**3-Month DevOps Study Plan (with AWS Cloud Practitioner Certification Prep)**

**Month 1: November 24 – December 27, 2024**

**Focus: DevOps Foundations, Linux, Python Scripting, Terraform, Ansible, AWS Cloud Practitioner**

**Week 1: Nov 24–30**

**Weekend (Nov 24, Sunday)**

* **Introduction to DevOps**: Lifecycle, culture, and tools (*The DevOps Handbook*).

**Weekdays (Nov 25–29)**

* **Nov 25 (Monday)**: Linux basics: Filesystem, commands, and permissions.
* **Nov 26 (Tuesday)**: Linux process management and shell scripting.
* **Nov 27 (Wednesday)**: Python scripting: Syntax, variables, and loops (*Automate the Boring Stuff with Python*).
* **Nov 28 (Thursday)**: Python functions and file handling.
* **Nov 29 (Friday)**: Automate a task using Python (e.g., parsing logs).

**Weekend (Nov 30, Saturday)**

* Linux hands-on: Set up a server, write scripts, and test automation.

**Week 2: Dec 1–7**

**Weekend (Dec 1, Sunday)**

* **Introduction to Terraform**: Basics, providers, syntax, and state.

**Weekdays (Dec 2–6)**

* **Dec 2 (Monday)**: Write a Terraform configuration to provision an AWS EC2 instance.
* **Dec 3 (Tuesday)**: Use variables and outputs in Terraform for reusable configurations.
* **Dec 4 (Wednesday)**: Introduction to Ansible: YAML basics and ad-hoc commands.
* **Dec 5 (Thursday)**: Write an Ansible playbook to configure a server (e.g., install Apache).
* **Dec 6 (Friday)**: Combine Terraform and Ansible for provisioning and configuration.

**Weekend (Dec 7, Saturday)**

* Practice: Deploy infrastructure and configure it using Terraform and Ansible.

**Week 3: Dec 8–14**

**Weekend (Dec 8, Sunday)**

* **AWS Basics**: Core services like EC2, S3, and IAM.

**Weekdays (Dec 9–13)**

* **Dec 9 (Monday)**: AWS CLI: Basic commands for EC2, S3, and IAM.
* **Dec 10 (Tuesday)**: AWS security best practices and IAM roles.
* **Dec 11 (Wednesday)**: Python Boto3: Automate S3 and EC2 tasks.
* **Dec 12 (Thursday)**: Create and deploy a Python app on AWS EC2.
* **Dec 13 (Friday)**: Hands-on: Set up and configure VPC, subnets, and security groups.

**Weekend (Dec 14, Saturday)**

* Review AWS concepts and practice tasks for EC2, S3, and IAM.

**Week 4: Dec 15–21**

**Weekend (Dec 15, Sunday)**

* Mock test: AWS Cloud Practitioner concepts.

**Weekdays (Dec 16–20)**

* **Dec 16 (Monday)**: AWS databases: RDS and DynamoDB basics.
* **Dec 17 (Tuesday)**: Introduction to CloudWatch and monitoring basics.
* **Dec 18 (Wednesday)**: Practice CloudFormation for AWS automation.
* **Dec 19 (Thursday)**: Take an AWS Cloud Practitioner mock test.
* **Dec 20 (Friday)**: Review weak areas and key concepts.

**Weekend (Dec 21, Saturday)**

* Final preparation for AWS Cloud Practitioner exam.

**Week 5: Dec 22–27**

**Weekdays (Dec 22–26)**

* Review AWS services, exam tips, and take practice tests.

**Dec 27 (Friday)**

* **Take AWS Cloud Practitioner Exam.**

**Month 2: December 28, 2024 – January 26, 2025**

**Focus: Docker, Kubernetes, GitHub Actions, Jenkins**

**Week 6: Dec 28–Jan 4**

**Weekend (Dec 28, Saturday)**

* Introduction to Docker: Install Docker, containers vs. VMs.

**Weekdays (Dec 30–Jan 3)**

* **Dec 30 (Monday)**: Docker commands: Create, run, and manage containers.
* **Dec 31 (Tuesday)**: Write Dockerfiles and build custom images.
* **Jan 1 (Wednesday)**: Use Docker Compose for multi-container apps.
* **Jan 2 (Thursday)**: Docker networking and volumes.
* **Jan 3 (Friday)**: Dockerize a Python web app.

**Weekend (Jan 4, Saturday)**

* Practice: Deploy and manage a multi-container app.

**Week 7: Jan 5–11**

**Weekend (Jan 5, Sunday)**

* Introduction to Kubernetes: Install Minikube/Kubectl, and create a cluster.

**Weekdays (Jan 6–10)**

* **Jan 6 (Monday)**: Kubernetes basics: Pods, Deployments, and Services.
* **Jan 7 (Tuesday)**: Persistent Volumes and ConfigMaps.
* **Jan 8 (Wednesday)**: Kubernetes auto-scaling and load balancing.
* **Jan 9 (Thursday)**: Helm for Kubernetes package management.
* **Jan 10 (Friday)**: Deploy a multi-container app in Kubernetes.

**Weekend (Jan 11, Saturday)**

* Kubernetes hands-on practice and review.

**Week 8: Jan 12–18**

**Weekend (Jan 12, Sunday)**

* Introduction to CI/CD concepts and tools overview.

**Weekdays (Jan 13–17)**

* **Jan 13 (Monday)**: Set up GitHub Actions for a Python testing workflow.
* **Jan 14 (Tuesday)**: Build a CI/CD pipeline using GitHub Actions.
* **Jan 15 (Wednesday)**: Jenkins basics: Install, configure, and create jobs.
* **Jan 16 (Thursday)**: Automate CI/CD pipelines with Jenkins for containerized apps.
* **Jan 17 (Friday)**: Integrate Jenkins and GitHub Actions for advanced CI/CD workflows.

**Weekend (Jan 18, Saturday)**

* Practice: Create CI/CD pipelines using Jenkins and GitHub Actions.

**Month 3: January 27 – February 15, 2025**

**Focus: AWS AI Practitioner, Advanced Automation, and Portfolio Project**

**Weeks 9–10: Jan 27–Feb 1**

**Weekend (Jan 27, Sunday)**

* Introduction to AWS AI/ML services: Rekognition, Polly, Comprehend.

**Weekdays (Jan 28–31)**

* Study AWS AI services, hands-on labs, and take mock exams.

**Feb 1 (Saturday)**

* **Take AWS AI Practitioner Exam.**

**Weeks 11–12: Feb 2–15**

**Portfolio Project:**

* **Feb 2–14 (Weekdays and weekends)**:
  + Build a **complete CI/CD pipeline**:
    - Automate deployments using GitHub Actions, Jenkins, and Terraform.
    - Deploy Dockerized applications on Kubernetes.
    - Use Ansible to configure infrastructure.
    - Monitor with Prometheus and Grafana.
    - Integrate alerts into Slack or email.

**Feb 15 (Saturday)**

* Finalize your project and prepare a **portfolio presentation**.