



### About DevOpsSchool

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DevOpsSchool is a unit of "Cotocus PVT Ltd" and a leading platform which helps IT organizations and professionals to learn all the emerging technologies and trend which helps them to learn and embrace all the skills, intelligence, innovation and transformation which requires to achieve the end result, quickly and efficiently. We provide over 40 specialized programs on DevOps, Cloud, Containers, Security, AI, ML and on Big data that are focused on industry requirement and each curriculum is developed and delivered by leading experts in each domain and aligned with the industry standards.

### ABOUT AIOps CERTIFICATION TRAINING

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The modern business landscape has transformed entirely with the likes of emerging technologies such as artificial intelligence, machine learning and automation. Such technologies have also transfigured modern application architectures as well as IT operations. Integrating AI into IT operations enables IT teams to perform more complex tasks and automate problem resolution in complex IT environments. This integration of AI into IT operations has led to the emergence of the term, AIOps that leverages big data, analytics and machine learning capabilities to simplify IT ops management.

DevOpsSchool's AIOps program will make you an expert of this paradigm shift and help you to market yourself as an expert and grow your career.

## What is AIOps?

If we will predict the future then what is the most exciting and perhaps the most disruptive tech trends of the coming years? It's "artificial intelligence (AI)". It is going to enable people to rethink how can we integrate the information, analyze the data, and use the resulting insights to improve decision making.

The same AI concept can enhance businesses IT operations immensely. AIOps is going to be a next generation of software intelligence where we can leverage the power of "artificial intelligence (AI)". This concept is introduced by analyst firm Gartner in the year 2017. The term AIOps is an amalgamation of artificial intelligence and IT operations. It refers to directly and indirectly automate and enhance IT operations - utilizing data analytics, machine learning (ML) other advanced analytics technologies.

## What are the benefits of AIOps?

- It breaks down data silos
- AIOps eliminates IT operational noise
- Reduced downtime - It delivers a seamless user experience
- It overcomes monitoring and analytics challenges.
- Improved collaboration.
- Improved business ROI IT productivity
- Digital transformation success
- Improve performance monitoring and service delivery
- Pattern Discovery
- It automates the tasks
- AIOps possess the ability to radically reduce IT operations costs.
- Drastically improves the problem-solving and deployment



Co-coordinator - Akanksha Kumari

Call/WhatsApp: - +91 1800 889 7977

Mail Address: -

[contact@DevOpsSchool.com](mailto:contact@DevOpsSchool.com)

Secondary contact - Patrick

Call/WhatsApp: - +91 7004 215 841

Mail Address: - [contact@DevOpsSchool.com](mailto:contact@DevOpsSchool.com)

|                                     |   |
|-------------------------------------|---|
| Duration                            | 40 Hours                                    |
| Mode                                | Online (Instructor-led, live & Interactive) |
| Projects (Real time scenario based) | 1   |

| FEATURES                         | DEVOPSSCHOOL | OTHERS |
|----------------------------------|--------------|--------|
| Faculty Profile Check            | ✓            | ✗      |
| Lifetime Technical Support       | ✓            | ✗      |
| Lifetime LMS access              | ✓            | ✗      |
| Top 25 Tools                     | ✓            | ✗      |
| Interviews Kit                   | ✓            | ✗      |
| Training Notes                   | ✓            | ✗      |
| Step by Step Web Based Tutorials | ✓            | ✗      |
| Training Slides                  | ✓            | ✗      |
| Training + Additional Videos     | ✓            | ✗      |



# AGENDA OF THE FULL STACK DEVELOPERS

## Understanding of AIOps

### Half Day: Overview of AIOps

1. Benefits of Artificial Intelligence for IT Operations (AIOps)
2. Artificial Intelligence for IT Operations (AIOps) Overview
3. Benefits of AIOps
4. Use Case: Evaluating the Benefits of AIOps
5. Implications of AIOps for Business
6. Implications of AIOps for Business
7. Use Case: Implications of AIOps for Business
8. Key Capabilities of Artificial Intelligence for IT Operations (AIOps)
9. Key Capabilities of AIOps
10. Use Case: Understanding Key Capabilities of AIOps
11. Key Dimensions of IT Operations Monitoring
12. IT Operations Monitoring: Overview and Relevance
13. Understanding Key Dimensions of IT Operations Monitoring
14. Key Dimensions of IT Operations Monitoring and AIOps
15. Use Case: Understanding Key Dimensions of IT Operations Monitoring
16. AIOps Deployment Types & storages
17. AIOps Industry Use cases
18. AIOps Vs DevOps Vs MLOps Life cycle
19. AIOps Challenges
20. AIOps Popular Solutions
21. AIOps Best Practices
22. AIOps supporting DevOps & SRE

### Second Half: Metrics collection: Prometheus, Grafana

#### Hour 1: Introduction to Prometheus

- **Overview of Prometheus** (15 mins)
  - Brief history and purpose
  - Key features and architecture
- **Basic Installation and Configuration** (15 mins)
  - Quick setup guide
  - Overview of configuration files and settings
- **Understanding Metrics and Data Model** (15 mins)
  - Introduction to Prometheus metrics
  - Data types and structure
- **Q&A Session** (15 mins)

#### Hour 2: Basic Monitoring with Prometheus

- **Instrumentation and Metrics Collection** (20 mins)
  - How to add Prometheus metrics to an application

- Best practices for metric collection
- **Introduction to Prometheus Query Language (PromQL)** (20 mins)
  - Basic syntax and queries
  - Creating simple alerts
- **Hands-On Exercise** (20 mins)
  - Quick setup of basic monitoring for a demo application

### Hour 3: Introduction to Grafana and Dashboard Creation

- **Overview of Grafana** (15 mins)
  - Key features and integration with Prometheus
- **Setting Up Grafana** (15 mins)
  - Connecting Grafana to Prometheus
- **Creating Basic Dashboards in Grafana** (15 mins)
  - Introduction to dashboard creation and configuration
  - Overview of visualization types
- **Hands-On Exercise** (15 mins)
  - Participants create a basic dashboard for the demo application

### Hour 4: Advanced Features and AIOps Integration

- **Advanced Dashboard Techniques in Grafana** (20 mins)
  - Dynamic dashboards with variables
  - Setting up basic alerts in Grafana
- **Integrating Prometheus and Grafana with AIOps** (20 mins)
  - How these tools fit into an AIOps strategy
  - Brief on AIOps concepts relevant to monitoring and observability
- **Wrap-Up and Q&A** (20 mins)
  - Recap of key concepts
  - Open floor for questions and discussion on real-world applications

## Data Collection and Monitoring Tools

[First Half: Log management: ELK Stack \(Elasticsearch, Logstash, Kibana\)](#)

### Hour 1: Introduction to the ELK Stack

- **Overview of ELK Stack** (15 mins)
  - Introduction to Elasticsearch, Logstash, and Kibana
  - Role of ELK in AIOps
  - Basic architecture and flow of data within the ELK Stack
- **Introduction to Elasticsearch** (15 mins)
  - Understanding Elasticsearch basics: Indexes, Documents, and Nodes
  - Basic Elasticsearch operations: CRUD (Create, Read, Update, Delete)
- **Q&A Session** (15 mins)
  - Address initial queries and clarifications

## Hour 2: Deep Dive into Logstash and Data Ingestion

- **Understanding Logstash** (20 mins)
  - Logstash fundamentals: Input, Filter, and Output plugins
  - Configuring Logstash for data ingestion
- **Hands-On Exercise: Setting Up Logstash** (20 mins)
  - Walkthrough of setting up a basic Logstash pipeline
  - Ingesting sample data into Elasticsearch

## Hour 3: Kibana for Data Visualization and Analysis

- **Introduction to Kibana** (20 mins)
  - Kibana Dashboard, Visualization, and Discover features
  - Connecting Kibana to Elasticsearch
- **Hands-On Exercise: Creating Visualizations and Dashboards** (20 mins)
  - Participants create basic visualizations and dashboards using the ingested data
  - Exploration of Kibana's features relevant to AIOps

## Hour 4: ELK Stack in AIOps and Advanced Topics

- **ELK Stack in the Context of AIOps** (20 mins)
  - Integrating ELK with AIOps workflows
  - Real-world use cases of ELK in AIOps (e.g., anomaly detection, performance monitoring)
- **Advanced ELK Features** (20 mins)
  - Brief on advanced Elasticsearch queries
  - Overview of X-Pack features (security, alerting, machine learning)
- **Wrap-Up and Q&A** (20 mins)
  - Recap of key points
  - Open Q&A session to discuss practical applications and address any remaining questions

## Second Half: Event streaming: Kafka

### Hour 1: Introduction to Apache Kafka

- **Overview of Kafka** (15 mins)
  - What is Apache Kafka and why it's important in AIOps
  - Kafka's architecture and core components (Brokers, Topics, Producers, Consumers)
- **Kafka Installation and Basic Configuration** (15 mins)
  - Setting up a basic Kafka environment
  - Overview of Kafka configuration files
- **Kafka Producers and Consumers** (15 mins)
  - Understanding Producers and Consumers
  - Writing basic producers and consumers
- **Q&A Session** (15 mins)
  - Address initial queries and clarifications

## Hour 2: Kafka in Depth - Topics, Partitions, and Replication

- **Deep Dive into Kafka Topics and Partitions** (20 mins)
  - Creating and managing Topics
  - Understanding Partitions for scalability and reliability
- **Kafka Replication and Fault Tolerance** (20 mins)
  - Concept of replication for high availability
  - Leader and follower partitions

## Hour 3: Kafka Streams and Kafka Connect

- **Introduction to Kafka Streams** (20 mins)
  - Understanding stream processing in Kafka
  - Basics of Kafka Streams API
- **Kafka Connect for Integration** (20 mins)
  - Overview of Kafka Connect
  - Setting up connectors for data import/export

## Hour 4: Kafka in AIOps and Practical Exercise

- **Using Kafka in an AIOps Context** (20 mins)
  - Role of Kafka in event-driven architectures for AIOps
  - Real-world use cases: Log aggregation, metrics collection, real-time analytics
- **Hands-On Exercise: Setting Up a Kafka Pipeline** (20 mins)
  - Building a simple pipeline for data ingestion and processing
  - Monitoring and managing Kafka performance
- **Wrap-Up and Q&A Session** (20 mins)
  - Recap of key concepts and best practices
  - Open floor for final questions and discussions

## Data Collection and Monitoring Tools

### First Half: Machine learning libraries: TensorFlow

## Hour 1: Introduction to TensorFlow and Machine Learning Basics

- **Overview of TensorFlow** (15 mins)
  - Introduction to TensorFlow and its relevance in AIOps
  - Core features and capabilities of TensorFlow
- **Machine Learning Fundamentals** (15 mins)
  - Brief overview of machine learning concepts
  - How TensorFlow supports machine learning operations
- **Setting Up TensorFlow** (15 mins)
  - Installation and setup of TensorFlow
  - Introduction to TensorFlow's programming model
- **Q&A Session** (15 mins)
  - Address initial queries and clarifications



## Hour 2: TensorFlow Basics - Operations, Graphs, and Sessions

- **TensorFlow Core Concepts** (20 mins)
  - Understanding Tensors, Operations, Graphs, and Sessions
  - Building simple computation graphs
- **Hands-On Exercise: Basic TensorFlow Operations** (20 mins)
  - Creating and executing a simple TensorFlow program
  - Introduction to TensorFlow data types and operations

## Hour 3: Building Machine Learning Models with TensorFlow

- **Introduction to Neural Networks in TensorFlow** (20 mins)
  - Basic concepts of neural networks
  - Building a simple neural network in TensorFlow
- **Practical Exercise: Building a Basic ML Model** (20 mins)
  - Step-by-step construction of a machine learning model for a simple problem (e.g., regression or classification)

## Hour 4: TensorFlow in AIOps and Advanced Topics

- **TensorFlow in the Context of AIOps** (20 mins)
  - Discussing the role of TensorFlow in AIOps (e.g., anomaly detection, predictive maintenance)
  - Real-world examples of TensorFlow applications in AIOps
- **Advanced TensorFlow Features** (20 mins)
  - Overview of advanced features like TensorFlow Extended (TFX), Keras for deep learning, and distributed training
- **Wrap-Up and Q&A Session** (20 mins)
  - Recap of key concepts and best practices
  - Open floor for final questions and discussions on practical TensorFlow applications in AIOps

## Second Half: Data analysis tools: Jupyter Notebook

### Hour 1: Introduction to Jupyter Notebooks

- **Overview of Jupyter Notebooks** (15 mins)
  - Introduction to Jupyter Notebooks and their importance in data analysis
  - Key features and benefits in the context of AIOps
- **Setting Up Jupyter Notebooks** (15 mins)
  - Installation and basic setup
  - Navigating the Jupyter Notebook interface
- **Basic Operations in Jupyter Notebook** (15 mins)
  - Creating and managing notebooks
  - Overview of Markdown, code cells, and kernel management
- **Q&A Session** (15 mins)
  - Addressing initial queries and clarifications

### Hour 2: Data Analysis Basics in Jupyter Notebook

- **Data Import and Manipulation** (20 mins)
  - Importing data from various sources (CSV, databases)
  - Basic data manipulation using Pandas
- **Hands-On Exercise: Working with Data** (20 mins)
  - Participants practice importing and manipulating a sample dataset

### Hour 3: Advanced Data Analysis and Visualization

- **Advanced Data Analysis Techniques** (20 mins)
  - Exploring more complex data manipulation and transformation
  - Introduction to time series analysis relevant to AIOps
- **Data Visualization in Jupyter** (20 mins)
  - Using Matplotlib and Seaborn for data visualization
  - Creating plots and charts relevant to AIOps data (e.g., performance metrics)

### Hour 4: Jupyter Notebooks in AIOps Context and Best Practices

- **Applying Jupyter Notebooks in AIOps** (20 mins)
  - Case studies or examples of Jupyter Notebooks used in AIOps scenarios
  - Integrating Jupyter Notebooks with other AIOps tools and platforms
- **Best Practices and Advanced Features** (20 mins)
  - Tips for effective use of Jupyter Notebooks
  - Overview of advanced features like JupyterLab, extensions
- **Wrap-Up and Q&A Session** (20 mins)
  - Recap of key concepts and functionalities
  - Open floor for final questions and in-depth discussions

## Analysis and Automation

First Half: Configuration management tools: Ansible

### Hour 1: Introduction to Ansible and Configuration Management

- **Overview of Ansible** (15 mins)
  - Introduction to Ansible and its role in AIOps
  - Key features and advantages of using Ansible for configuration management
- **Ansible Architecture and Components** (15 mins)
  - Understanding Ansible architecture: Playbooks, Roles, Tasks, Modules, Inventory
  - YAML syntax basics
- **Setting Up Ansible** (15 mins)
  - Installation and basic setup of Ansible
  - Setting up an inventory file
- **Q&A Session** (15 mins)
  - Addressing initial queries and clarifications

### Hour 2: Basic Playbooks and Ad-hoc Commands

- **Writing Your First Ansible Playbook** (20 mins)

- Creating a simple playbook
- Defining tasks and running the playbook
- **Ansible Ad-hoc Commands** (20 mins)
  - Introduction to ad-hoc commands in Ansible
  - Practical examples of common ad-hoc commands

### Hour 3: Advanced Ansible Features

- **Variables, Templates, and Roles** (20 mins)
  - Using variables and templates for dynamic configurations
  - Organizing playbooks with roles
- **Error Handling and Debugging** (20 mins)
  - Best practices for error handling in Ansible playbooks
  - Using Ansible's debugging tools

### Hour 4: Ansible in AIOps and Hands-On Exercise

- **Applying Ansible in an AIOps Context** (20 mins)
  - Case studies or examples of Ansible used in AIOps scenarios
  - Integration of Ansible with monitoring and alerting tools
- **Hands-On Exercise: Building an AIOps Pipeline** (20 mins)
  - Participants work on creating a basic pipeline using Ansible
  - Automating a simple operational task relevant to AIOps
- **Wrap-Up and Q&A Session** (20 mins)
  - Recap of key concepts and functionalities
  - Open floor for final questions and in-depth discussions

## Second Half: Infrastructure-as-code software tool: Terraform

### Hour 1: Introduction to Terraform and Infrastructure as Code

- **Overview of Terraform** (15 mins)
  - Introduction to Terraform and its role in infrastructure automation
  - Key features and benefits of using Terraform in AIOps
- **Terraform Basics** (15 mins)
  - Understanding Terraform's syntax and structure
  - Core concepts: Providers, Resources, Variables, State
- **Setting Up Terraform** (15 mins)
  - Installing Terraform
  - Basic setup and configuration
- **Q&A Session** (15 mins)
  - Addressing initial queries and clarifications

### Hour 2: Writing Terraform Configuration

- **Creating Your First Terraform Configuration** (20 mins)
  - Writing a basic Terraform configuration file
  - Managing infrastructure as code
- **Understanding Terraform Workflow** (20 mins)

- The Terraform workflow: `init`, `plan`, `apply`, `destroy`
- Hands-on demo of managing a simple infrastructure

### Hour 3: Advanced Terraform Concepts

- **Modules and Remote State** (20 mins)
  - Using modules to organize and reuse code
  - Managing state in complex environments
- **Dynamic Infrastructure with Terraform** (20 mins)
  - Dynamic configurations with loops and conditionals
  - Integrating with cloud providers (AWS, Azure, GCP)

### Hour 4: Terraform in AIOps and Practical Exercise

- **Terraform in an AIOps Context** (20 mins)
  - Real-world use cases of Terraform in AIOps
  - Automating and maintaining AIOps infrastructure with Terraform
- **Hands-On Exercise: Implementing an AIOps Scenario** (20 mins)
  - Participants implement a small-scale infrastructure setup relevant to AIOps
  - Practicing Terraform commands and configurations
- **Wrap-Up and Q&A Session** (20 mins)
  - Recap of key concepts and best practices
  - Open floor for final questions and discussions on practical applications

## CI/CD and Automation

First Half: Continuous integration tools: Jenkins

### Hour 1: Introduction to Jenkins and Continuous Integration

- **Overview of Jenkins** (15 mins)
  - Introduction to Jenkins and its importance in CI/CD pipelines
  - The role of Jenkins in AIOps
- **Jenkins Architecture and Key Concepts** (15 mins)
  - Understanding Jenkins architecture: master, agents, plugins
  - Core concepts: Jobs, Builds, Plugins, Pipelines
- **Setting Up Jenkins** (15 mins)
  - Installing and configuring Jenkins
  - Navigating the Jenkins interface
- **Q&A Session** (15 mins)
  - Addressing initial queries and clarifications

### Hour 2: Building Jobs and Basic Pipelines in Jenkins

- **Creating Your First Jenkins Job** (20 mins)
  - Setting up a freestyle project
  - Configuring source code management (SCM), build triggers, and build steps

- **Introduction to Jenkins Pipelines** (20 mins)
  - Creating a basic pipeline using Jenkinsfile
  - Pipeline syntax and scripted vs. declarative pipelines

### Hour 3: Advanced Jenkins Usage and Integration

- **Automated Testing and Notifications** (20 mins)
  - Integrating automated testing into Jenkins pipelines
  - Configuring build notifications (e.g., email, Slack)
- **Integrating Jenkins with Other Tools** (20 mins)
  - Connecting Jenkins with version control systems (like Git)
  - Using Jenkins with containerization tools (like Docker)

### Hour 4: Jenkins in AIOps and Practical Exercise

- **Jenkins in the Context of AIOps** (20 mins)
  - Discussing the role of Jenkins in automated operations
  - Use cases of Jenkins in monitoring, alerting, and auto-remediation
- **Hands-On Exercise: Implementing a CI/CD Pipeline** (20 mins)
  - Participants create a simple CI/CD pipeline relevant to AIOps
  - Emphasizing on automated deployment and testing
- **Wrap-Up and Q&A Session** (20 mins)
  - Recap of key concepts and functionalities
  - Open floor for final questions and discussions

## Second Half: Runbook Automation Platform: Rundeck

### Hour 1: Introduction to Rundeck and Runbook Automation

- **Overview of Rundeck** (15 mins)
  - Introduction to Rundeck and its significance in AIOps
  - Understanding the role of runbook automation in IT operations
- **Rundeck Architecture and Key Features** (15 mins)
  - Core components: Jobs, Nodes, Projects, Commands
  - Overview of Rundeck's UI and basic navigation
- **Setting Up Rundeck** (15 mins)
  - Installation and basic configuration
  - Setting up projects and access controls
- **Q&A Session** (15 mins)
  - Addressing initial queries and clarifications

### Hour 2: Creating and Managing Jobs in Rundeck

- **Defining and Executing Jobs** (20 mins)
  - Creating your first job in Rundeck
  - Configuring job workflows, options, and scheduling
- **Advanced Job Features** (20 mins)
  - Using job plugins for extended functionality
  - Handling job outputs and logs

### Hour 3: Integrating Rundeck with Other Tools and Services

- **Rundeck Integrations** (20 mins)
  - Integrating with version control systems (e.g., Git)
  - Connecting Rundeck with monitoring tools (e.g., Nagios, Splunk)
- **API and CLI Usage** (20 mins)
  - Utilizing Rundeck's API for automation
  - Command-line interface for Rundeck management

### Hour 4: Rundeck in AIOps and Practical Exercise

- **Applying Rundeck in an AIOps Context** (20 mins)
  - Case studies or examples of Rundeck used in AIOps scenarios
  - Automating routine operations and incident response
- **Hands-On Exercise: Implementing a Runbook Automation Scenario** (20 mins)
  - Participants implement a basic runbook automation task relevant to AIOps
  - Emphasizing on automated problem resolution and reporting
- **Wrap-Up and Q&A Session** (20 mins)
  - Recap of key concepts and functionalities



# Thank you!

Connect with us for more info

Call/WhatsApp: - +91 968

682 9970 Mail: -

[contact@DevOpsSchool.c](mailto:contact@DevOpsSchool.com)  
[om](mailto:contact@DevOpsSchool.com)

[www.DevOpsSchool.com](http://www.DevOpsSchool.com)

