.2",
  "react-i18next": "^15.4.1",
  "react-ios-time-picker": "^0.2.2",
  "react-mobile-picker": "^1.1.0",
  "react-redux": "^9.2.0",
  "redux-persist": "^6.0.0"
```

- 개발 도구 및 환경 구성

```
"@eslint/eslintrc": "^3",
  "@trivago/prettier-plugin-sort-imports": "^5.2.2",
  "@types/node": "^20",
  "@types/qs": "^6.9.18",
  "@types/react": "^19",
  "@types/react-dom": "^19",
  "@types/react-time-picker": "^4.0.3",
  "eslint": "^9",
  "eslint-config-next": "15.2.3",
  "eslint-plugin-react-refresh": "^0.4.19",
  "next-pwa": "^5.6.0",
  "redux-logger": "^3.0.6",
  "typescript": "^5"
```

- **기타 환경 정보**
  - PWA 적용: `next-pwa` 사용
  - 상태관리: `Redux Toolkit`, `redux-persist`
  - 코드 품질 관리: `ESLint`, `Prettier`
  - 번역: `react-i18next`
  - 날짜 및 시간: `date-fns`, `react-datepicker`, `react-ios-time-picker`
  - 그래프/차트: `d3`
  - FCM Firebase 연동

Backend

프레임워크 : Spring Boot 3.4.3

언어 : Java 21

IDE : IntelliJ IDEA 2024.1.1

빌드 도구 : Gradle

주요 설정

- Java Toolchain 사용: `Java 21`
- Dependency 관리: `io.spring.dependency-management` 플러그인 사용
- 테스트 플랫폼: `JUnit Platform`

라이브러리 및 의존성 목록

🔷 Spring Core

- `spring-boot-starter-web` : REST API 개발
- `spring-boot-starter-data-jpa` : JPA & Hibernate
- `spring-boot-starter-security` : Spring Security
- `spring-boot-starter-oauth2-client` : OAuth2 인증
- `spring-boot-starter-batch` : Spring Batch
- `hibernate-validator` : Bean Validation

🔷 데이터베이스

- `mysql-connector-j` : MySQL JDBC
- `h2` : 인메모리 테스트용 DB
- `spring-boot-starter-data-jpa` : ORM
- `p6spy-spring-boot-starter` : SQL 로그 확인

🔷 테스트

- `spring-boot-starter-test` : Spring Test
- `spring-security-test` : 시큐리티 테스트
- `spring-batch-test` : 배치 테스트
- `junit-platform-launcher` : JUnit 런타임
- `h2` (testImplementation): 테스트용 인메모리 DB

🔷 JWT

- `jjwt-api` , `jjwt-impl` , `jjwt-jackson` : JWT 토큰 처리

🔷 Firebase

- `firebase-admin` : Firebase Admin SDK

🔷 AWS

- `spring-cloud-aws-starter-parameter-store` : AWS SSM 파라미터 스토어
- `aws-java-sdk-s3` : S3 연동

🔷 API 문서화

- `springdoc-openapi-starter-webmvc-ui` : Swagger UI (OpenAPI)

🔷 PDF 생성

- `itext7-core` : PDF 생성
- `openhtmltopdf-pdfbox` , `openhtmltopdf-slf4j` : HTML → PDF 렌더링

🔷 기타 유틸

- `jackson-databind` : JSON 직렬화/역직렬화
- `guava` : Google 유틸리티

- `org.json:json` : 간단한 JSON 처리
- `okhttp` : HTTP 클라이언트
- `lombok` : 보일러플레이트 코드 제거 (compileOnly + annotationProcessor)

🔷 Web3

- `web3j-core` : 블록체인 연동

레포지토리 설정

```
repositories {
    mavenCentral()
    maven {
        url "https://oss.sonatype.org/content/repositories/snapshots/"
    }
}
```

Spring Cloud AWS BOM

```
dependencyManagement {
    imports {
        mavenBom "io.awspring.cloud:spring-cloud-aws-dependencies:3.0.0"
    }
}
```

개발 환경

Frontend

- JavaScript
  - Node.js 20.13.1
  - React 18.2.0
  - Next.js 15.2.3
  - TypeScript 5

Backend

- Java 21

- Spring Boot 3.4.3
- Spring Cloud AWS 3.0.0
- MySQL 8.4.4
- H2
- Firebase Admin SDK 9.3.0
- JWT jjwt 0.12.6
- Web3j 4.12.0
- PDF 생성 iText 7.2.4, OpenHtmlToPdf 1.0.10

Infra

- Docker : 28.0.1
- Nginx : 1.18.0 (ubuntu)

---

4. 환경변수

Backend

- `application.yml` → 로컬용

```
spring:
  cloud:
    aws:
      region:
        static: ${AWS_REGION}
      credentials:
        access-key: ${AWS_ACCESS_KEY_ID}
        secret-key: ${AWS_SECRET_ACCESS_KEY}
  application:
    name:
  config:
    import:
      - optional:file:.env[.properties] #ENV ?? ??
      - aws-parameterstore:/chaing/

  datasource:
```

```yaml
    url: ${DATASOURCE_URL}
    username: ${DATASOURCE_USERNAME}
    password: ${DATASOURCE_PASSWORD}
    driver-class-name: com.mysql.cj.jdbc.Driver

  jpa:
    hibernate:
      ddl-auto: validate
    show-sql: true
    properties:
      hibernate:
        dialect: org.hibernate.dialect.MySQLDialect

  security:
    oauth2:
      client:
        registration:
          google:
            client-name: google
            client-id: ${GOOGLE_CLIENT_ID}
            client-secret: ${GOOGLE_CLIENT_SECRET}
            redirect-uri: ${GOOGLE_REDIRECT_URI}
            authorization-grant-type: authorization_code
            scope:
              - email
              - profile
  profiles:
    active: dev

  servlet:
    multipart:
      max-file-size: 20MB
      max-request-size: 50MB
      enabled: true

  mail:
    host: smtp.gmail.com
    port: 587
    username: ${GOOGLE_MAIL_USERNAME}
    password: ${GOOGLE_MAIL_PASSWORD}
    protocol: smtp
    properties:
      mail:
        smtp:
          auth: true
          starttls:
            enable: true
            required: true

  batch:
    jdbc:
      initialize-schema: always

  lifecycle:
    timeout-per-shutdown-phase: 60s

server:
  shutdown: graceful

application:
  security:
    jwt:
      secret-key: ${APPLICATION_SECURITY_JWT_SECRET_KEY}
      access-token-expiration: ${APPLICATION_SECURITY_JWT_ACCESS_T
      refresh-token-expiration: ${APPLICATION_SECURITY_JWT_REFRESH_

firebase:
  project-name: ${FIREBASE_PROJECT_NAME}
  service-account-base64: ${FIREBASE_SERVICE_ACCOUNT}

app:
  cors:
    allow-hosts:
      - http://localhost:8080
      - http://localhost:3000
  frontend:
```

```yaml
    url: http://localhost:3000
springdoc:
  api-docs:
    path: /v3/api-docs
    version: openapi_3_0



api:
  naver:
    client-id: ${API_NAVER_CLIENT_ID}
    client-secret: ${API_NAVER_CLIENT_SECRET}

cloud:
  aws:
    s3:
      bucket: ${AWS_BUCKET_NAME}

web3j:
  client-address: ${web3j.client-address}
  fallback-client-address: ${web3j.fallback-client-address}
  connection-timeout: 15
  contract-wallet-private-key: ${web3j.contract-wallet-private-key}
  rent-wallet-private-key: ${web3j.rent-wallet-private-key}
  utility-wallet-private-key: ${web3j.utility-wallet-private-key}
  contract-address: ${web3j.contract-address} # DB 에 넣어야 함.
  rent-contract-address: ${web3j.utility-contract-address}
  utility-contract-address: ${web3j.rent-contract-address}
  chain-id: ${web3j.chain-id}

ssafy:
  fintech:
    api-key: ${FINTECH_API_KEY}
    user-key: ${FINTECH_USER_KEY}
    card-unique-no: ${FINTECH_CARD_UNIQUE_NO}
    base-url: ${FINTECH_BASEURL}

openai:
  api:
    key: ${GPT_API_KEY}
    url: ${GPT_URL}
  model: ${GPT_MODEL}
```

- `application-deploy.yml` → 배포용

```
spring:
  cloud:
    aws:
      region:
        static: ${AWS_REGION}
      credentials:
        access-key: ${AWS_ACCESS_KEY_ID}
        secret-key: ${AWS_SECRET_ACCESS_KEY}
  application:
    name: chaing
  config:
    import:
      - aws-parameterstore:/chaing/

  datasource:
    url: ${datasource.url}
    username: ${datasource.username}
    password: ${datasource.password}
    driver-class-name: com.mysql.cj.jdbc.Driver

  jpa:
    hibernate:
      ddl-auto: validate
    show-sql: false
    properties:
      hibernate:
        dialect: org.hibernate.dialect.MySQLDialect

  security:
    oauth2:
      client:
        registration:
          google:
            client-name: google
            client-id: ${google.client-id}
            client-secret: ${google.client-secret}
            redirect-uri: ${google.redirect-url}
            authorization-grant-type: authorization_code
            scope:
              - email
              - profile

  servlet:
    multipart:
      max-file-size: 20MB
      max-request-size: 50MB
      enabled: true

  mail:
    host: smtp.gmail.com
    port: 587
    username: ${GOOGLE_MAIL_USERNAME}
    password: ${GOOGLE_MAIL_PASSWORD}
    protocol: smtp
    properties:
      mail:
        smtp:
          auth: true
          starttls:
            enable: true
            required: true

  batch:
    jdbc:
      initialize-schema: always

  lifecycle:
    timeout-per-shutdown-phase: 60s

server:
```

```yaml
  shutdown: graceful

application:
  security:
    jwt:
      secret-key: ${jwt.secret-key}
      access-token-expiration: ${jwt.access-token.expiration}
      refresh-token-expiration: ${jwt.refresh-token.expiration}

app:
  cors:
    allow-hosts:
      - ${allow-host.front}
      - ${allow-host.local}
      - ${allow-host.local.front1}
      - ${allow-host.local.front2}

  frontend:
    url: ${allow-host.front}
springdoc:
  api-docs:
    path: /v3/api-docs
    version: openapi_3_0



api:
  naver:
    client-id: ${API_NAVER_CLIENT_ID}
    client-secret: ${API_NAVER_CLIENT_SECRET}

cloud:
  aws:
    s3:
      bucket: ${aws.bucket}

web3j:
  client-address: ${web3j.client-address}
  wallet-private-key: ${web3j.wallet-private-key}
  connection-timeout: 15
  contract-address: ${web3j.contract-address} # DB 에 넣어야 함.
  fallback-client-address: ${web3j.fallback-client-address}
  rent-contract-address: ${web3j.rent-contract-address}
  utility-contract-address: ${web3j.utility-contract-address}
  chain-id: ${web3j.chain-id}

ssafy:
  fintech:
    api-key: ${ssafy.fintech.apiKey}
    user-key: ${ssafy.fintech.userKey}
    card-unique-no: ${ssafy.fintech.cardUniqueNo}
    base-url: ${ssafy.fintech.baseUrl}

firebase:
  project-name: ${firebase.projectName}
  service-account-base64: ${firebase.serviceAccount}

openai:
  api:
    key: ${gpt.apiKey}
    url: ${gpt.apiUrl}
  model: ${gpt.model}
```

5. CI/CD 및 배포

AWS EC2

- 포트 번호
    - Mysql : 3306
    - Jenkins : 9090
    - Backend : 8080
    - Nginx : 80/443
    - Frontend : 3000
- Dokcer

- Frontend

```
# ⚡ 1. React(Next.js) 빌드 단계
FROM node:18-alpine AS builder

WORKDIR /app

# package.json과 package-lock.json만 복사 후 의존성 설치 (최적화)
COPY package.json package-lock.json ./
RUN npm ci --production

# Next.js 소스 코드 복사 후 빌드 실행
COPY . .
RUN npm run build

# 🏃 2. 배포용 컨테이너 (Next.js 서버 실행)
FROM node:18-alpine

WORKDIR /app

# 빌드된 Next.js 파일과 필요한 패키지만 복사
COPY --from=builder /app/package.json ./
COPY --from=builder /app/node_modules ./node_modules
COPY --from=builder /app/.next ./.next
COPY --from=builder /app/public ./public

EXPOSE 3000

# Next.js 프로덕션 실행
CMD ["npx", "next", "start"]
```

- Backend

```
FROM openjdk:21-slim AS builder

RUN apt-get update && apt-get install -y \
    unzip \
 && rm -rf /var/lib/apt/lists/*
```

```
WORKDIR /app

COPY gradlew settings.gradle build.gradle ./
COPY gradle/ gradle/

RUN chmod +x gradlew

COPY . .

RUN ./gradlew --no-daemon clean build -x test

FROM openjdk:21-slim AS runner

WORKDIR /app

COPY --from=builder /app/build/libs/*.jar app.jar
COPY src/main/resources/application-deploy.yml /app/application-de

EXPOSE 8080

ENTRYPOINT ["java", "-jar", "/app/app.jar", "--spring.config.location=
```

- Jenkins

```
FROM jenkins/jenkins:lts-jdk21

USER root

# 패키지 리스트 업데이트 및 Docker CLI 설치
RUN apt-get update && apt-get install -y docker.io wget curl

# Jenkins 실행 사용자로 변경
USER jenkins

# 기본 실행 명령어
CMD ["/usr/local/bin/jenkins.sh"]
```

도커 명령어 관련

- 도커 빌드 명령어

```
docker build -t main-container .
# main-container 라는 태그 지정.
```

- 프로젝트 스프링 이미지 실행 명령어

```
docker run -p 8080:8080 --env-file .env main-container
```

- 젠킨스 컨테이너 실행 명령어

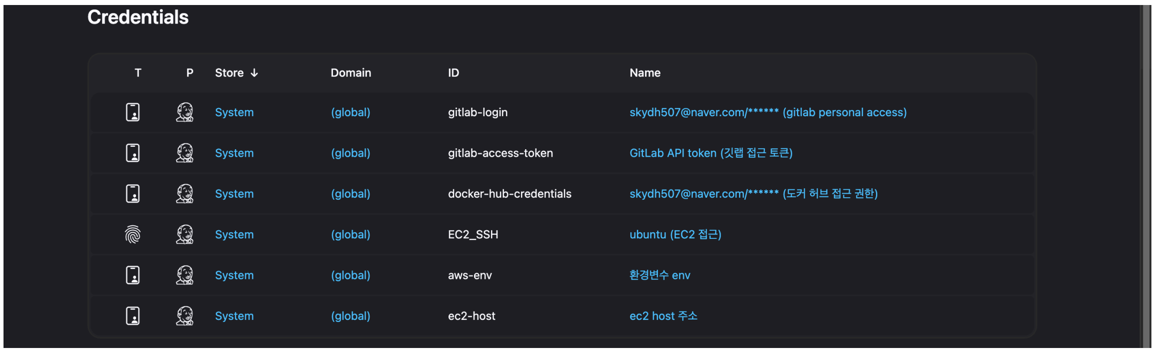
```
docker run -d -p 9090:8080 -e TZ=Asia/Seoul -e JENKINS_OPTS="--pref
docker exec -u root -it custom-jenkins bash
apt-get install -y docker.io
```

- mysql 실행 명령어

```
### Mysql 도커 컨테이너
docker run -d   --name mysql-container   -e MYSQL_ROOT_PASSWORD=p
docker exec -it container mysql -u root -p
```

Jenkins 세팅

- Credentials



Credentials

T	P	Store ↓	Domain	ID	Name
		System	(global)	gitlab-login	skydh507@naver.com/****** (gitlab personal access)
		System	(global)	gitlab-access-token	GitLab API token (깃랩 접근 토큰)
		System	(global)	docker-hub-credentials	skydh507@naver.com/****** (도커 허브 접근 권한)
		System	(global)	EC2_SSH	ubuntu (EC2 접근)
		System	(global)	aws-env	환경변수 env
		System	(global)	ec2-host	ec2 host 주소

- CI 파이프라인

```
pipeline {
    agent any
```

```
environment {
    // GitLab 플러그인에서 제공되는 Merge Request 정보 (source / target)
    CREDENTIALS_ID = 'gitlab-login'
    PROJECT_NAME = 'S12P21A302'
    CONFLICT_DETECTED = "false"
}

tools {
    jdk 'jdk21'
    nodejs 'node'
}

stages {
    stage('Detect MR Branches') {
        steps {
            script {
                updateGitlabCommitStatus name: 'Detect MR Branches', state

                env.SOURCE_BRANCH = env.gitlabSourceBranch ?: env.GIT_B

                if (env.gitlabTargetBranch) {
                    env.TARGET_BRANCH = env.gitlabTargetBranch
                } else {
                    if (env.SOURCE_BRANCH == "dev-be" || env.SOURCE_BRAI
                        env.TARGET_BRANCH = env.SOURCE_BRANCH
                    } else {
                        env.TARGET_BRANCH = "dev-be"
                    }
                }

                echo "🔍 Detected Source Branch: ${env.SOURCE_BRANCH}'
                echo "🔍 Detected Target Branch: ${env.TARGET_BRANCH}"

                if (!env.SOURCE_BRANCH || !env.TARGET_BRANCH) {
                    error("❌ 소스/대상 브랜치가 감지되지 않았습니다.")
                }
                updateGitlabCommitStatus name: 'Detect MR Branches', state
            }
        }
        post {
            failure {
                updateGitlabCommitStatus name: 'Detect MR Branches', state
                mattermostSend(
                        message: """\
                    ❌ *Detect MR Branches Failed!*
                    Source: ${env.SOURCE_BRANCH}
                    Target: ${env.TARGET_BRANCH}
                    Project: ${env.PROJECT_NAME}
                    Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
                    """
                )
            }
        }
    }

    stage('Clean Conflicting Branches') {
        steps {
            echo "🧹 Cleaning up stale local refs that may cause branch con
            sh 'git remote prune origin || true'
        }
    }

    stage('Merge Conflict Check') {
        when {
            expression { env.gitlabSourceBranch }
        }
        steps {
            script {
                updateGitlabCommitStatus name: 'Merge Conflict Check', stat

                echo "🔄 Checking out repository for merge conflict check..."
                git branch: env.SOURCE_BRANCH,
                    credentialsId: env.CREDENTIALS_ID,
                    url: 'https://lab.ssafy.com/s12-blochain-transaction-sub1/S1
            echo "🔄 Checking for merge conflicts: ${env.SOURCE_BRAN

            withCredentials([usernamePassword(
                credentialsId: env.CREDENTIALS_ID,
                usernameVariable: 'GIT_USER',
                passwordVariable: 'GIT_PASS'
            )]) {
                sh """
                    git config credential.helper "!f() { echo username=\\"$GIT
                    git config user.email "jenkins@example.com"
                    git config user.name "Jenkins"
                    git fetch https://lab.ssafy.com/s12-blochain-transaction-s
                    git merge --no-commit --no-ff origin/${env.TARGET_BRA
                """
            }

            def mergeResult = sh(script: "git diff --name-only --diff-filter=
            if (mergeResult) {
                echo "❌ Merge conflict detected!"
                env.CONFLICT_DETECTED = "true"
                updateGitlabCommitStatus name: 'Merge Conflict Check', st
                currentBuild.result = 'FAILURE'
                error("❌ Merge conflict detected! Resolve conflicts before
            }

            updateGitlabCommitStatus name: 'Merge Conflict Check', stat
        }
    }
    post {
        failure {
            script {
                echo "❌ Merge conflict detected - notifying from stage pos
                updateGitlabCommitStatus name: 'Merge Conflict Check', st
                mattermostSend(
                    message: """\
                        ❌ *Merge Conflict Detected!*
                        Source: ${env.SOURCE_BRANCH}
                        Target: ${env.TARGET_BRANCH}
                        Project: ${env.PROJECT_NAME}
                        Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
                        👉 Please resolve merge conflicts and try again.
                        """
                    )
                }
            }
        }
    }

    stage('Build & Unit Test (Backend)') {
        when {
            expression {
                env.CONFLICT_DETECTED == "false" && env.TARGET_BRANC
            }
        }
        steps {
            script {
                updateGitlabCommitStatus name: 'Backend Build', state: 'penc

                echo "🛠️ Running backend (Spring) build & unit tests..."
                dir('backend') {
                    sh '''
                        chmod +x ./gradlew
                        ./gradlew build -x test
                    '''
                }

                updateGitlabCommitStatus name: 'Backend Build', state: 'succ
            }
        }
        post {
            failure {
                script {
                    updateGitlabCommitStatus name: 'Backend Build', state: 'fai
                    mattermostSend(
                        message: """\
                        ❌ *Backend Build & Unit Test Failed!*
                        Source: ${env.SOURCE_BRANCH}
                        Target: ${env.TARGET_BRANCH}
                        Project: ${env.PROJECT_NAME}
                        Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
                        """
                    )
                }
            }
        }
    }

    stage('Build & Unit Test (Frontend)') {
        when {
            expression {
                env.CONFLICT_DETECTED == "false" && env.TARGET_BRANC
            }
        }
        steps {
            script {
                updateGitlabCommitStatus name: 'Frontend Build', state: 'penc

                echo "🛠️ Running frontend (npm) build & unit tests..."
                dir('frontend') {
                    sh '''
                        npm install
                        npm run build
                    '''
                }

                updateGitlabCommitStatus name: 'Frontend Build', state: 'succ
            }
        }
        post {
            failure {
                script {
                    updateGitlabCommitStatus name: 'Frontend Build', state: 'fa
                    mattermostSend(
                        message: """\
                            ❌ *Frontend Build & Unit Test Failed!*
                            Source: ${env.SOURCE_BRANCH}
                            Target: ${env.TARGET_BRANCH}
                            Project: ${env.PROJECT_NAME}
                            Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
                            """
                    )
                }
            }
        }
    }
}

post {
    success {
        script {
            echo "✅ Build & Tests Passed!"
            mattermostSend(
                message: """\
                    ✅ *Jenkins Build & Test Success!*
                    Source: ${env.SOURCE_BRANCH}
                    Target: ${env.TARGET_BRANCH}
                    Project: ${env.PROJECT_NAME}
                    Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
                    """
            )
        }
    }
    // failure {
    //     script {
    //         // Merge conflict 관련 알림은 이미 Merge Conflict Check 스테이지
    //         // 여기서는 Build/Test 실패에 대한 알림만 전송합니다.
    //         if (env.CONFLICT_DETECTED != "true") {
    //             echo "❌ Build or Test Failed."
    //             mattermostSend(
    //                 message: """\
    //                     ❌ *Jenkins Build & Test Failed!*
//                    Source: ${env.SOURCE_BRANCH}
//                    Target: ${env.TARGET_BRANCH}
//                    Project: ${env.PROJECT_NAME}
//                    Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
//                    """
//            )
//        }
//    }
// }
    aborted {
        script {
            echo "⚠️ Build Aborted."
        }
    }
  }
}
```

- CD 파이프라인
  - Frontend

```
pipeline {
    agent any

    tools {
        nodejs 'node'
    }

    environment {
        // GitLab, DockerHub, 프로젝트 정보
        CREDENTIALS_ID          = 'gitlab-login'
        DOCKER_CREDENTIALS_ID   = 'docker-hub-credentials'

        DOCKERHUB_REPO          = "stussyhunter"
        FRONTEND_IMAGE          = "chaging-frontend"    // 최종 Docker 이I
        PROJECT_NAME            = "S12P21A302"
    }

    stages {
        stage('Cleanup old refs') {
            steps {
                script {
                    echo "🧹 오래된 Git 레퍼런스 정리"
                    sh 'rm -rf .git || true'
                    sh 'git init'
                    sh 'git remote add origin https://lab.ssafy.com/s12-blochai
                    sh 'git remote prune origin || true'
                }
            }
        }
        stage('Checkout') {
            steps {
                script {
                    echo "✅ GitLab에서 프론트엔드 코드 가져오기"
                    git branch: 'dev-fe',
                        credentialsId: "${CREDENTIALS_ID}",
                        url: 'https://lab.ssafy.com/s12-blochain-transaction-sub
                }
            }
        }

        stage('Test Build') {
            steps {
                script {
                    echo "🛠️ Next.js 빌드 테스트"
                    dir('frontend') {
                        sh "npm install"
                        sh "npm run build"
                    }
                }
            }
        }

        stage('Test Docker Hub Login') {
            steps {
                script {
                    echo "✅ Docker Hub 로그인 테스트"
            docker.withRegistry('https://index.docker.io/v1/', "${DOCK
                echo "🔑 Docker Hub 로그인 성공!"
            }
        }
    }
}

stage('Build & Push chaging-frontend Image') {
    steps {
        script {
            def imageName = "${DOCKERHUB_REPO}/${FRONTEND_
            echo "✅ Docker 이미지 빌드 & 푸시: ${imageName}"
            docker.withRegistry('https://index.docker.io/v1/', "${DOCK
                def builtImage = docker.build("${imageName}", "-f fron
                builtImage.push('latest')
            }
        }
    }
}

stage('Deploy to EC2') {
    steps {
        echo "🚀 EC2에 배포합니다."
        withCredentials([
            sshUserPrivateKey(credentialsId: 'EC2_SSH', keyFileVariab
            string(credentialsId: 'ec2-host', variable: 'SECRET_EC2_HC
        ]) {
            sh """
                chmod 400 \$SSH_KEY_PATH
                ssh -i \$SSH_KEY_PATH -o StrictHostKeyChecking=no u
echo "✅ EC2에서 최신 Docker 이미지 Pull"
docker pull ${DOCKERHUB_REPO}/${FRONTEND_IMAGE}:latest
echo "🛑 기존 컨테이너 중지 및 삭제"
docker stop ${FRONTEND_IMAGE} || true
docker rm ${FRONTEND_IMAGE} || true
echo "🚀 새로운 컨테이너 실행"
docker run -d --name ${FRONTEND_IMAGE} -p 3000:3000 --env-file
echo "⏳ 컨테이너 초기화 대기 (10초)"
```

```
sleep 3
echo "🔍 실행 중인 컨테이너 확인"
docker ps | grep ${FRONTEND_IMAGE} > /dev/null 2>&1
if [ \$? -eq 0 ]; then
   echo "✅ 프론트엔드 컨테이너가 정상적으로 실행 중입니다."
else
   echo "❌ 프론트엔드 컨테이너 실행 실패: 배포에 문제가 발생했습니다."
   exit 1
fi
EOF
               """.stripIndent()
            }
         }
      }
   }

   post {
      success {
         script {
            echo "✅ 프론트엔드 배포 테스트성공!"
            mattermostSend(
               message: """\
                  ✅ *Front Build & Deploy Success!*
                  Project: ${PROJECT_NAME}
                  Image: ${DOCKERHUB_REPO}/${FRONTEND_IMAGE}:la
                  Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
                  """.stripIndent()
            )
         }
      }
      failure {
         script {
            echo "❌ 프론트 엔드 배포 테스트 실패. 문제 해결이 필요합니다."
            mattermostSend(
               message: """\
                  ❌ *Front Deploy Failed!*
                  Project: ${PROJECT_NAME}
                  Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
```

```
                    """.stripIndent()
                )
            }
        }
    }
}
```

- Backend

```
pipeline {
    agent any

    tools {
        jdk 'jdk21'  // Jenkins Tools에서 설정한 JDK 21 사용
    }

    environment {
        CREDENTIALS_ID = 'gitlab-login'         // GitLab 로그인 정보
        DOCKER_CREDENTIALS_ID = 'docker-hub-credentials' // Docker
        DOCKERHUB_REPO = "stussyhunter"         // Docker Hub 사용자명
        TEST_IMAGE_NAME = "chaing-backend"      // 테스트용 Docker 이
        PROJECT_NAME = 'S12P21A302'             // 프로젝트명
    }

    stages {
        stage('Cleanup old refs') {
            steps {
                script {
                    echo "🧹 오래된 Git 레퍼런스 정리"
                    sh 'rm -rf .git || true'
                    sh 'git init'
                    sh 'git remote add origin https://lab.ssafy.com/s12-blochai
                    sh 'git remote prune origin || true'
                }
            }
        }
        stage('Checkout') {
            steps {
```

```
            script {
                echo "✅ GitLab에서 코드 가져오기 (테스트)"
                git branch: 'dev-be',
                    credentialsId: "${CREDENTIALS_ID}",
                    url: 'https://lab.ssafy.com/s12-blochain-transaction-sub
            }
        }
    }

    stage('Test Build') {
        steps {
            script {
                echo "🛠️ 빌드 & 테스트 (application-deploy.yaml + .env 사용
                // backend 디렉토리 안으로 이동
                dir('backend') {
                    // 1) Jenkins Credentials에 등록된 Secret Text(.env 내용)을
                    //    credentialsId: 'aws-env' 라고 가정
                    withCredentials([string(credentialsId: 'aws-env', variable
                        sh """
                            # .env 내용을 현재 디렉토리에 파일로 생성
                            echo "\$ENV_CONTENT" > .env

                            # 주석(#)을 제외한 라인을 export 해서 ENV 반영
                            export \$(grep -v '^#' .env | xargs)

                            # Gradle 실행권한 부여
                            chmod +x ./gradlew

                            # (1) clean build (테스트 제외)
                            ./gradlew clean build -x test -Dspring.profiles.activ
                        """
                    }
                }
            }
        }
    }

    stage('Test Docker Hub Login') {
        steps {
            script {
                echo "✅ Docker Hub 로그인 테스트"
                docker.withRegistry('https://index.docker.io/v1/', "${DOCK
                    echo "🔑 Docker Hub 로그인 성공!"
                }
            }
        }
    }

    stage('Build & Push Test Image') {
        steps {
            script {
                def testImage = "${DOCKERHUB_REPO}/${TEST_IMAGE_N
                echo "✅ 테스트용 Docker 이미지 빌드 & 푸시"
                docker.withRegistry('https://index.docker.io/v1/', "${DOCK
                    def builtImage = docker.build("${testImage}", "-f backe
                    builtImage.push('latest')
                }
            }
        }
    }

    stage('Deploy to EC2') {
        steps {
            echo "🚀 EC2에 배포합니다."
            withCredentials([
                sshUserPrivateKey(credentialsId: 'EC2_SSH', keyFileVariab
                string(credentialsId: 'ec2-host', variable: 'SECRET_EC2_H
            ]) {
                sh """
                    chmod 400 \$SSH_KEY_PATH
                    ssh -i \$SSH_KEY_PATH -o StrictHostKeyChecking=no 
echo "✅ EC2에서 최신 Docker 이미지 Pull"
docker pull ${DOCKERHUB_REPO}/${TEST_IMAGE_NAME}:latest
echo "🛑 기존 컨테이너 중지 및 삭제"
docker stop -t 70 ${TEST_IMAGE_NAME} || true
docker rm ${TEST_IMAGE_NAME} || true
```

```
echo "🚀 새로운 컨테이너 실행"
# 이미 EC2 내 .env가 있다고 가정 (혹은 Jenkins에서 scp로 업로드)
docker run -d --name ${TEST_IMAGE_NAME} \\
  -p 8080:8080 \\
  --env-file .env \\
  ${DOCKERHUB_REPO}/${TEST_IMAGE_NAME}:latest
echo "⏳ 컨테이너 초기화 대기 (10초)"
sleep 3
echo "🔍 실행 중인 컨테이너 확인"
docker ps | grep ${TEST_IMAGE_NAME} > /dev/null 2>&1
if [ \$? -eq 0 ]; then
  echo "✅ 컨테이너가 정상적으로 실행 중입니다."
else
  echo "❌ 컨테이너 실행 실패: 배포에 문제가 발생했습니다."
  exit 1
fi
EOF
          """
        }
      }
    }
  }

  post {
    success {
      script {
        echo "✅ 테스트 배포 성공!"
        mattermostSend(
          message: """\
            ✅ *Backend & Deploy Success!*
            Project: ${PROJECT_NAME}
            Image: ${DOCKERHUB_REPO}/${TEST_IMAGE_NAME}:l
            Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
            """.stripIndent()
        )
      }
    }
    failure {
            script {
                echo "❌ 테스트 배포 실패. 문제 해결이 필요합니다."
                mattermostSend(
                    message: """\
                        ❌ *Backend Deploy Failed!*
                        Project: ${PROJECT_NAME}
                        Time: ${new Date().format("yyyy-MM-dd HH:mm:ss")}
                        """.stripIndent()
                )
            }
        }
    }
}
```