Preliminary Project Proposal

Do-ploy: Quick Deployment Pipeline setup tool with Docker

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What

The project is the implementation of the midterm paper. The ultimate goal is to build a Docker-based configuration tool that helps set up a deployment pipeline of the backend server for a web application in a faster and simpler way.

Do-ploy will support typical backend server with the following architecture:

- Server framework (SpringBoot, Express, Flask)
- Dependency management (maven, npm)
- (optional) Databases (MySQL, PostgreSQL)
- (optional) Testing framework (Junit, Jasmine)
- (optional) Continuous integration framework (Jenkins)
- (optional) Code quality monitor (SonarQube)
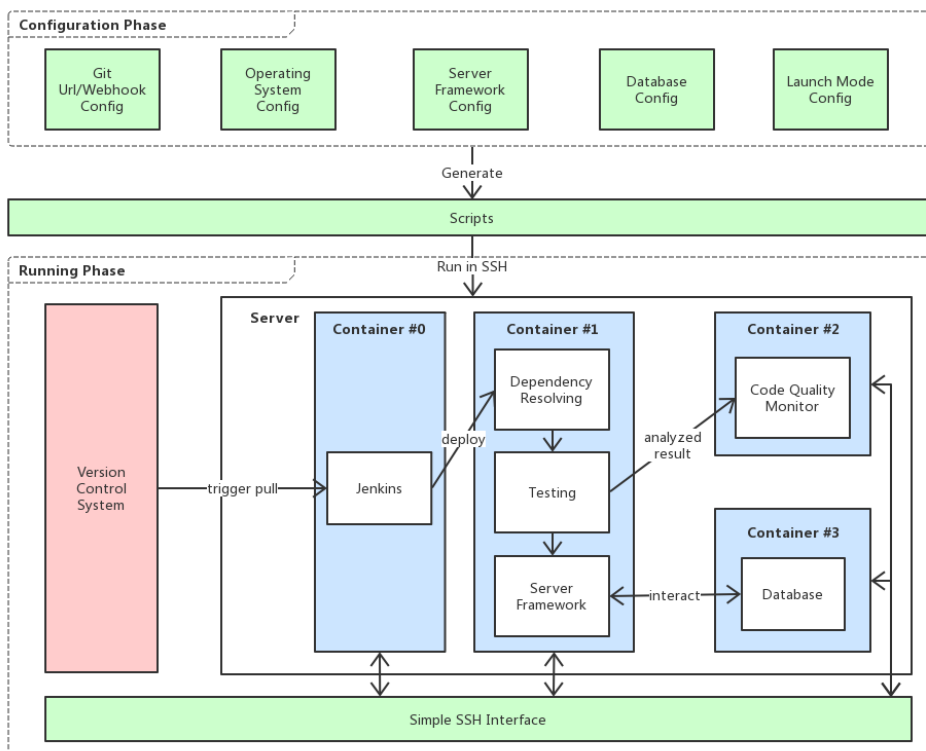
Users first select their favored configuration on the interactive website and then the tool will generate scripts that help build the environment. Further, the users only need to run the scripts

at any server from any online server providers (AWS, Azure, Google Cloud, etc.) or local machines with a Docker platform, and they will get the environment they want within minutes.

Note that the tool is not aimed at building an online platform that holds management of users' projects. Instead, this is for the initialization of the project. Once the environment is set up, the tool will give users full control of all features through a simple SSH interface (like launch the quality check, connect to database, etc.).

How

Docker, as one of the most popular topics in scalable software engineering, is used to empower the tool. From the industrial perspective, 'Docker + Kuburnetes' is one of the mainstream solutions for distributed system. Do-ploy will produce several Docker containers, and it can be technically integrated with new techniques like Kuburnetes.

Why

During my undergraduate and the first semester in Columbia, I ran into several similar cases where we were required to build a backend server with a database, and the configuration of deployment normally took a lot of time. Consequently, I started from building a Springboot template, which works pretty among junior students of my undergraduate school. Nowadays, I'm transforming it into a tool with easier usage and better compatibility with Docker techniques.