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DevOps

GitHub Actions

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# GitHub Actions Report

## Continuous Integration & Continuous Deployment

### Continuous Integration (CI):

Continuous Integration (CI) is a software development practice that aims to improve the quality and efficiency of the software development process by automating the integration of code changes from multiple contributors into a shared codebase.

### Continuous Deployment (CD):

Continuous Deployment (CD) is an extension of the Continuous Integration (CI) process that automates the deployment of code changes to production or other target environments, such as staging or testing as soon as they pass all automated tests and quality checks.

## GitHub Actions:

GitHub Actions is a continuous integration and continuous delivery (CI/CD) platform and workflow automation tool provided by GitHub, one of the most popular version control and code hosting platforms in the software development industry. GitHub Actions allows developers to automate various aspects of their software development workflows directly within their GitHub repositories.

Here are some key features of GitHub actions which are as follow:

* Workflows in GitHub Actions are defined using YAML files (usually named .github/workflows/workflow-name.yml) and describe a series of steps, jobs, and actions to be executed when specific events occur. These events can include pushes to the repository, pull requests, issue comments, and more.
* A workflow consists of one or more jobs, and each job contains a series of steps. Jobs can run in parallel or sequentially and are typically used to group related tasks, such as building, testing, and deploying code.
* Actions are reusable units of work defined in separate repositories. GitHub provides a marketplace of pre-built actions for common tasks like building, testing, and deploying code.
* GitHub Actions can be triggered by various GitHub events, including pushes to specific branches, pull requests, labels, issue comments, and more.
* GitHub Actions can execute workflow jobs on virtual machines called runners. GitHub offers hosted runners with a variety of operating systems, or users can set up self-hosted runners on their own infrastructure.
* GitHub Actions allows you to upload, download, and share artifacts between jobs and workflows. Artifacts can include build artifacts, test results, and other files.
* GitHub Actions supports matrix builds, enabling you to run the same job with multiple configurations, such as different versions of programming languages or operating systems.
* Detailed logs and insights are provided for each workflow run, including information about which steps succeeded or failed, the timing of each step, and any errors encountered.
* GitHub provides a visual representation of workflow runs, showing the sequence of jobs and their statuses.