Introduction to DevOps

Key Takeaways

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Different IT Roles in Software Development & Delivery Process

Software Development

- software **programmed by developers**
- in different programming languages, like Java, Python, JavaScript
- new functionality & bugfixes

Software Testing

- **test** new features & old functionality
- done by developers & dedicated testers
- manual & automated testing

Operations

- **build** application
- **deploy** on servers
- **upgrade** existing software
- run software in production
- done by operations team

Traditional: Development vs Operations - 1

Release

Development

Operations

- focus on **implement new features fast**
- focus on **maintaining stability**

Traditional: Development vs Operations - 2

Different Responsibilities

Different Technical Knowledge

Different Toolsets

Development

- programming languages
- test frameworks
- databases
- version control

Operations

- OS, mostly Linux
- command-line
- scripting
- monitoring tools

Traditional: Development vs Operations - 3

Miscommunication and Lack of Collaboration

- Deployment requires configurations & environment needs to be prepared, so communication is important
- In reality **silos between those 2 departments**

Conflict of Interest

- **DEV Focus** on releasing new features fast
- **OPS Focus** on maintaining systems' stability

Manual Work & Checklists

- **Manual checks**: does new change affect systems' stability or security
- **Manual deployment**
- **Manual configurations** of deployment environment

Slows down the release process!!

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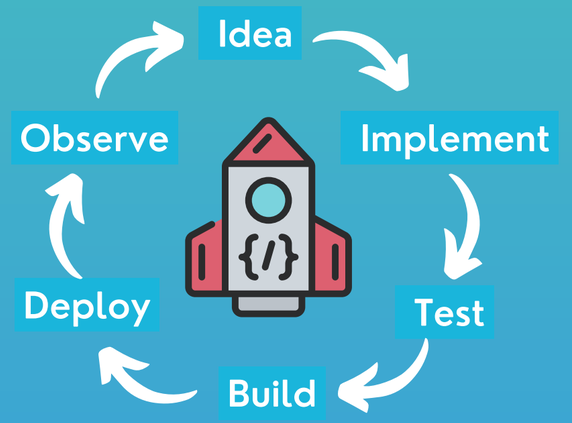
Solution: DevOps Culture - 1

Simplest Definition:
Intersection of Development & Operations

- DevOps was just a way of working between **DEV**'s and **OP**'s
- Common language to communicate

Better Definition:
DevOps is about making the process of continuous delivery fast and with minimal errors

- DevOps tries to **remove all these roadblocks** and things that slow down the release process
- Instead of manual inefficient processes helps create fully **streamlined processes for release cycles**



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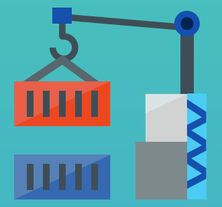
Solution: DevOps Culture - 2

- Different companies implemented DevOps in different ways
- But, gradually it got a more concrete form with common patterns

Source Code Management

Continuous Integration/Deployment



Container Orchestration

Continuous Monitoring

Planning & Collaboration

Package Management

Treat Infrastructure as Code

Cloud

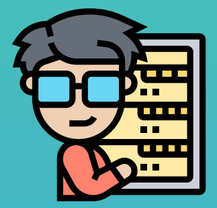
DevOps Engineer

DevOps as a separate Role

- DevOps evolved into an **actual role**: "DevOps Engineer"
- Where either Developers, Operations or a separate role is responsible for DevOps

Developers doing DevOps

Doing only DevOps

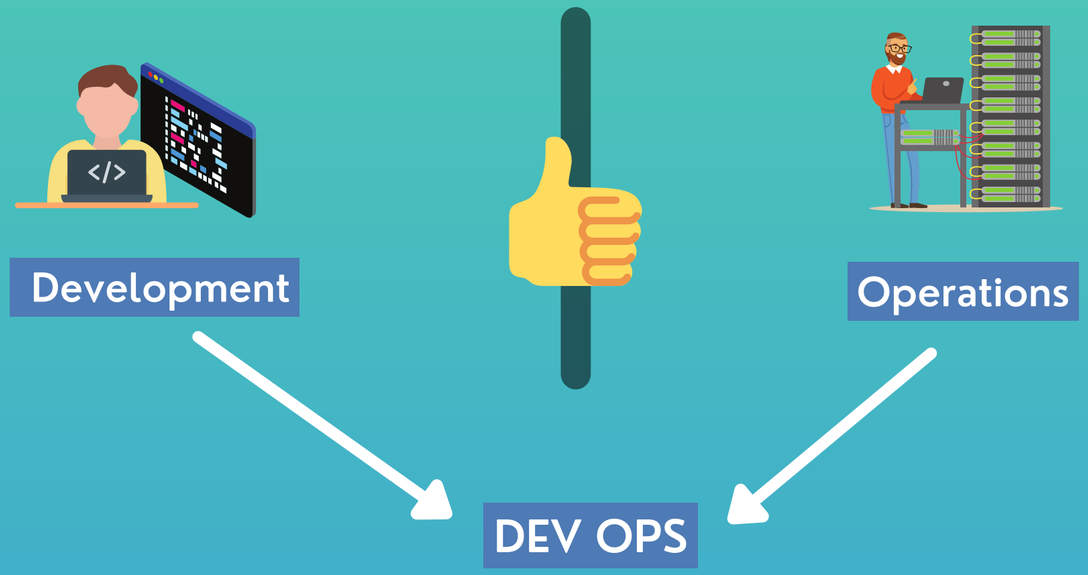


Operations doing DevOps

- **DevOps tools**: Set of technologies used to implement the DevOps Principles became DevOps technologies
- DevOps Engineer responsible for creating a streamlined fully automated release process

DevOps Tasks and Responsibilities - 1

Need **some know-how from DEV and OPS team**



Additional DevOps specific skills and know-how

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DevOps Tasks and Responsibilities - 2

- DevOps tools that are known today:

Source Code Management

Git

Package Management

Docker

Infrastructure as Code

Terraform, Ansible

Continuous Integration/Delivery

Jenkins, Gitlab

Container Orchestration

Kubernetes

Cloud

AWS, Azure, Google Cloud

Continuous Monitoring

Prometheus

- Replacing human tasks with automation tools

- At the core of DevOps: **CI/CD Pipeline for an automated release process**

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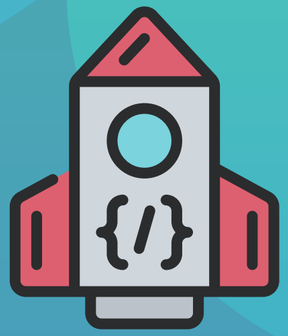
High Level Overview & Big Picture of DevOps



Throughout Bootcamp: Zoom in into each part and understand it in detail and be able to implement the whole DevOps process