DEPLOYMENT 1

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SEPTEMBER 1, 2022

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Documentation and observations:

Jenkins Installation

- Network security group needs to be configured to open ports 22,80,8080 for EC2 instance.
- Access to Jenkins via web browser requires public DNS name from Ubuntu EC2 and the port number Jenkins was configured on (8080).
- Installation of Jenkins requires JRE since Jenkins is a Java based application.
- Jenkins requires account creation for access or can enter as guest.
- Jenkins requires access to secret password located in a specific directory. 'Cat' to show txt file containing password.

Jenkins Build and Test

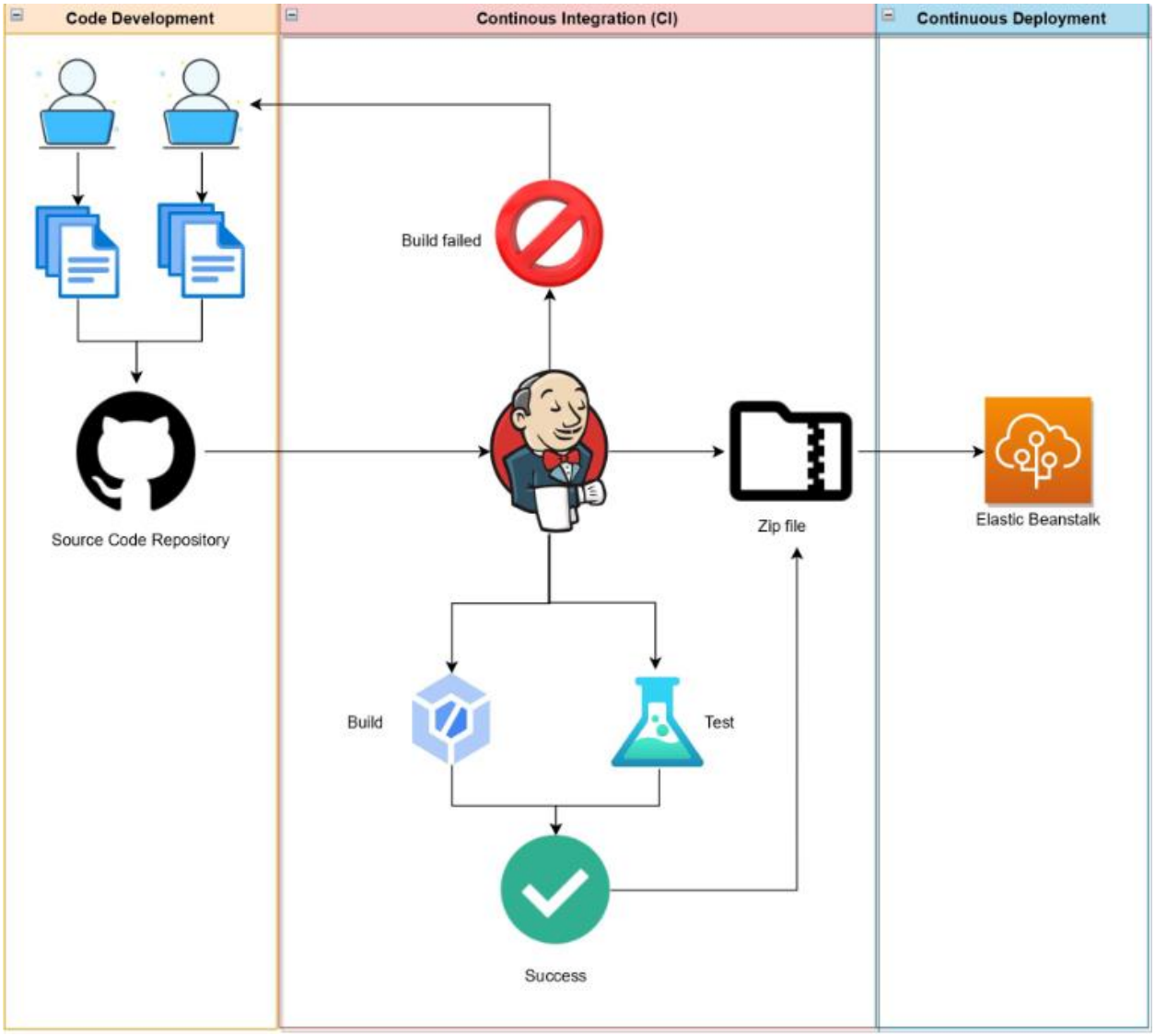
- Jenkins build and test was done through the jenkinsfile in application directory.
    - The build stage outlined in jenkinsfile requires virtual environment to be installed and runs the flask application in the virtual environment.
    - The test stage outline in jenkinsfile runs a framework called pytest to return errors in code based on failures found in the python application. (i.e if you write 4 == 5, pytest will return this as a failure in your code).
- Using the provided repository link, Jenkins checks for any pull requests on the main branch and schedules a build for that branch (compiles all code).

Elastic Beanstalk

- Compression of zip files needs to be done to not include parent directory for Elastic beanstalk to successfully deploy the application. (i.e kuralabs_deployment_1/application.py as opposed to application.py being the zip file)
- Load balancer and EC2 instance was made when deploying on EBS.
- CloudWatch alarm was initiated to keep track of logs and metrics related to our deployment.
- A Procfile was generated to configure the WSGI
- Health status failures I encountered:

Error	*Cause*
ModuleNotFoundError: No Module named 'application'	Zip file for application.py incorrectly formatted.
TemplatenotFound(template)	Subdirectories were not compressed correctly when running zip command. The Templates subdirectory specifically was not compressed.
TemplatenotFound(home.html)	Subdirectories were not compressed correctly when running zip command. The Templates subdirectory specifically was not compressed.

Pipeline diagram



Key takeaways:

- The deployment was much done very manually. A plugin could be used to automate the process to Elastic beanstalk for continuous deployment.
- Any failures in building and testing the code should return feedback. A feedback loop will help identify errors.
- The build and testing occurred based on the instructions provided in the jenkinsfile.

Improvements:

- Use of plugins in Jenkins would be able to upload successful build of source code to Elastic Beanstalk for a more fluid CI/CD process.
- Creating a script to properly zip the necessary files and dependencies.
- Creating a script for automating Jenkins installation would be helpful in configuring other EC2 instances.