SEMINAR REPORT

ON

DEVOPS TOOLS &PROCESSES

CERTIFICATION DONE BY

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19K61A1201

INFORMATION TECHNOLOGY

UNDER THE GUIDANCE OF

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Department of Information Technology

CERTIFICATE

Name : . . . . . .
.

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Register No.

Certified that this is the report of work done by the above student in the Internship and seminar during the year 2022-2023.

Faculty In charge: **HOD**

Submitted for the Internship and seminar Examination held on . . . . . .
.

Internal Examiner **External Examiner**

DECLARATION

I hereby declare that the certification embodied in this dissertation entitled “DevOps Tools and processes” was done by me during the year 2022-2023 for a seminar is to gain knowledge on the curriculum courses.

BY:

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1. ABSTRACT

DevOps is an approach to software development that emphasizes collaboration, communication, and integration between development and operations teams. DevOps tools and processes certification is designed to help individuals learn about the various tools and techniques used in DevOps, as well as how to implement them in an organization. This certification covers topics such as continuous integration and delivery, infrastructure automation, containerization, monitoring and logging, and collaboration tools. By earning a DevOps tools and processes certification, individuals can demonstrate their expertise in this critical area of software development and improve their chances of landing a high-paying job in the field.

2. INTRODUCTION

DevOps is a software development methodology that emphasizes the collaboration and communication between development and operations teams to deliver software quickly and reliably. DevOps tools and processes certification is a program that provides individuals with the knowledge and skills required to implement DevOps principles in their organization. This certification covers various tools and techniques used in DevOps, such as continuous integration and delivery, containerization, infrastructure automation, monitoring, and collaboration tools. By earning this certification, individuals can demonstrate their expertise in DevOps and become valuable assets to their organizations.

3. OBJECTIVES

The objectives of DevOps and Python certification programs may vary depending on the specific course and institution offering the certification. However, here are some general objectives of these certification programs:

DevOps Certification Objectives:

1. To provide knowledge and skills required to build, test, and deploy software applications using DevOps practices and tools.
2. To equip candidates with the ability to design and implement automation processes to streamline software development and deployment.
3. To ensure candidates can effectively collaborate with cross-functional teams to deliver high-quality software products in a fast-paced environment.
4. To provide an understanding of DevOps principles and their importance in software development and delivery.

4. DEVOPS

4.1 Benefits of DevOps Tools:

DevOps tools offer several benefits to organizations, including improved collaboration, faster delivery, improved quality, increased agility, cost savings, and enhanced security. Let's discuss each of these benefits in more detail:

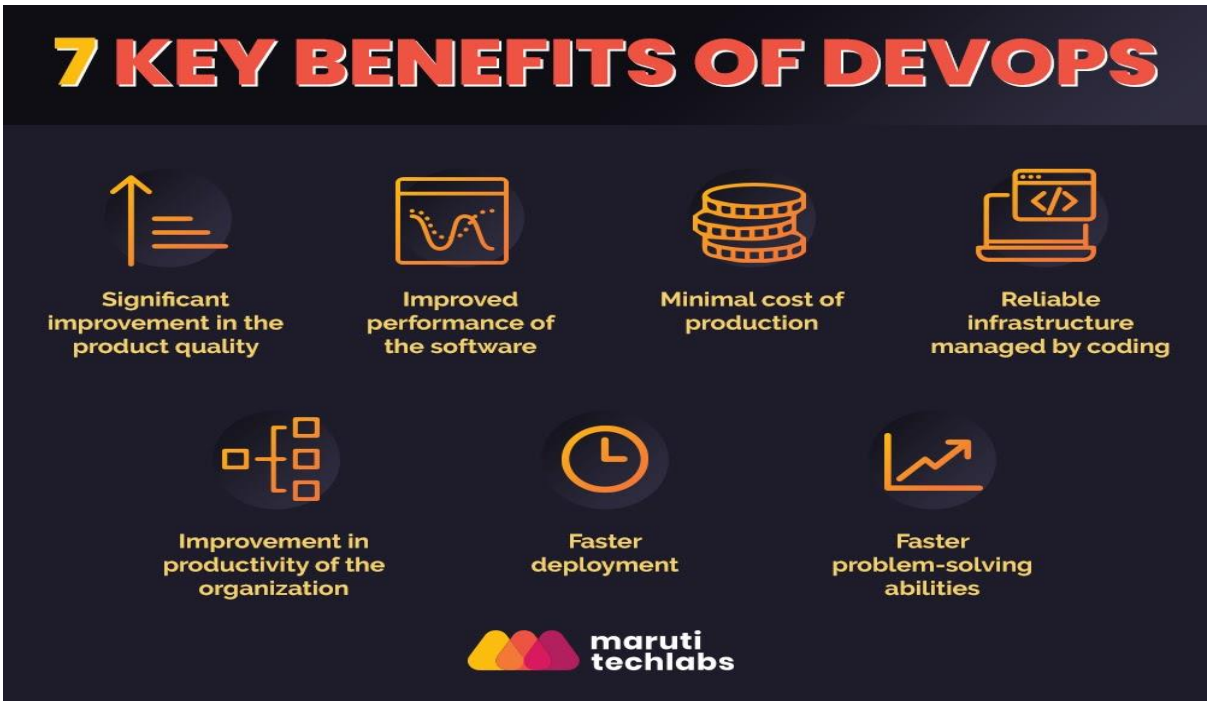
Improved Collaboration: DevOps tools facilitate better collaboration between development and operations teams by breaking down silos and promoting communication. This collaboration results in better alignment of business goals, increased transparency, and faster decision-making.

Faster Delivery: DevOps tools enable teams to automate the software development lifecycle, resulting in faster delivery of software to customers. With automated testing, building, and deployment processes, teams can quickly iterate and release software, reducing the time-to-market and increasing the organization's competitive advantage.

Improved Quality: By automating the software development process, DevOps tools reduce the chance of human error, resulting in improved quality of software. Automated testing processes catch issues early in the development cycle, enabling teams to fix problems before they impact users.

Increased Agility: DevOps tools enable teams to respond quickly to changing customer requirements and market demands by facilitating faster software delivery and deployment. With a DevOps approach, teams can easily pivot and adjust their development efforts to meet new demands, which is especially critical in fast-paced, agile environments.

Cost Savings: DevOps tools reduce the costs associated with manual processes and human error, resulting in cost savings for organizations. By automating repetitive tasks and catching errors early in the development cycle, DevOps tools reduce the need for costly rework and manual intervention.



4.2 Tools covered in devOps tools Certification:

The DevOps Tools Certification in Infosys Spring Board covers a variety of tools that enable teams to automate and

streamline their software development processes. Here are some of the popular tools that are covered in the certification:

Git: It is a distributed version control system that enables teams to manage source code changes, collaborate on code, and maintain different versions of code.

Jenkins: It is an open-source automation server that enables teams to automate building, testing, and deploying software. It provides a wide range of plugins and integrations, making it highly customizable and flexible.

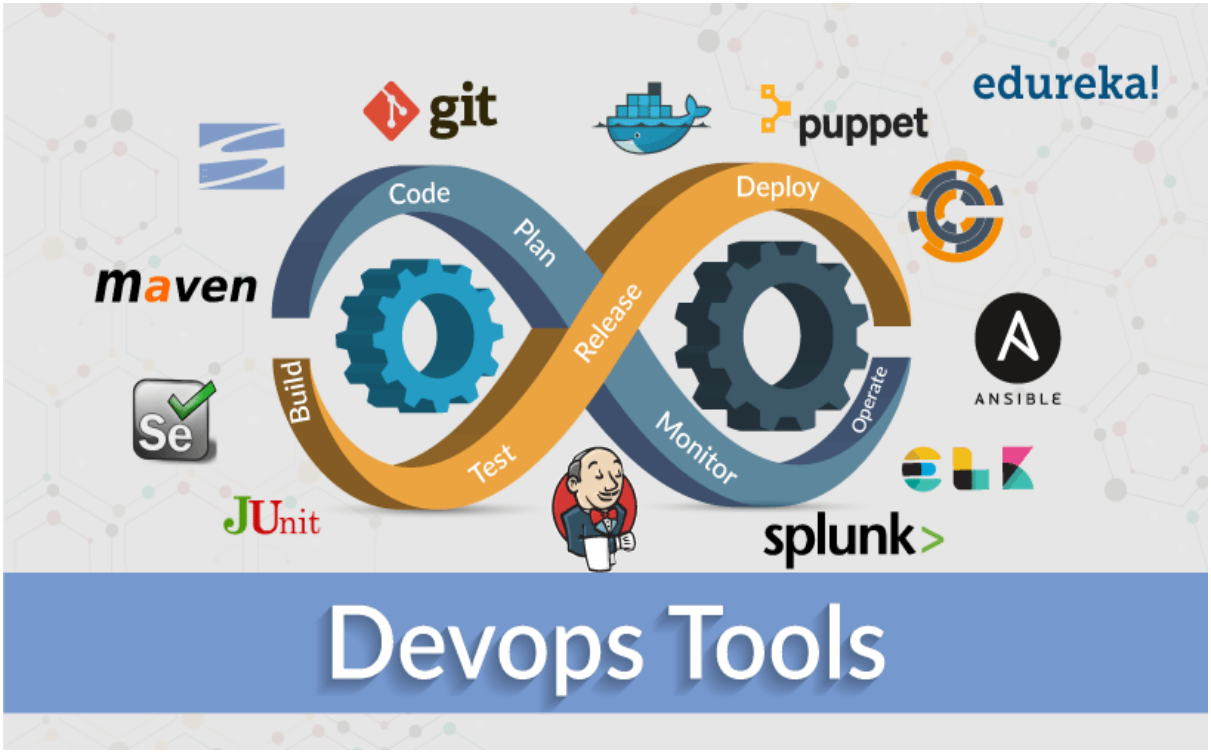
Ansible: It is an open-source automation tool that enables teams to automate deployment, configuration, and orchestration of software applications and infrastructure.

Dockers: It is a platform for building, shipping, and running applications in containers. It enables teams to create a consistent and reproducible environment for their applications, making it easier to deploy and manage them.

Kubernetes: It is an open-source container orchestration platform that automates the deployment, scaling, and management of containerized applications. It provides features such as load balancing, automatic scaling, and self-healing, making it ideal for managing large, complex deployments.

Puppet: It is an open-source configuration management tool that enables teams to automate the management of

infrastructure and applications. It provides a declarative language for defining infrastructure, making it easier to manage and scale infrastructure.



4.3 DevOps for Machine Learning:

DevOps for Machine Learning (ML) is an emerging field that focuses on applying DevOps principles to machine learning workflows to improve the speed and efficiency of the ML development lifecycle. Here are some key concepts that you can explore in your seminar:

Data Versioning and Management: DevOps for ML emphasizes the importance of versioning and managing data, as it is the foundation of any ML model. You can explore tools

and platforms like DVC, Pachyderm, and Kubeflow to manage data pipelines and versioning.

Model Versioning and Management: DevOps for ML also emphasizes the importance of versioning and managing ML models, as they are constantly evolving. You can explore tools like MLFlow and Kubeflow to track, manage, and deploy ML models.

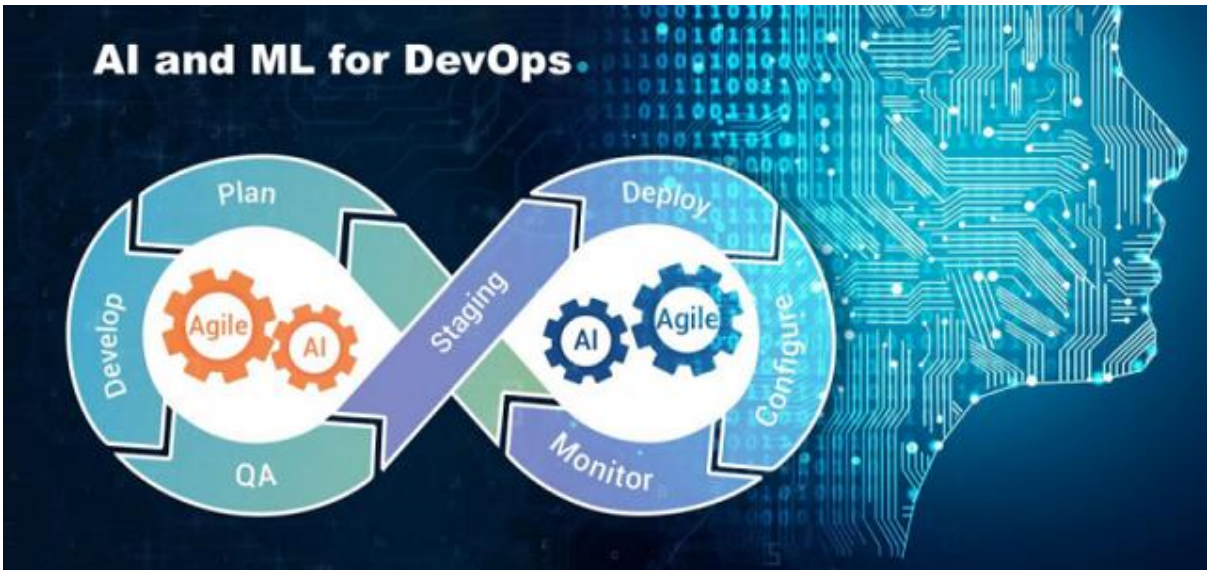
Continuous Integration and Continuous Delivery (CI/CD): DevOps for ML encourages the use of CI/CD pipelines to automate the testing, building, and deployment of ML models. You can explore tools like Jenkins, GitLab CI/CD, and Azure DevOps to set up CI/CD pipelines.

Infrastructure as Code (IaC): DevOps for ML also emphasizes the use of IaC tools like Terraform and Ansible to automate the provisioning and management of infrastructure resources needed for ML workloads.

Monitoring and Observability: DevOps for ML emphasizes the importance of monitoring and observability to ensure the performance and stability of ML models. You can explore tools like Prometheus, Grafana, and Kibana for monitoring and visualization.

Collaboration and Communication: DevOps for ML emphasizes the importance of collaboration and communication between ML engineers, data scientists, and IT

operations teams. You can explore tools like Slack, Microsoft Teams, and Zoom for collaboration and communication.



4.4 Security in DevOps:

Security in DevOps is a critical area that focuses on integrating security into the software development lifecycle to ensure that the software is secure from the start. Here are some key concepts that you can explore in your seminar:

Shift-Left Security: DevOps promotes the shift-left approach, where security is integrated into the software development process from the very beginning. You can explore tools and practices like static code analysis, dynamic testing, and software composition analysis to ensure that security is addressed early in the development process.

DevSecOps Culture: DevOps encourages a culture of collaboration and communication between developers,

operations, and security teams. You can explore the importance of building a DevSecOps culture and the role of security in the software development process.

Security Testing: DevOps emphasizes the importance of continuous security testing throughout the development process. You can explore tools and practices like penetration testing, vulnerability scanning, and compliance testing to ensure that the software is secure.

Infrastructure Security: DevOps also emphasizes the importance of securing the infrastructure that supports the software. You can explore tools and practices like infrastructure-as-code, secrets management, and network security to ensure that the infrastructure is secure.

Compliance and Governance: DevOps emphasizes the importance of compliance and governance to ensure that the software meets the necessary regulatory and legal requirements. You can explore tools and practices like policy management, auditing, and compliance reporting to ensure that the software is compliant.

Incident Response: DevOps emphasizes the importance of incident response to ensure that security incidents are detected, contained, and resolved quickly. You can explore tools and practices like incident response planning, incident response automation, and security information and event management

(SIEM) to ensure that security incidents are handled effectively.

4.5 DevOps tool Certification Process:

The DevOps Tools Certification in Infosys Spring Board is designed to provide participants with a comprehensive understanding of the DevOps philosophy and the tools and processes that support it. Here is a brief overview of the certification process:

1. **Preparing for the Certification:** Participants need to prepare for the certification by understanding the DevOps philosophy and familiarizing themselves with the tools and processes covered in the certification.

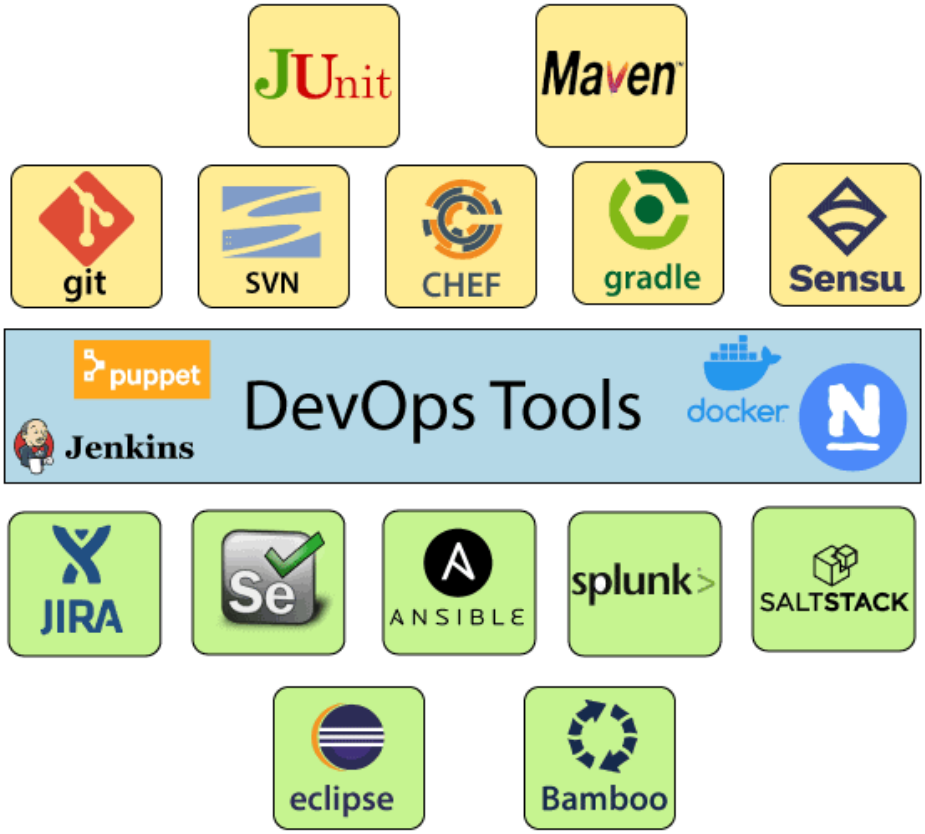
2. **Enrolling for the Certification:** Participants need to enroll in the DevOps Tools Certification program offered

by Infosys Spring Board. They can do this by visiting the Infosys Spring Board website and registering for the program.

3. **Learning and Practice:** The certification program covers a range of topics related to DevOps, including DevOps culture, continuous integration and deployment, containerization, configuration management, and monitoring and logging. Participants learn through a mix of online video lectures, hands-on exercises, and assessments.

4. **Taking the Certification Exam:** After completing the learning and practice sessions, participants need to take the certification exam. The exam is typically an online, multiple-choice test that assesses the participant's knowledge of the DevOps philosophy and the tools and processes covered in the certification.

5. **Certification Completion:** Participants who pass the certification exam receive a certificate of completion from Infosys Spring Board, indicating their proficiency in the DevOps tools and processes covered in the certification.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Maven
git
SVN
CHEF
gradle
Sensu
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Jenkins
DevOps Tools
docker
JIRA
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ANSIBLE
splunk>
SALTSTACK
eclipse
Bamboo


Best DevOps Certifications
CODE
PLAN
BUILD
TEST
RELEASE
DEPLOY
OPERATE
MONITOR

5. CONCLUSION

DevOps Tools Certification provides knowledge and skills required to build, test, and deploy software applications using DevOps practices and tools. It also equips candidates with the ability to design and implement automation processes to streamline software development and deployment. The certification helps individuals to effectively collaborate with cross-functional teams to deliver high-quality software products in a fast-paced environment.

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COURSE COMPLETION CERTIFICATE

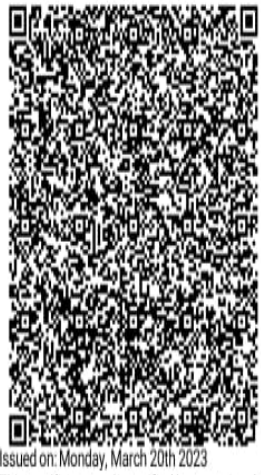
The certificate is awarded to

Harika Adapareddy

For successfully completing the course

The Language of DevOps: DevOps Tools & Processes

On Friday, February 17th 2023



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