IBM DEVOPS

GROUP 26

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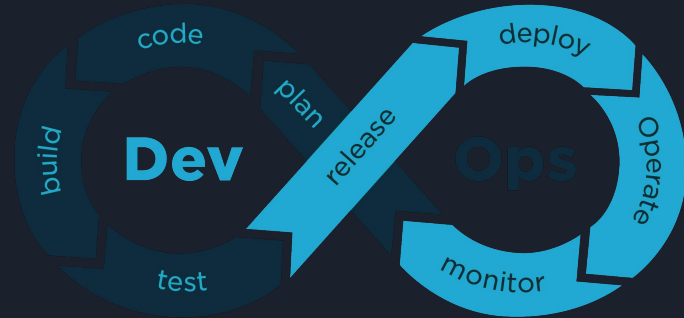
Project Overview:

- DevOps is a term to describe the collaboration between systems development and systems operations.

- It gives an overall perspective of the whole life-cycle of developing and producing code through clearly defined steps, tools and automation.

- IBM wants us to build a CI/CD pipeline to incorporate this methodology.

- The main purpose of this pipeline is to help automate software delivery. This includes automated software standardisation, testing, containerizing and finally deployment.
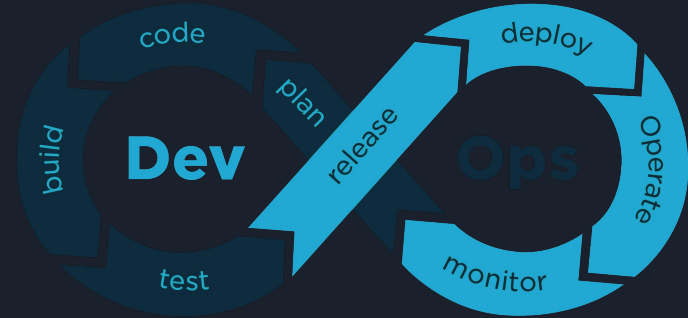
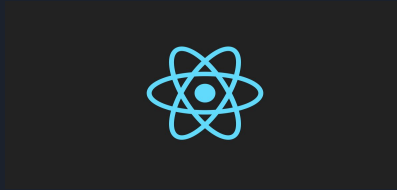To build this CI/CD pipeline, we must develop:

- Automated testing: Unit, Integration and end to end
- Containerizing of web-app
- Automated deployment to multiple environments
- A front-end such as a web-app to test that the code was properly deployed
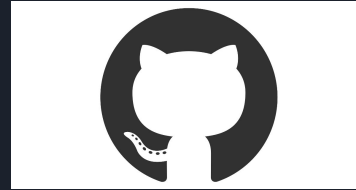
Technologies used:

We used a variety of different technologies including:
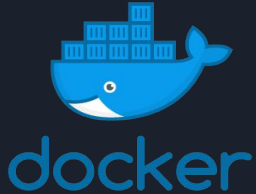
Travis CI for pipeline orchestration

React.js for the front-end

Github for version control

Slack for build notifications

Docker for containerisation

Jest & Cypress for testing

IBM cloud to host our application

Main Challenges:

The main challenges we faced were:

- Having to learn plenty of completely new technologies such as Travis CI, Docker, Kubernetes Jest, Cypress and IBM cloud.

- IBM free cloud account restrictions: Only one free Cluster and Storage/Pull Traffic quotas for IBM Container Registry.

    - Utilised separate IBM cloud accounts for production and development.

    - Image retention policies for managing Container Registry quotas.

- Bloated docker images from unnecessary packages.

    - Docker multi-stage build pattern to produce a lean, production-ready image.

    - ~300MB down to ~10MB

How we feel the project turned out:

Overall, we are extremely happy with our project.

 We all collaborated well as a team to produce a working CI/CD pipeline that deploys a quiz web application.

We managed our time well and had time to do the non-functional requirements including incorporating slack notifications with Travis CI and added end-to-end testing using Cypress.

Video Demo: