Internship Program

DevOps

Internship In EFG Hermes>>LinkedIn Profile

Under supervision

Manager Engineering In DevOps

Eng / Mohamed Saeed>>LinkedIn Profile

1-Eng/ Mahmoud El Ghamrawy >>LinkedIn Profile

Helped Me In This Topics Through Internship

[Azure DevOps,Pipeline,Jenkins,Docker,Kubernetes.....]

2-Eng/ Ahmed Bashandy>>LinkedIn Profile

Helped Me In This Topics Through Internship

[RabbitMQ,Helm Chart,Kubernetes

Monitoring(Prometheus,Grafana)]

Prepared By The Trainee

Ali Wazeer >>LinkedIn Profile

GitHub>>>EFG_Hermes-Internship

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NOte “You must see the Readme.md Files files because they contain an explanation of each topic ”

DevOps Content Track

1. Introduction to DevOps:
- Overview of DevOps principles and practices
- Understanding the DevOps lifecycle (Plan, Code, Build, Test, Release, Deploy, Operate, Monitor)
- Importance of DevOps in the modern software development landscape

2. Version Control Systems:
- Git: Basics of Git, branching, merging, and collaboration
- GitHub/GitLab: Exploring and using cloud-based Git repositories

3. Continuous Integration (CI) and Continuous Deployment (CD):
- Setting up a CI/CD pipeline using tools like Jenkins, CircleCI, or GitLab CI/CD
- Configuring builds, tests, and deployments
- Monitoring and troubleshooting the CI/CD pipeline

4. Infrastructure as Code (IaC):
- Introduction to IaC and its benefits
- Hands-on experience with tools like Terraform, Ansible, or CloudFormation
- Deploying and managing infrastructure components using IaC

5. Containerization and Docker:
- Understanding the fundamentals of containerization
- Building, running, and managing Docker containers
- Deploying containerized applications using Docker Compose

6. Kubernetes and Container Orchestration:

- Introduction to Kubernetes and its core concepts
- Deploying and managing applications on Kubernetes
- Exploring Kubernetes features like scaling, load balancing, and self-healing

7. Monitoring and Observability:

- Implementing monitoring solutions using tools like Prometheus, Grafana, or Elastic Stack
- Setting up alerts and notifications for critical system events
- Analyzing logs and metrics to identify and troubleshoot issues

8. Cloud Computing and Cloud Services:

- Exploring popular cloud providers (AWS, Azure, GCP)
- Deploying and managing infrastructure and applications on the cloud
- Utilizing cloud-native services and features

9. Security and Compliance:

- Understanding DevSecOps principles
- Implementing security practices in the DevOps pipeline
- Ensuring compliance with industry standards and regulations

10. DevOps Culture and Soft Skills:

- Collaborating with cross-functional teams
- Effective communication and documentation
- Continuous learning and professional development

During the internship

the intern should be involved in hands-on projects, contributing to real-world DevOps initiatives, and gaining practical experience in the various aspects of the DevOps lifecycle. Regular feedback, mentorship, and opportunities for presenting and showcasing their work can also be valuable components of the internship.

Tasks & Knowledge During Internship
Under supervision Eng/El Ghamrawy & Eng/Bashandy

***Docker**

1-Static Website Hosting With Nginx As(Html & Full Website) >>> ***Repo Project***
2-Building Docker Image From Dockerfile
3-Dockerize ASP.NET Core Application >>>***Repo Project***
4-Dockerize Angular Application>>>>***Repo Project***
5-Containerizing Nodejs Application With Docker Compose>>>>***Repo Project***
6-Containerize .NET Application Without Writing Dockerfile>>>>***Repo Project***
7-Difference Between CMD And Entrypoint In Docker
8-Dockerize Application
9-Deployment In Docker
10-Make Website From Not Secure (http) Into Secure Website (https) ***Repo Project***

***Kubernetes**

1-Differences Between (Monolithic & SOA & Microservices)
2-Kubernetes Architecture
3-Pods In Kubernetes
4-Labels And Selector In Kubernetes
5-Deployment In Kubernetes>>>>***Repo Project***
6-Deployment / Manifest File Config YAML File
7-Deploy Node.Js App>>>>***Repo Project***
8-Differences Between Docker,Docker-Compose,Docker Swarm,Kubernetes
9-Ingress Service ,Deploy with Ingress some App>>>>***Repo Project***
10-ConfigMap , Secrets
11-Managing Secrets using Configuration File in Kubernetes
12-Deployed MongoDB and Mongo Express on Minikube cluster>>>>***Repo Project***

Topics In We Will Study In Internship Program In Future

Azure DevOps >>>>Repo Project

1. Introduction to Azure DevOps:

- Overview of the Azure DevOps suite of tools and services
- Understanding the key components of Azure DevOps (Repos, Pipelines, Boards, Artifacts, Test Plans, etc.)
- Exploring the Azure DevOps web portal and user interface

2. Version Control with Azure Repos:

- Working with Git repositories in Azure Repos
- Branching strategies and collaboration workflows
- Configuring and managing source code repositories

3. Azure Pipelines:

- Understanding the concept of continuous integration (CI) and continuous deployment (CD)
- Configuring and running Azure Pipelines for building, testing, and deploying applications
- Implementing multi-stage pipelines for complex workflows
- Leveraging pipeline triggers, variables, and agents

4. Azure Boards:

- Exploring Agile project management with Azure Boards
- Creating and managing work items (tasks, bugs, user stories, etc.)
- Configuring and customizing Agile boards and backlogs
- Integrating Azure Boards with other Azure DevOps components

5. Azure Artifacts:

- Hosting and managing packages (NuGet, npm, Maven, etc.) in Azure Artifacts
- Configuring package feeds and integrating them into the build and release process
- Implementing secure access and authentication for Azure Artifacts

6. Azure Test Plans:

- Exploring manual and exploratory testing capabilities in Azure Test Plans
- Creating and executing test cases, and analyzing test results
- Integrating test plans with the Azure DevOps pipeline

7. Azure DevOps Extensions and Marketplace:

- Discovering and using Azure DevOps extensions and integrations
- Customizing the Azure DevOps experience with marketplace extensions
- Building and publishing custom Azure DevOps extensions

8. Continuous Integration and Continuous Deployment (CI/CD):

- Designing and implementing end-to-end CI/CD pipelines
- Automating the build, test, and deployment processes
- Exploring deployment strategies (e.g., blue-green, canary) and release management

9. Azure DevOps Security and Governance:

- Managing user permissions and access control in Azure DevOps
- Implementing security best practices for Azure DevOps
- Configuring and enforcing policies and compliance rules

10. Azure DevOps Integration and Automation:

- Integrating Azure DevOps with other Azure services (e.g., Azure Repos, Azure Kubernetes Service)
- Automating tasks and workflows using Azure DevOps REST API and CLI
- Exploring Azure DevOps extensibility and integration with third-party tools

Throughout the internship

the intern should have the opportunity to work on hands-on projects, collaborate with team members, and present their work to stakeholders. Providing regular feedback, mentorship, and opportunities for skill development will help the intern gain valuable experience in the Azure DevOps ecosystem.

*Jenkins

Jenkins is a widely-used open-source automation server that enables DevOps teams to build, test, and deploy software applications efficiently. It provides a robust platform for implementing continuous integration and continuous deployment (CI/CD) workflows, helping organizations accelerate software delivery and improve overall quality.

1-Create Admin User ***Repo Project***
2-Create Job ***Repo Project***
3-Detect Failed Jobs ***Repo Project***
4-Create Workspace And Job Folders ***Repo Project***
5-Jenkins Maven Install Git Plugin ***Repo Project***
6-Create And Run Maven Project ***Repo Project***
7-Git Maven Add Github Webhook ***Repo Project***
8-Email Notification ***Repo Project***
9-Deploy Jenkins With Helm ***Repo Project***
10-create file .exe open calculator ***Repo Project***

*RabbitMQ >>>>Repo Project

A RabbitMQ cluster is a logical grouping of one or several nodes, each sharing users, virtual hosts, queues, exchanges, bindings, runtime parameters and other distributed state.

1-Deploy Rabbitmq With Helm Chart
2-Deploy Rabbitmq With Jenkins

*OpenShift

1. Introduction to OpenShift:

- Overview of OpenShift and its key features
- Understanding the architecture of OpenShift (Kubernetes, containers, and more)
- Exploring the OpenShift web console and command-line interface (oc)

2. OpenShift Basics:

- Deploying and managing applications on OpenShift
- Working with OpenShift projects and namespaces
- Accessing and managing OpenShift resources (pods, services, routes, etc.)

3. Container Orchestration with Kubernetes:

- Understanding Kubernetes concepts (pods, deployments, services, etc.)
- Interacting with the Kubernetes API through the OpenShift CLI
- Deploying and scaling Kubernetes-based applications on OpenShift

4. Application Deployment Strategies:

- Implementing continuous integration and continuous deployment (CI/CD) pipelines
- Exploring deployment patterns (e.g., rolling, blue-green, canary)
- Automating application builds, tests, and deployments

5. OpenShift Networking:

- Understanding OpenShift networking models and components
- Configuring services, routes, and ingress traffic management
- Implementing load balancing and service discovery

6. OpenShift Storage and Data Management:

- Working with persistent volumes and storage classes
- Integrating external storage solutions (e.g., NFS, AWS EBS, Azure Disk)
- Backing up and restoring application data in OpenShift

7. OpenShift Security and Access Control:

- Managing user authentication and authorization in OpenShift
- Implementing security policies and role-based access control (RBAC)
- Securing container images and application environments

8. OpenShift Monitoring and Logging:

- Setting up monitoring and alerting for OpenShift clusters
- Accessing and analyzing logs from applications and the platform

- Integrating with external monitoring and logging solutions

9. OpenShift Administration and Maintenance:

- Performing cluster upgrades and updates
- Managing resource quotas and limits
- Troubleshooting common issues and failures

10. OpenShift Extensions and Integrations:

- Exploring the OpenShift Marketplace and available operator-backed services
- Integrating OpenShift with other cloud services and tools
- Developing and deploying custom OpenShift extensions and operators

Throughout the internship,

the intern should have the opportunity to work on hands-on projects, such as deploying and managing sample applications on OpenShift, automating build and deployment processes, and implementing advanced platform features. Regular feedback, mentorship, and opportunities for skill development will help the intern gain valuable experience in the OpenShift ecosystem.