EE6254: DEVOPS ENGINEERING

ASSIGNMENT 3

GROUP 56

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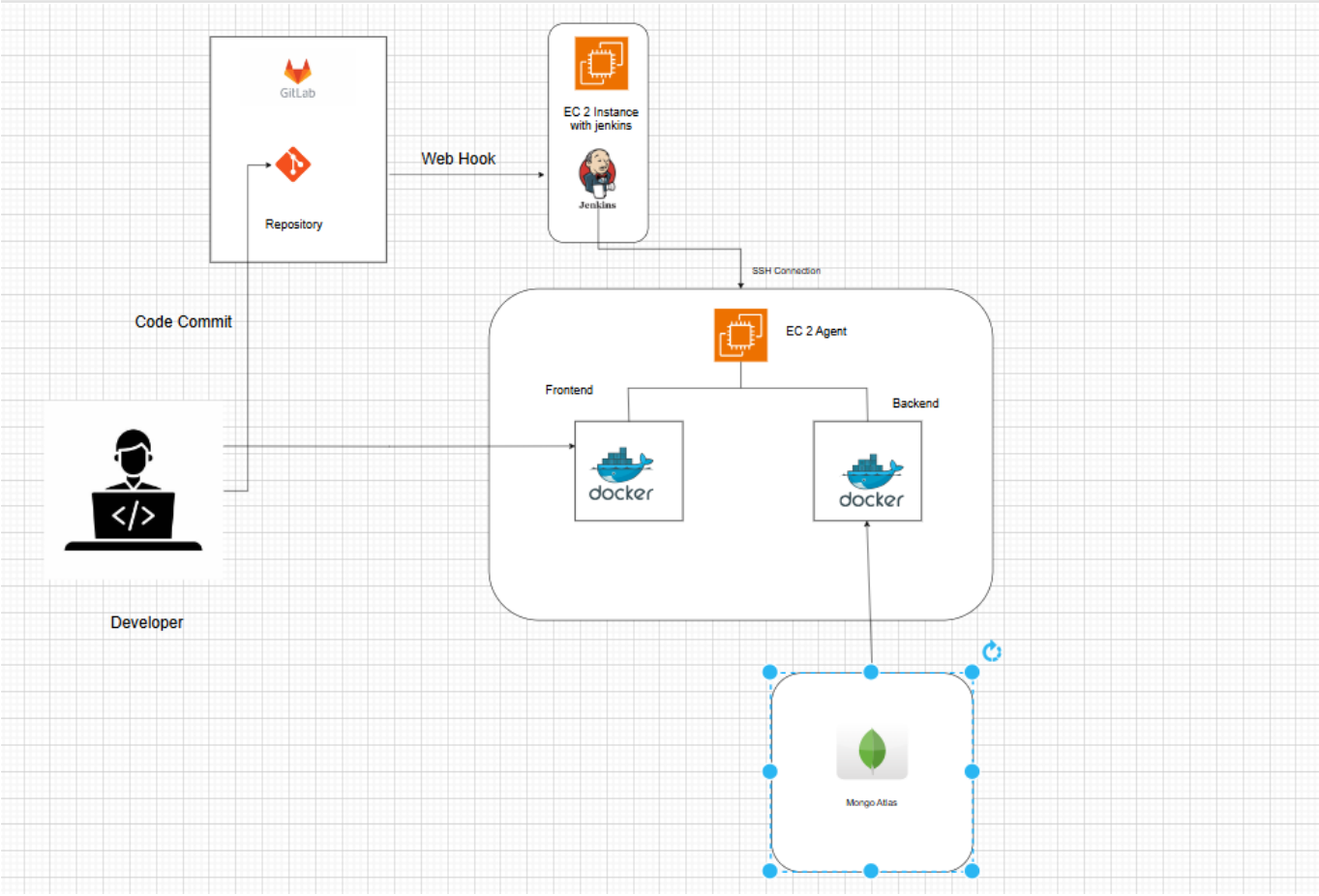

1 DevOps Tools and Their Versions

- Jenkins
  - Version: 2.452.2
  - Purpose: used to automate process of building, testing and deploying. (continuous integration and deployment

- GitLab
  - Version: 17.1
  - Purpose: Git Lab is the version controller of the project. it will trigger the CI pipeline one the changes are added.

- Docker
    - Version: 26.1.4
    - Purpose: used to containerize the application promoting isolated deployment environment.

2 Application Tools and Dependencies

- Backend

  Using node js as the runtime of the backend using express to handle the server side logic and API calls.

  - Node version 16.9.1 (stable)

- Frontend

  For our user interface, we used React, a JavaScript library, which enabled us to create interactive and responsive components for a dynamic user experience. React's component-based architecture allowed us to efficiently handle and update UI elements based on data changes.

  - React version 18.2.0

- Database

  For the database, I utilized MongoDB and Mongoose. MongoDB provided a flexible, scalable NoSQL database solution. Mongoose facilitated data modeling and schema management for seamless integration with MongoDB.

  - Mongo db Version 6.0

3 Automated Deployment Process

The process begins when the developer push the code changes into Gitlab. Then the webhook triggers the Jenkins pipeline. Jenkins first checks the code changes then the next step of the pipeline is triggered. The repository is cloned in to the ec2 Agent and then Jenkins starts building the docker images utilizing the docker compose file. Then the built images are used to create each of the containers inside the instance which will provide developer access to see the changes in the deployed environment.