Q1 Tools Analysis

Tool 1: Flyway

Overview

Flyway is a database migration tool that uses SQL-based versioned scripts to manage schema changes. Migrations are applied sequentially and tracked in a history table.

Key Features

- SQL and Java-based migrations
- Version control for database schema
- Automatic migration execution
- Command-line and Docker support
- Tracks migration history

Tool 2: Liquibase

Overview

Liquibase is a database schema change management tool that uses XML, YAML, JSON, or SQL formats to define migrations. It provides database-independent change definitions.

Key Features

- Multiple format support (XML, YAML, JSON, SQL)
- Database-agnostic changesets
- Automatic rollback generation
- Preconditions and context-based execution
- Change tracking via DATABASECHANGELOG table

Comparison Table

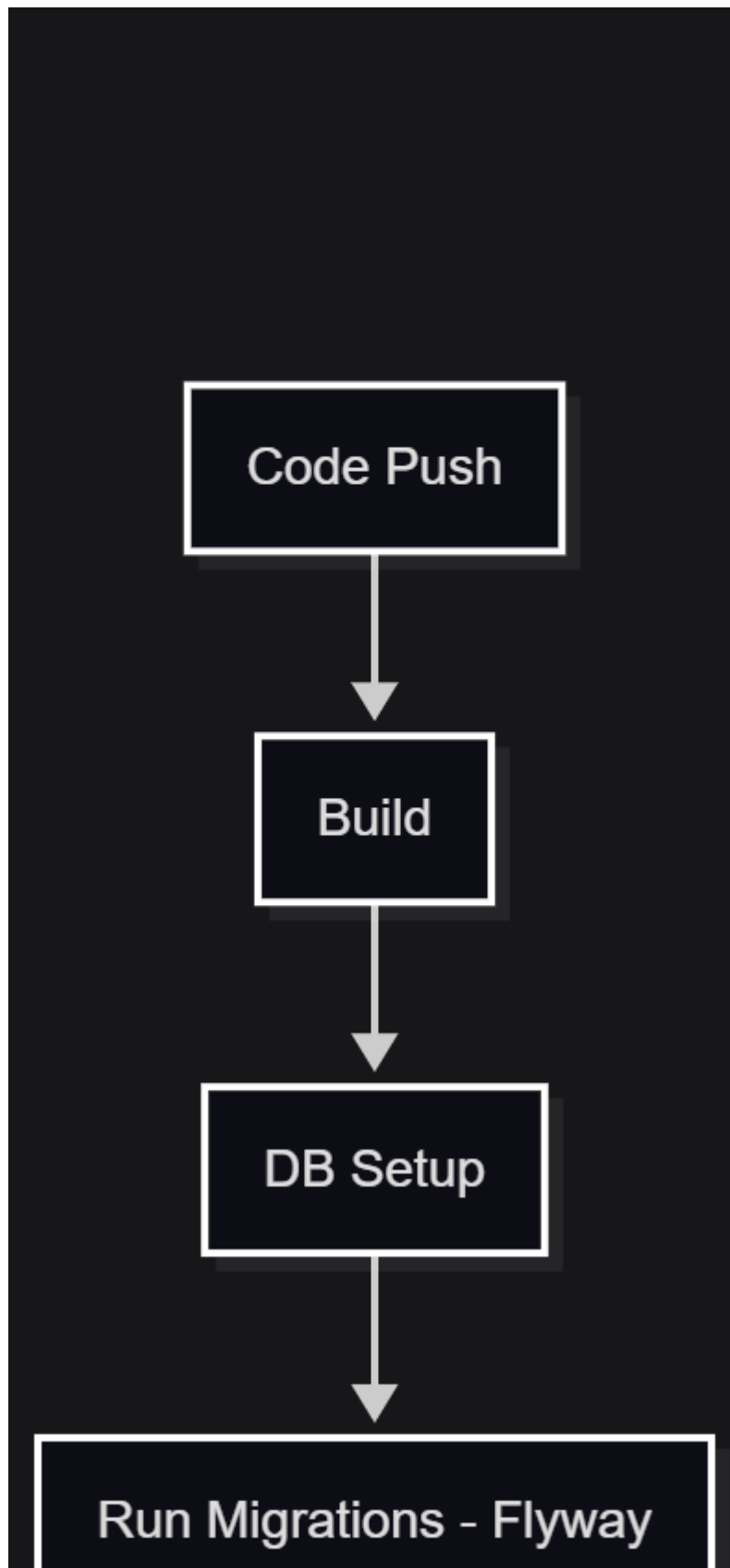| Feature	Flyway	Liquibase
Ease of Use	Simple, SQL-focused, low learning curve	Steeper learning curve, more complex
CI/CD Integration	Docker, CLI, direct integration	CLI, Maven, Gradle plugins
Supported Databases	MySQL, PostgreSQL, Oracle, SQL Server, 20+ total	MySQL, PostgreSQL, Oracle, SQL Server, 30+ total

CI/CD Integration Strategy
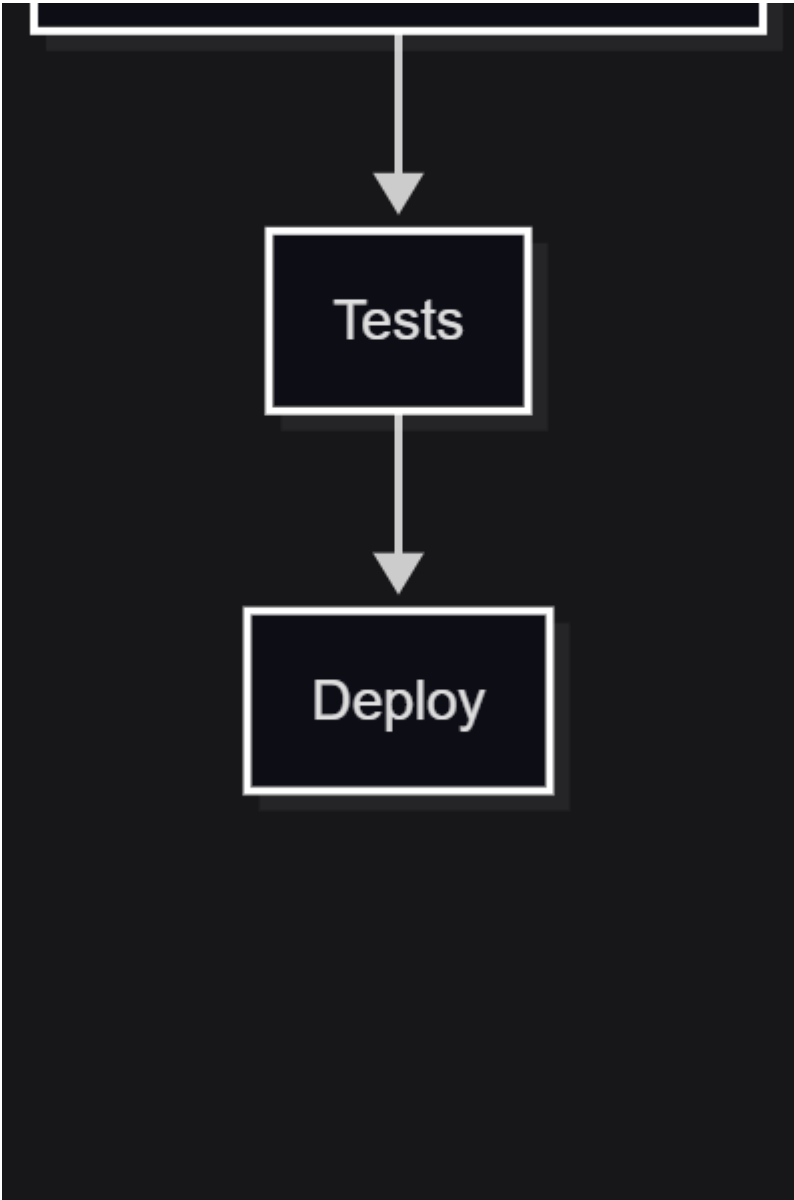
Pipeline Steps

1. Checkout code

2. Start database service
3. Run migrations (Flyway)
4. Execute tests
5. Deploy application

Diagram

The above pipeline stages should be executed sequentially via github actions

Simple CICD pipeline stages