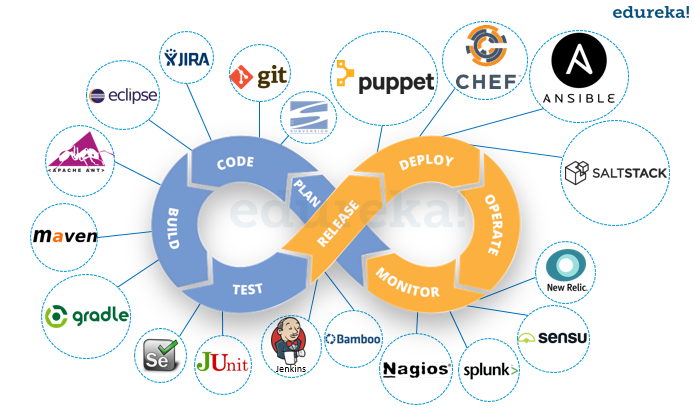
Was solltest Du zu AWS-DevOps wissen

[Overview of DevOps](https://www.edureka.co/devops" \l "Curriculum_18537)

Learning Objective: In this module you will be introduced to DevOps environment.

Why DevOps?

* What is DevOps?
* DevOps Market Trends
* DevOps Engineer Skills
  + https://www.techrepublic.com/article/10-critical-skills-that-every-devops-engineer-needs-for-success/
  + <https://www.cbronline.com/list/7-skills-devops-engineer>
    - Skript with ***Python***, Perl, or Ruby
    - SH Skript
      * <https://openclassrooms.com/fr/courses/43538-reprenez-le-controle-a-laide-de-linux/43394-les-conditions>
      * https://www.brianstorti.com/understanding-shell-script-idiom-redirect/
    - Bash, Powershell
    - Secure coding
    - Source control (like Git, Bitbucket, VSTS, etc.)
    - Continuous integration (like Jenkins, Bamboo, VSTS )
    - Infrastructure automation (like Puppet, Chef, Ansible)
    - Deployment automation and orchestration (like Jenkins, VSTS, Octopus Deploy)
    - Container concepts (LXD, Docker)
    - Orchestration (Kubernetes, Mesos, Swarm)
    - Cloud (like AWS, Azure, Google Cloud Platform, OpenStack)



* DevOps Delivery Pipeline
* DevOps Ecosystem

Hands On:

* Edureka’s Use Case

Version Control with Git

Learning Objective: In this module you will be introduced to DevOps environment.

Topics:

* **What is version control**
* **What is Git**
* **Why Git for your organization**
* **Install Git**
* **Common commands in Git**
  + [**https://git-scm.com/book/de/v1/Git-Grundlagen-%C3%84nderungen-am-Repository-nachverfolgen**](https://git-scm.com/book/de/v1/Git-Grundlagen-%C3%84nderungen-am-Repository-nachverfolgen)
  + [**https://de.atlassian.com/git/tutorials/making-a-pull-request**](https://de.atlassian.com/git/tutorials/making-a-pull-request)
  + [**https://git-scm.com/book/fr/v1/Les-branches-avec-Git-Rebaser**](https://git-scm.com/book/fr/v1/Les-branches-avec-Git-Rebaser)
  + **https://git-scm.com/book/fr/v1/Les-branches-avec-Git-Rebaser**
* **Working with Remote Repositories**

Hands On:

* GIT Installation, Version Control, Working with remote repository

Links:

https://hackernoon.com/understanding-git-index-4821a0765cf

Git, Jenkins & Maven Integration

Learning Objective: In this module, you will learn about the different actions performed through git and will be introduced to Jenkins and maven..

Topics:

* <https://intellipaat.com/tutorial/devops-tutorial/jenkins-tutorial/>
* ***Branching in Git***
* ***Merging in Git***
  + ***Forward mering***
    - ***https://confluence.atlassian.com/bitbucket/git-fast-forwards-and-branch-management-329977726.html***
    - [***https://fr.atlassian.com/git/tutorials/using-branches/merge-strategy***](https://fr.atlassian.com/git/tutorials/using-branches/merge-strategy)
* ***Git workflows***
  + [***https://medium.com/@OVHUXLabs/la-puissance-des-workflows-git-12e195cafe44***](https://medium.com/@OVHUXLabs/la-puissance-des-workflows-git-12e195cafe44)
  + ***https://leanpub.com/git-flow/read***
  + [***https://fr.atlassian.com/git/tutorials/comparing-workflows***](https://fr.atlassian.com/git/tutorials/comparing-workflows)
  + ***Different Workflow: (https://www.codingblocks.net/podcast/comparing-git-workflows/)***
    - ***Centralized***
    - ***Feature Branch Workflow***
    - ***Gitflow***
    - ***Fork & Merge***
* ***Git cheat sheet : https://about.gitlab.com/images/press/git-cheat-sheet.pdf***
* ***What is CI***
* ***Why CI is Required***
* Introduction to Jenkins (With Architecture)
  + https://www.udemy.com/jenkins-from-zero-to-hero/
  + <https://jenkins-le-guide-complet.github.io/html/intro.html> (french)
* Ticket in GITLAB
* ***Introduction to Maven*** 
  + ***shared repository***
  + ***plugins' goals***
  + ***mvn test***
  + ***maven cheat sheet: http://files.zeroturnaround.com/pdf/Maven-cheat-sheet.pdf***
  + ***assembly descriptor ??***

Hands On:

* Branching and merging, Stashing, rebasing, reverting and resetting
* Build and automation of Test using Jenkins and Maven

Continuous Integration using Jenkins

**Learning Objective**: In this module, you will know how to perform Continuous Integration using Jenkins by building and automating test cases using Maven.

Topics:

* Jenkins Management
* Adding a slave node to Jenkins
* Building Delivery Pipeline
* Pipeline as a Code
* Implementation of Jenkins in the Edureka’s Project

Hands On:

* Build the pipeline of jobs using Jenkins
* Create a pipeline script to deploy an application over the tomcat server

Continuous Testing with Selenium .

**Learning Objective**: In this module, you will learn about selenium and how to automate your test cases for testing web elements. You will also get introduced to X-Path, TestNG and integrate Selenium with Jenkins.

Topics:

* Introduction to Selenium
* Why Selenium?
* Selenium – Webdriver
* Creating Test Cases in Selenium WebDriver (Waits)
* What and why X-Path
* Handling different controls on Webpage
* Framework in Selenium
* Selenium Integration with Jenkins
* Implementation of Selenium in the Edureka’s Project

Hands On:

* Installing Selenium
* Creating Test Cases in Selenium WebDriver
* Integrating Selenium with Jenkins

Continuous Deployment: Containerization with Docker.

Learning Objective: This module introduces Docker to readers, the core concepts and technology behind Docker. Learn in detail about container and various operations performed on it.

Topics:

* Shipping Transportation Challenges
* Introducing Docker
* Understanding images and containers
* Running Hello World in Docker
* Introduction to Container
* Container Life Cycle
* Sharing and Copying
* Base Image
* Docker File
* Working with containers
* Publishing Image on Docker Hub
* ***Wait for Service Start***

Hands On:

* Create and Implement docker images and containers

Containerization with Docker: Ecosystem and Networking.

**Learning Objective**: In this module, you will learn to integrate different containers using docker.

Topics:

* Introduction to Docker Ecosystem
* Docker Compose
* Docker Swarm
* Managing Containers
* Running Containers
* Introduction to Docker Networking
* Network Types
* Docker Container Networking
* Implementation of Docker in the Edureka’s Project

Hands On:

* Use Docker Compose to create a WordPress site
* Start Containers on a Cluster with Docker Swarm
* Deploy a multi-tier application over a cluster
* Scale an application

Continuous Deployment: Configuration Management with Puppet.

**Learning Objective**: In this module, you will learn to install and configure Puppet. Additionally, understand the master-agent architecture in Puppet.

Topics:

* Introduction to Puppet
* Puppet Installation
* Puppet Configuration
* Puppet Master and Agent Setup
* Puppet Module
* Node Classification
* Puppet Environment
* Puppet Classes
* Automation & Reporting

Hands On:

* Install and configure Puppet
* Configure and implement servers using Puppet

Configuration Management with Ansible.

**Learning Objective**: In this module, you will learn to install Ansible and configure ansible roles. You will also learn to write playbooks and finally execute ad-commands using Ansible.

Topics:

* Introduction to Ansible
* Ansible Installation
* Configuring Ansible Roles
* Write Playbooks
* Executing adhoc command

Hands On:

* Installing Ansible
* Configuring Ansible Role
* Write Playbooks
* Execute adhoc commands

Containerization using Kubernetes.

**Learning Objective**: In this module, you will learn the basics of Kubernetes and its integration with Docker.

Links:

https://imti.co/gitlabci-golang-microservices/

Topics:

* Revisiting Kubernetes Cluster Architecture
* Spinning up a Kubernetes Cluster on Ubuntu VMs
* Exploring your Cluster
* Understanding YAML
* Creating a Deployment in Kubernetes using YAML
* Creating a Service in Kubernetes
* Installing Kubernetes Dashboard
* Deploying an App using Dashboard
* Using Rolling Updates in Kubernetes
* Containers and Container Orchestration
* Introduction to Kubernetes

Hands On:

* Setting up the Kubernetes Cluster
* Accessing your application through service
* Deploying an app through Kubernetes Dashboard
* Rolling updates in Kubernetes

Continuous Monitoring with Nagios.

**Learning Objective**: Learn how to continuously monitor your tasks using various plugins and implementing Nagios Commands.

Topics:

* Introduction to Continuous Monitoring
* Introduction to Nagios
* Installing Nagios
* Nagios Plugins(NRPE) and Objects
* Nagios Commands and Notification

Hands On:

* Installing Nagios
* Monitoring of different servers using Nagios

Introduction to DevOps on Cloud.

**Learning Objective**: Learn about various cloud services and service providers, also get the brief idea of how to implement DevOps using AWS.

Topics:

* Why Cloud?
* Introduction to Cloud Computing
* Why DevOps on Cloud?
* Introduction to AWS
* Various AWS services
* DevOps using AWS

Automating infrastructure with CloudFormation.

**Learning Objective**: In this module, you will learn how to use CloudFormation Templates to model and provision the AWS resources in an automated and secure manner for your application.

Topics:

* Introduction to CloudFormation
* CloudFormation Structure
* Intrinsic Functions & Conditions
* CloudFormation Nesting
* CloudFormation Wait Conditions & Wait Condition Handlers
* CloudFormation Helper Scripts
* CloudFormation Custom Resources
* CloudFormation Resource Deletion Policies
* Stack Creation
* CloudFormation Stack Updates

Application Deployment using Elastic Beanstalk.

**Learning Objective**: In this module, you will gain knowledge on various aspects of Elastic Beanstalk. Also, you will learn how to deploy and Monitor your application in Beanstalk.

Topics:

* Introduction to Elastic Beanstalk
* Components of Beanstalk
* Deployment Option
* Platform Updates
* Docker in Elastic Beanstalk
* Extending Beanstalk using ebextensions
* Alarms and Notification

Configuration Management using OpsWorks.

**Learning Objective**: In this module, you will get to know the nitty-gritty of AWS OpsWorks and also learn how to create stacks and manage configuration with AWS OpsWorks.

Topics:

* Introduction to OpsWorks
* Components of OpsWorks
* Cookbooks, Recipes, Data bags and Berkshelf
* OpsWorks Lifecycle Events
* OpsWork Deployment
* OpsWorks Auto-Healing

Continuous Monitoring and Management.

**Learning Objective**: In this module, you will understand how to implement the concepts of continuous monitoring and management using CloudWatch and CloudTrail. You will also learn about real-time log processing using Kinesis.

Topics:

* Introduction to CloudWatch
* CloudWatch Metrics: EC2, ELB and Auto Scaling metrics
* Custom Metrics
* CloudWatch Alarms
* CloudWatch Agent
* CloudWatch Logs
* CloudWatch AMI
* Introduction to CloudTrail
* Real-Time Log Processing- Kinesis

Security, Governance and Validation.

**Learning Objective**: In this module, you will learn about the concept of Security, Governance, and Validation on AWS.

Topics:

* Implementing Delegation & Federation
* Corporate Identity Federation
* Web Identity Federation
* Enabling IT Governance with AWS Services
* Security and network in EC2
* Encryption of volumes and snapshot

Elasticity and High Availability.

**Learning Objective**: In this module, you will learn how to implement Elasticity and High Availability using various AWS services.

Topics:

* Provisioning elasticity using Load Balancer and Auto-Scaling
* Components of Auto Scaling
* Horizontal and vertical scaling
* Auto-Scaling Lifecycle
* High Availability, Multi AZ Architecture, Data Management in Amazon RDS, Dynamo DB, SQS

Continuous Monitoring and Management.

**Learning Objective**: In this module, you will understand how to implement the concepts of continuous monitoring and management using CloudWatch and CloudTrail. You will also learn about real-time log processing using Kinesis.

Topics:

* Introduction to CloudWatch
* CloudWatch Metrics: EC2, ELB and Auto Scaling metrics
* Custom Metrics
* CloudWatch Alarms
* CloudWatch Agent
* CloudWatch Logs
* CloudWatch AMI
* Introduction to CloudTrail
* Real-Time Log Processing- Kinesis

**Topics:**

* Overview of DevOps - Lifecycle, Stages in DevOps
* AWS CodeCommit
* AWS CodePipeline
* AWS Code Deploy

**Hands-on:**

* Implement AWS CodeCommit
* Implement AWS CodePipeline

See :

<https://intellipaat.com/tutorial/devops-tutorial/jenkins-tutorial/>

https://www.edureka.co/blog/aws-devops-a-new-approach-to-software-deployment/#AWSDevOps

<https://www.edureka.co/cloudcomputing>

https://www.edureka.co/devops

<https://www.edureka.co/masters-program/devops-engineer-training>