

# Diploma in **DEVOPS & CLOUD ADVANCEMENT**

Accredited by  
**EduQual** UK

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# About the Diploma

The DevOps and Cloud Advancement Diploma aims to equip students with practical skills and knowledge relevant to DevOps and cloud computing positions and duties. The diploma covers topics such as Docker, Python automation, Bash script, Jira, Vagrant, Ansible, and other tools for automating repetitive processes. We offer immersive learning experiences through our Amazon Web Services (AWS) cloud computing labs and container labs, which concentrate on real-world scenarios.

Our course material is designed to acquaint learners with various viewpoints on emerging technologies. The diploma aims to improve students' understanding of technical elements, including system design, development, deployment, maintenance, and problem-solving while promoting collaboration between development and operations teams. To prepare learners for job interviews, we provide internships, resume development, and interview coaching. Graduates of this diploma can pursue DevOps careers, such as DevOps engineers, cloud architects, and system administrators, within 3-6 months, enabling national or international job opportunities.

The DevOps and Cloud Advancement Diploma is supplemented with the contents of the Cloud Cyber Security Diploma, enabling learners to develop a more comprehensive understanding of emerging sciences and increase their employability with diversified knowledge.

Focusing on employability, the course uses open-source, vendor-agnostic content and provides students with recorded videos, hands-on practice, custom cloud labs, and assignments. Hands-on practice includes step-by-step guidance and interaction with trainers via communities, forums, and live classes.

# Key Features of the Diploma



EduQual Globally  
Recognized  
Certificate



300+ hands-on  
cloud labs



Self-paced learning  
5000+ hands-on  
projects



Job description  
learning



8X higher live  
interaction with  
live online classes  
by Industry experts



Student  
Communities



Resume  
building



Interview  
Preparation



Internship  
Program



Global Undergraduate  
program eligibility



Gain full  
expertise in Cloud  
Environments with  
Cloud Playground's  
on-demand servers  
and specialized  
containers for labs



Al Razzaq  
Program



# About the Diploma Program - Accredited by EduQual

The DevOps and Cloud Advancement Diploma, accredited by EduQual, holds significant value for those seeking careers in cloud computing and DevOps. As a globally recognized awarding organization, EduQual provides top-tier qualifications that are widely respected by employers and academic institutions worldwide. The accreditation of the DevOps and Cloud Development Diploma demonstrates the program's commitment to upholding high-quality standards and providing students with comprehensive training in cloud computing. This diploma is an excellent option for individuals looking to improve their DevOps methodologies and cloud computing abilities while enhancing their career opportunities in this rapidly changing sector. Moreover, since the diploma corresponds to Level 4 of the Regulated Qualifications Framework (RQF), graduates may be eligible for a first-year exemption in an undergraduate program upon successful completion of the course.

## Upon completion of this diploma program, you will:

- Receive a Certificate from EduQual after completion of the diploma program.
- Eligible for AI Nafi Alumni membership



## About AI Nafi

AI Nafi, the leading global e-Learning platform, offers rigorous and specialized training in emerging technologies and processes shaping the digital landscape. With a cost-effective, self-paced learning and time-efficient approach, we have served more than 300,000 learners, with numerous alumni excelling in Fortune 500 companies worldwide. Our customized programs are designed to help both individuals and organizations achieve their career and business objectives.

# Program Eligibility Criteria & Application Process

To apply for the DevOps and Cloud Advancement Diploma at Eduqual Level 4, individuals who are interested will need to register for the diploma through the website. The provided link <https://alnaf.com/tracks/doat> can be used by learners to complete their application.



## Eligibility Criteria

To enrol in the DevOps and Cloud Advancement Diploma at Eduqual Level 4, there are no specific courses or academic prerequisites required. However, candidates must possess the following:

- A laptop or desktop computer that is in good working order
- A dependable internet connection
- Proficiency in using the internet and the ability to troubleshoot internet-related issues.

## Application Process

After selecting the preferred payment plan, learners can begin their studies with ease as the application process comprises only three straightforward steps.

### STEP 1

#### CHOOSE THE PAYMENT PLAN AND TYPE

Fill out the application form and choose your preferred payment plan, which includes options for monthly, quarterly, half-yearly, and annual payments.

### STEP 2

#### SUBMIT THE APPLICATION PROCESS

With just one click, submit your application once you have chosen the payment method and plan.

### STEP 3

#### ADMISSION

Once your payment method and plan have been verified, immediately begin your studies.

[alnaf.com/tracks/doat](https://alnaf.com/tracks/doat) | 07

# Connect with the Support Operations Center

Our dedicated support team is here to assist you with any questions or concerns you may have regarding the application process and related matters, 24/7. They can help you with inquiries regarding

- The application
- provide information on the interest-free student loan (if applicable)
- Clarify any confusion you have about the diploma program



## Unlock Al Razzaq Program Opportunities:

Learners who pass the EduQual exam and complete their internship can enroll in the Al Razzaq Program, an augmentation program offering additional professional growth prospects. Moreover, our company actively endorses these learners when applying for Fortune 500 and global job positions, highlighting the invaluable achievements and skills acquired during the internship Program.

# Program Outcomes



Familiarize with Docker components, integrate Docker with DevOps tools, and automate configuration management and deployment. (DevOps Docker Deep Dive)



Learn to automate infrastructure deployment and management processes using Ansible Playbooks and Modules. (Ansible)



Acquire proficiency in writing and executing Bash scripts, manipulating files and directories, and using various Bash utilities and tools. (Bash Script Deep Dive)



Become adept at using Python for JIRA components and gain a solid understanding of JIRA fundamentals. (JIRA with Python)



Develop skills and familiarity in deploying, managing, and operating clusters using Kubernetes by doing hands-on exercises. (Kubernetes Administrator)



Gain skills in deploying, managing and scaling cloud-native applications using Kubernetes and cloud technologies, and learn how to maintain and observe these applications through practical exercises. (Kubernetes and Cloud Native Associates)



# Program Outcomes



Master the essential features of Kubernetes, including pods, services, replica sets, and secrets. (Kubernetes Application Developer)



Learn best practices for securing Kubernetes clusters and addressing security challenges. (Kubernetes Security Specialist)



Gain skills in Python automation scripts for file operations, data processing, web scraping, and real-world problem-solving. (Python Automation Deep Dive)



Acquire knowledge of Python Selenium for web automation, debugging, and troubleshooting scripts, using Selenium WebDriver through practical assignments. (Python Selenium)



Learn to use Vagrant for creating and managing virtual development environments, automating tasks, and streamlining workflows. (Vagrant)

# Who Should Enroll in this Program?

**This DevOps and Cloud Advancement Diploma is designed for:**

- School and university students looking to expand their knowledge, skills, and career opportunities
- Professionals in the industry who want to enhance their skills and advance their careers

This diploma program is suitable for individuals between the ages of 16 and 45 who are self-motivated and capable of studying independently. The diverse student body, composed of individuals from various industries and backgrounds, enriches class discussions and interactions.

**The diploma prepares individuals for careers such as:**

- Docker Administrator, Automation Engineer, Deployment Engineer
- DevOps Engineer, Automation Engineer, System Administrator
- Ansible Engineer, Automation Engineer, Infrastructure Engineer
- JIRA Administrator, Python Developer
- Kubernetes Administrator, Cloud Engineer, Deployment Engineer
- Kubernetes Developer, Cloud Engineer, Application Developer
- Kubernetes Security Engineer, Security Specialist, DevSecOps Engineer
- Python Developer, Automation Engineer, Data Analyst
- Selenium Automation Engineer, Software Developer, Web Application Developer
- DevOps Engineer, System Administrator
- Cybersecurity Analyst, Security Operations Center (SOC) Analyst
- Data Analyst, Data Scientist, Machine Learning Engineer
- SOC Engineer, Security Operations Center (SOC) Analyst
- Threat Hunting Engineer, Security Operations Center (SOC) Analyst
- Ethical Hacker, Incident Response Manager, Security Analyst

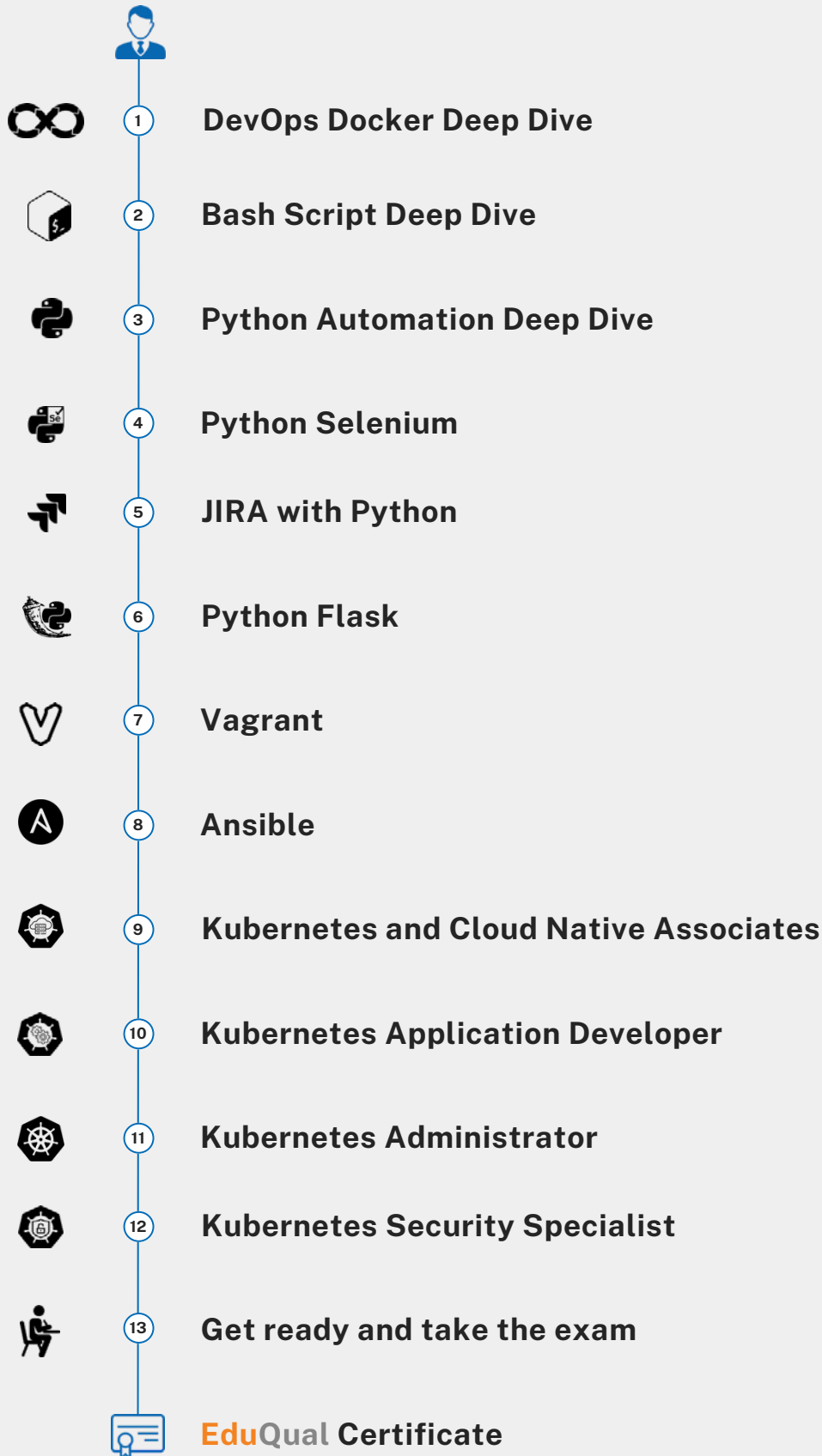
- Information Security Manager, Security Consultant, Security Auditor
- Data Analyst, Data Scientist, Machine Learning Engineer
- Data Analyst, Data Scientist, Machine Learning Engineer
- Job seeker, Professional looking to improve their LinkedIn profile
- Linux Administrator, System Administrator, DevOps Engineer
- Network Security Analyst, Penetration Tester, Ethical Hacker
- PCI DSS Compliance Auditor, Security Consultant, Compliance Officer
- Data Analyst, Data Scientist, Machine Learning Engineer
- Python Developer, Data Analyst, App Developer, Machine Learning Engineer
- Data Analyst, Data Scientist, Machine Learning Engineer
- DevOps Engineer, Cloud Engineer, Application Developer
- SCADA Security Analyst, Incident Response Manager, Cybersecurity Consultant
- SIEM Engineer, Security Operations Center (SOC) Analyst
- Data Analyst, Data Scientist, Machine Learning Engineer
- Vulnerability Assessment Specialist, Penetration Tester, Security Consultant

### **Important Features:**

- No academic prerequisites required
- Only a reliable internet connection and a laptop/PC needed



# Learning Path



# DevOps Docker Deep Dive

By the end of this course, students will be able to comprehend the concepts of Continuous Integration and Continuous Deployment (CI/CD) and become familiar with Docker components such as images, containers, networks, and volumes. They will gain the ability to set up and manage Docker networks, images, and containers and integrate Docker with other DevOps tools like Git. Additionally, they will develop proficiency in automating configuration management and deployment of Docker and apply these skills through practical solutions and hands-on exercises.

## Key Learning Objectives

- Gain an understanding of the role and responsibilities of a DevOps Administrator and the DevOps Architecture.
- Learn to install and use Docker through command line operations and understand the Docker file and its commands.
- Acquire knowledge on Docker image concepts such as Busy Box, Alpine, and variants and learn to create Docker images from Docker containers.
- Learn to use Docker Pull and Push commands, and Docker Port Mapping to deploy an application in Docker.
- Understand Docker Volume types and Docker Multi-Stages and apply these concepts through hands-on exercises.
- Learn to use Docker Compose, Docker Data Container, and Docker Networking to manage and deploy Docker applications.
- Understand GitLab Workflow automation using CI/CD pipeline and how to push Docker images from GitLab and GitHub to AWS ECR.
- Gain practical knowledge on Docker Swarm and local repository in Docker and learn to monitor Docker applications and use Docker Secrets and Docker Stack.
- Acquire knowledge of JBoss deployment using Docker and learn to archive Docker images and containers.
- Develop an understanding of the DevOps Administrator work profile and prepare for relevant interview questions.



## Course Curriculum

- Lesson 1: Introduction to DevOps Administrator, DevOps Architecture and Trainer Profile
- Lesson 2: Introduction to Docker, Docker installation, and commands
- Lesson 3: Introduction to Docker File and Docker commands, Docker Busy Box, and Alpine image concepts
- Lesson 4: Docker file and Docker file creation, Practical Phase One with Solution, Docker Pull and Push Commands, Create Docker Image from Docker Container, Docker Port Mapping, Deploy an Application In Docker
- Lesson 5: Practical Phase 1 [Part - 2] with Solution, Practical Phase 2 with Solution, Introduction to Docker Volume, Docker Volume type explanation with Hands-on, Docker Image variants, and Change default Docker path
- Lesson 6: Docker Multi stages, Hands-On Docker Compose, Docker Data Container with Hands-On, Practical Phase 3 with Solution
- Lesson 7: Docker file understanding with useful keywords, Docker image push and pull to AWS ECR, Deploy Docker app to AWS ECS, Docker image push and Pull from GitHub and GitLab repository, Practical Phase 4 with Solution
- Lesson 8: GitLab Workflow automation using CICD pipeline, Docker image push from GitLab to AWS ECR using CICD pipeline, GitHub build image to AWS ECR using CICD pipeline
- Lesson 9: Introduction to Docker Networking, Docker Network with Hands-On, Docker linking with two containers, Docker Swarm, Local repository in Docker, Docker Monitoring, Docker Secrets | Docker Stack | Jboss Deployment using Docker
- Lesson 10: Docker Alias, Archive your image and container
- Lesson 11: DevOps admin work profile and interview questions.

# Bash Script Deep Dive

By the end of this course, students will have a comprehensive understanding of the principles and concepts of Bash Scripts, including the syntax and structure of bash scripts, variables, conditions, and loops. They will be proficient in using a variety of Bash utilities and tools to manipulate files and directories, execute conditional statements and loop constructs, pipelines, and more. Students will also be able to create real-world applications and solutions and demonstrate their abilities through multiple practical phase solutions and hands-on exercises

## Key Learning Objectives

- Understand the basics of Bash Scripting and how to use the echo and read commands.
- Learn how to write and debug Bash scripts and gain familiarity with Linux editors and commands such as tr, xargs, and seq.
- Explore conditional statements in Bash scripting and learn about nested if conditions and positional parameters.
- Develop proficiency in using loops in Bash scripting, including for, while, until, and select loops.
- Discover advanced Bash script commands and flags, such as positional parameters with shift commands and control and break statements.
- Apply Bash scripting skills to real-world scenarios and develop solutions through practical phases.
- Learn about string operations and arrays in Bash scripting, and understand how to use functions in Bash scripts.
- Gain familiarity with filtering commands such as grep, cut, and AWK, and understand how to use AWK scripts in Bash scripts.
- Explore SED commands and understand how to use find commands and schedule tasks in Bash scripting.
- Apply Bash scripting skills to real-time hands-on practical exercises and develop solutions in the practical phase.

## Course Curriculum

- Lesson 1: Introduction to Bash Scripting, Echo and Read Commands, Writing and Debugging Bash Scripts
- Lesson 2: Linux Editors and Commands, including tr, xargs, and seq
- Lesson 3: Conditional Statements in Bash Scripting (Part 1 and Part 2), Nested If Conditions, and Positional Parameters
- Lesson 4: Loops in Bash Scripting, including For, While, Until, and Select Loops
- Lesson 5: Advanced Bash Script Commands and Flags, such as Positional Parameter with Shift Commands and Control and Break Statements
- Lesson 6: Real-World Scenarios and Practical Phases for Developing Bash Scripting Skills
- Lesson 7: String Operations, Arrays, and Functions in Bash Scripting
- Lesson 8: Filtering Commands in Bash Scripting, including grep, cut, and AWK, and using AWK scripts
- Lesson 9: SED Commands, Finding Commands, and Scheduling Tasks in Bash Scripting
- Lesson 10: Real-Time Hands-On Practical Exercises for Developing Bash Scripting Solutions (Part 1 and Part 2), and Practical Phase 2 Solution

# Python Automation Deep Dive

By the end of this course, students will have a comprehensive understanding of Python Automation. They will be able to write and run Python scripts, work with data structures and data types, use control structures, functions, and modules, and automate tasks using libraries and APIs. Students will apply their knowledge to automate file operations, data processing, and web scraping to solve real-world issues. They will write clean, well-documented, and maintainable code, and demonstrate their understanding through the creation of useful applications and solutions, as well as multiple real-world projects

## Key Learning Objectives

- Acquire a foundational understanding of Python, including installation and basic commands, as well as variables and data types.
- Learn about data structures in Python, including strings, lists, tuples, and dictionaries, and explore how to work with modules and control statements.
- Develop proficiency in using loops in Python, including for and while loops, and understand how to handle exceptions and work with the datetime module.
- Gain familiarity with file handling in Python, including reading, writing, and manipulating files, as well as using the email and scheduler modules.
- Learn about regular expressions in Python and how to use them for pattern matching and manipulation.
- Explore remote server modules in Python and how to work with databases in Python.
- Apply Python skills to real-world projects, demonstrating the ability to write clean, well-documented code that solves real-world problems.

## Course Curriculum

- Lesson 1: Learn the basics of Python and how to install Python and PyCharm.
- Lesson 2: Understand variables and data types in Python, including type casting and print formatting, as well as escape sequences and comments
- Lesson 3: Explore conditional statements in Python and string operations.
- Lesson 4: Develop proficiency in using list, tuple, and dictionary data structures in Python, as well as modules such as the OS module and the platform module.
- Lesson 5: Learn about command line arguments and develop skills in using loops and control statements in Python.
- Lesson 6: Apply Python skills to real-world scenarios and develop solutions through practical phases, including file handling, email modules, and scheduling tasks in Python.
- Lesson 7: Learn about exception handling, datetime modules, and regular expressions in Python.
- Lesson 8: Gain familiarity with remote server modules and working with databases in Python.
- Lesson 9: Apply Python skills to real-world projects.

# Python Selenium

Upon completion of this course, students will acquire comprehensive knowledge on Python Selenium, including the basic principles of web automation, Python syntax, and Selenium WebDriver, and how to apply these concepts to real-world situations. They will gain the skills necessary to automate web-based applications, effectively use Selenium WebDriver, and debug and troubleshoot scripts. The course includes complete hands-on practical assignments to provide students with practical experience, allowing them to apply their knowledge and skills to real-world scenarios. By the end of the course, students will be able to demonstrate their proficiency in using Python Selenium to automate web-based applications and solve web automation challenges.

## Key Learning Objectives

- Understand the fundamentals of web automation using Python Selenium
- Gain knowledge of Python Selenium architecture and installation process
- Learn to work with different browsers using Python Selenium
- Understand how to work with Web Driver Manager and Web Elements in Python Selenium
- Learn how to handle synchronisation issues and different elements in Python Selenium
- Gain familiarity with CSS Selectors and XPATH in Python Selenium
- Learn how to handle complex elements and take screenshots using Python Selenium
- Develop proficiency in using Pytest in Python Selenium
- Apply Python Selenium skills to real-world scenarios and work on practical assignments
- Learn how to work with Selenium Grid and Docker in Python Selenium
- Develop proficiency in integrating Python Selenium with Jenkins and GitHub.

## Course Curriculum

- Lesson 1: Introduction to Python Selenium.
- Lesson 2: Python Selenium Architecture.
- Lesson 3: Installation Python Selenium.
- Lesson 4: Working with a Different browser.
- Lesson 5: Working with Web Driver Manager.
- Lesson 6: Web Elements in Python Selenium.
- Lesson 7: Synchronisation issue.
- Lesson 8: Working with Different Elements.
- Lesson 9: CSS Selectors in Python Selenium.
- Lesson 10: XPATH in Python Selenium.
- Lesson 11: Handling complex elements in Python Selenium.
- Lesson 12: Practical Assignments.
- Lesson 13: Options in Python Selenium.
- Lesson 14: Screenshot in Python Selenium.
- Lesson 15: Pytest in Python Selenium
- Lesson 16: Practical Session.
- Lesson 17: Selenium Grid.
- Lesson 18: Selenium grid with docker.
- Lesson 19: Python Selenium with Jenkins and GitHub



# JIRA with Python

Upon completion of this course, students will gain factual, procedural, and theoretical knowledge on how to integrate JIRA with Python. They will be able to understand the fundamental concepts of JIRA, including workflows, projects, and plugins, as well as Python's syntax, modules, and data structures. The students will gain hands-on experience by connecting Python and JIRA through the use of the JIRA API and Python libraries. As a result, they will develop the skills to automate JIRA-based activities and perform real-world project scenarios, effectively utilising JIRA and Python together

## Key Learning Objectives

- Learn the fundamentals of JIRA, including its setup and dashboard.
- Understand the Agile process in JIRA and learn how to use advanced search and filters.
- Gain proficiency in JIRA administration through parts 1-5.
- Learn how to use Python to connect with JIRA and utilize JIRA API and libraries.
- Apply JIRA skills to practical sessions.

## Course Curriculum

- Lesson 1: Introduction to JIRA
- Lesson 2: Setup JIRA
- Lesson 3: Agile process in JIRA
- Lesson 4: Understanding JIRA Dashboard
- Lesson 5: JIRA advanced search and filter
- Lesson 6: JIRA Dashboards
- Lesson 7: JIRA admin
- Lesson 8: JIRA with python
- Lesson 9: Practical Session

# Python Flask

Upon completion of this course, students will possess the proficiency to utilise Python functions, modules, and data structures while exploring the Flask framework's views, templates, and blueprints. The learners will acquire knowledge on the process of connecting to databases, managing user input, and sessions, and creating routes in Flask. The course will also cover the deployment process of Flask applications, including hosting options and security considerations. Students will participate in hands-on practical assignments and a final project to demonstrate their skills in Flask application development and deployment

## Key Learning Objectives

- Introduction to Flask and its components, including views, templates, and blueprints.
- Introduction and understanding of HTTP methods and how they are used in Flask applications.
- Understand API and their use in Flask, with examples to illustrate.
- Installation Flask setup: Students will learn how to install and set up Flask on their local machines.
- Learn how to connect Flask applications to databases, and how to retrieve data from a database in Flask.
- Setting up a Website with Flask
- Learn how to search and retrieve data in Flask applications.
- Introduce learners to integrating Jira with Flask applications.
- Learn about session management in Flask applications.
- Learners will learn how to deploy Python Flask applications on Docker

## Course Curriculum

- Lesson 1: Introduction to Flask
- Lesson 2: Introduction and understanding methods
- Lesson 3: Understand API with an example
- Lesson 4: Understand API with example part 2
- Lesson 5: Installation Flask setup
- Lesson 6: Database connectivity with Flask
- Lesson 7: Fetching data from the database in Flask
- Lesson 8: Setup Website with Flask
- Lesson 9: Searchwise data in Flask
- Lesson 10: Jira integration with Flask
- Lesson 11: Session management in Flask
- Lesson 12: Deploy Python Flask Application on Docker
- Lesson 13: Practical Assignment

# Vagrant

Upon completion of this course, learners will gain factual, procedural, and theoretical knowledge of the Vagrant tool to build and manage virtual development environments. They will understand the benefits of using Vagrant and its integration with other tools such as VirtualBox and Docker. The learners will be proficient in creating and configuring virtual machines using Vagrant and automating repetitive tasks with ease. They will develop the necessary skills to streamline and simplify development workflows, increasing their efficiency and productivity. The course will provide learners with practical experience and hands-on exercises, allowing them to apply their knowledge to real-world scenarios. Ultimately, the learners will be able to use Vagrant as an essential tool for managing virtual environments in their development workflows

## Key Learning Objectives

- Understand the concept of Vagrant and its importance in creating virtual development environments.
- Learn how to install Vagrant on different operating systems.
- Create a new operating system instance using Vagrant and its configuration files.
- Understand the concept of the box in Vagrant and how to use it to create, manage, and share virtual environments.
- Explore the different networking options available in Vagrant and how to configure them for your virtual environments.
- Learn how to synchronize files and directories between your local machine and the Vagrant environment.
- Understand the concept of a provision in Vagrant and how to use it to automate the setup of your virtual environments.
- Learn how to provision files and shell scripts in Vagrant to automate software installation, configuration, and customization.
- Learn how to automate the setup of your virtual environments using Vagrant, making it easier to streamline your development workflows.

## Course Curriculum

- Lesson 1: Vagrant Introduction
- Lesson 2: Installation Vagrant
- Lesson 3: Creating OS using Vagrant
- Lesson 4: Understanding box in Vagrant
- Lesson 5: Networking in Vagrant
- Lesson 6: Syncing folder in Vagrant env
- Lesson 7: Provision in Vagrant
- Lesson 8: File Provision in Vagrant
- Lesson 9: Shell Provision in Vagrant
- Lesson 10: Automated Setup using Vagrant

# Ansible

The learning objective of this course is to equip students with the skills and concepts related to using an open-source IT automation tool. Upon completion, learners will have the ability to automate various IT tasks, including provisioning, configuration management, and application deployment. Through multiple practical phase solutions and hands-on exercises, learners will acquire the necessary expertise to work with an IT automation tool effectively. The course will enable learners to streamline and simplify IT processes, resulting in increased efficiency and productivity.

## Key Learning Objectives

- Students will learn the concept of configuration management and its importance in IT operations.
- Learners will understand the basics of Ansible, including its architecture, components, and use cases.
- Students will learn how to install and configure Ansible on various platforms and operating systems.
- Learners will acquire hands-on experience in creating and using Ansible playbooks and modules to automate various IT tasks, such as provisioning, configuration management, and application deployment

## Course Curriculum

- Lesson 1: Introduction to Configuration Management
- Lesson 2: Ansible Overview and Architecture
- Lesson 3: Ansible Installation and Configuration
- Lesson 4: Ansible Playbooks and Modules

# Kubernetes and Cloud Native Associates

After completing this course, students will have a thorough understanding of deploying, managing, and scaling applications in cloud-native environments using Kubernetes and other cloud-native technologies. They will gain expertise in managing and maintaining cloud-native applications, architecture, and observability by learning about container orchestration. Moreover, the learners will have the opportunity to practice multiple practical solutions and hands-on exercises to enhance their knowledge and skills in deploying and managing cloud-native applications. This course will equip them with the knowledge and practical experience necessary to manage and scale cloud-native applications in a dynamic and fast-paced environment.

## Key Learning Objectives

- Understand the fundamentals of Kubernetes and cloud-native technologies
- Build and configure a Kubernetes cluster
- Manage Kubernetes resources, such as pods, services, and storage
- Explore Kubernetes architecture, API, and containerization
- Understand Kubernetes security and networking
- Implement autoscaling and serverless computing in a cloud-native environment
- Gain familiarity with cloud-native community and governance, as well as organizational personas and open standards
- Learn about observability and monitoring with Prometheus
- Understand application delivery fundamentals, including GitOps, continuous integration, and continuous delivery
- Perform multiple practical exercises and solutions to reinforce learning

## Course Curriculum

- Lesson 1: Course Introduction
- Lesson 2: Kubernetes and Cloud Native Associate Overview
- Lesson 3: Building a Kubernetes Cluster
- Lesson 4: Kubernetes Fundamentals Intro
- Lesson 5: Introducing Kubernetes Resources
- Lesson 6: Resources for Managing Pods
- Lesson 7: Exploring Kubernetes Architecture
- Lesson 8: Kubernetes API
- Lesson 9: Closer View of Containers
- Lesson 10: Scheduling Explained
- Lesson 11: Introduction, Fundamentals, Runtime
- Lesson 12: Kubernetes Security
- Lesson 13: Kubernetes Networking
- Lesson 14: Exploring Services
- Lesson 15: Understanding Service Meshes
- Lesson 16: Exploring Kubernetes Storage
- Lesson 17: Introduction, Fundamentals, Understanding Autoscaling
- Lesson 18: Understanding Serverless
- Lesson 19: Cloud Native Community and Governance
- Lesson 20: Cloud Native Organizational Personas, Open Standards
- Lesson 21: Introduction, Telemetry and Observability
- Lesson 22: Monitoring with Prometheus
- Lesson 23: Understanding Cost Management
- Lesson 24: Introduction, Application Delivery Fundamentals
- Lesson 25: Understanding GitOps
- Lesson 26: Continuous Integration and Continuous Delivery



# Kubernetes Application Developer

In this course, students will develop a comprehensive understanding of Kubernetes and container orchestration. They will learn to configure a Kubernetes cluster using different tools, understand YAML basics, work with single and multi-container pods, and explore deployment strategies, updates, and rollbacks. Additionally, they will gain knowledge about namespaces, jobs, and imperative commands in Kubernetes. The course includes hands-on exercises and practical sessions to provide students with practical skills in Kubernetes Application Development.

## Key Learning Objectives

- Introduction to Kubernetes and Containers
- Container Orchestration and Kubernetes Architecture
- Tools for Cluster Configuration (kind, minikube, kubeadm)
- Understanding the Basics of YAML
- Working with Single Container Pods
- Working with Multi-container Pods
- Working with Sidecar Multi-Container Pods
- Working with Ambassador Multi-Container Pods
- Init-Container Pods Hands-On
- Replication Controller and Hands-On
- ReplicaSet and Hands-On
- Deployment and Hands-On
- Updates and Rollbacks in Deployments Explained and Hands-On
- Deployment Strategies and Hands-On (Canary Deployment)
- Namespaces Explained and Hands-On
- Jobs Explained and Hands-On
- CronJob Explained and Hands-On
- Imperative Commands in Kubernetes Explained and Hands-On

## Course Curriculum

- Lesson 1: Introduction
- Lesson 2: Containers Overview
- Lesson 3: Container Orchestration
- Lesson 4: Kubernetes Architecture
- Lesson 5: Introduction to all tools
- Lesson 6: Cluster configuration using a kind tool
- Lesson 7: Cluster configuration using Minikube
- Lesson 8: Cluster configuration using Kubeadm
- Lesson 9: Understanding the Basics of YAML
- Lesson 10: Working with Single Container Pods
- Lesson 11: Working with Multi-container Pods
- Lesson 12: Working with Sidecar Multi-Container Pods
- Lesson 13: Working with Ambassador Multi-Container Pods
- Lesson 14: Init-Container Pods Hands-On
- Lesson 15: Replication Controller Explained
- Lesson 16: Replication Controller Hands-On
- Lesson 17: ReplicaSet Hands-On
- Lesson 18: Deployment Explained
- Lesson 19: Deployments Hands-On
- Lesson 20: Deployments -- Updates and Rollbacks Explained
- Lesson 21: Deployments -- Updates and Rollbacks Hands-On
- Lesson 22: Deployment Strategies Explained
- Lesson 23: Canary Deployment Strategy Hands-On
- Lesson 24: Namespaces Explained
- Lesson 25: Namespaces Hands-On
- Lesson 26: Jobs Explained
- Lesson 27: Jobs Hands-On
- Lesson 28: CronJob Explained & Hands-On
- Lesson 29: Imperative Commands in Kubernetes Explained
- Lesson 30: Imperative Commands in Kubernetes Hands-On

# Kubernetes Administrator

After completing this course, students will have an in-depth understanding of the core concepts of Kubernetes and its architecture. They will be familiar with all the components of a Kubernetes cluster, including ETCD, Kube API Server, Kube Control Manager, Kube Scheduler, Kubelet, and Kube Proxy. Students will be able to create and manage pods, replica sets, and deployments with various scheduling techniques, including manual scheduling, resource limits, labels & selectors, taints & tolerations, and node affinity. Furthermore, learners will understand the importance of monitoring, maintenance, and security in Kubernetes, and they will be able to perform tasks such as upgrading, backing up and restoring, and configuring high availability. They will also learn about container storage interface, volumes, and persistent volumes, as well as network solutions like DNS, CNI, and Weave. Students will be able to design and deploy a Kubernetes cluster, and they will have a thorough understanding of how to troubleshoot and manage applications and nodes using Kubectl commands and JSON Path.

## Key Learning Objectives

- Understanding core concepts of Kubernetes and cluster architecture
- Familiarity with ETCD in Kubernetes and various Kubernetes components like Kube API Server, Kube Control Manager, Kube Scheduler, Kubelet, and Kube Proxy
- Understanding Pods, ReplicaSets, and Deployments, and their revisions
- Configuring Kubernetes resources like scheduling, resource limits, labels & selectors, taints & tolerations, and node selectors & affinity
- Monitoring and managing cluster components, application logs, and cluster maintenance operations like OS upgrades, Kubernetes software version upgrades, cluster upgrades, and backup and restore methods
- Understanding Kubernetes security and authentication mechanisms like TLS certificates, certificates API, kubeconfig, API groups, and authorization
- Understanding Docker storage, volume driver plugins, container storage interface, volumes, persistent volumes, and persistent volume claims & storage class
- Understanding CNI in Kubernetes, network namespaces, Docker networking, CNI Weave, Ipam Weave, and deploying network solutions
- Designing and choosing infrastructure for a Kubernetes cluster, configuring high availability, and understanding application, control plane, and worker node failures
- Practising JSON Path Hands-On and learning Kubectl Commands.

## Course Curriculum

- Lesson 1: Core Concepts Introduction
- Lesson 2: Cluster Architecture
- Lesson 3: Understand ETCD
- Lesson 4: ETCD in Kubernetes
- Lesson 5: Kube API Server
- Lesson 6: Kube Control Manager
- Lesson 7: Kube Scheduler
- Lesson 8: Kubelet
- Lesson 9: Kube Proxy
- Lesson 10: Revision of Pods
- Lesson 11: ReplicaSets
- Lesson 12: Deployments
- Lesson 13: Introduction to Scheduling Manually
- Lesson 14: Resource Limits
- Lesson 15: Labels & Selectors
- Lesson 16: Taints & Tolerations
- Lesson 17: Node Selectors & Node Affinity
- Lesson 18: Introduction to Monitoring Cluster Components
- Lesson 19: Managing Application Logs
- Lesson 20: Cluster Maintenance -- Introduction
- Lesson 21: Operating System Upgrades
- Lesson 22: Kubernetes Software Version
- Lesson 23: Cluster Upgrades -- Introduction
- Lesson 24: Cluster Upgrade in Action
- Lesson 25: Backup and Restore Method
- Lesson 26: Working with ETCDCTL
- Lesson 27: Introduction to Kubernetes Security
- Lesson 28: Authentication in Kubernetes
- Lesson 29: Introducing TLS Certificates
- Lesson 30: Basics of TLS Certificates
- Lesson 31: TLS Certificates in Kubernetes
- Lesson 32: Viewing Certificate Details
- Lesson 33: Certificates API

- Lesson 34: kubeconfig
- Lesson 35: API groups in Kubernetes
- Lesson 36: Authorization
- Lesson 37: Introduction to Docker Storage Explained
- Lesson 38: Volume Driver Plugins in Docker
- Lesson 39: Container Storage Interface
- Lesson 40: Volumes
- Lesson 41: Persistent Volumes
- Lesson 42: Persistent Volume Claims & Storage Class
- Lesson 43: Introduction to Switching, Routing & Gateway CNI in Kubernetes
- Lesson 44: DNS
- Lesson 45: Network Namespaces
- Lesson 46: Docker Networking
- Lesson 47: CNI
- Lesson 48: Cluster Networking
- Lesson 49: Pod Networking
- Lesson 50: CNI in Kubernetes
- Lesson 51: CNI Weave
- Lesson 52: Ipam Weave
- Lesson 53: Deploying Network Solution
- Lesson 54: Design a Kubernetes Cluster
- Lesson 55: Choosing Kubernetes Infrastructure
- Lesson 56: Configure High Availability
- Lesson 57: ETCD in High Availability
- Lesson 58: Design a Kubernetes Cluster
- Lesson 59: Choosing Kubernetes Infrastructure
- Lesson 60: Configure High Availability
- Lesson 61: ETCD in High Availability
- Lesson 62: Introduction to Application Failure
- Lesson 63: Control Plane Failure
- Lesson 64: Worker Node Failure
- Lesson 65: JSON Path Hands-On
- Lesson 66: Kubectl Commands



# Kubernetes Security Specialist

After completing this course, students will have the knowledge and skills necessary to secure a Kubernetes cluster. They will be able to understand and implement the principles of confidentiality, integrity, and availability of resources within a Kubernetes cluster. The learners will be able to identify security challenges and apply best practices for securing a Kubernetes cluster. Through practical exercises and hands-on experience, students will develop proficiency in Kubernetes security, including secure communication between components, RBAC authorization, and network security policies. Additionally, learners will understand how to use security tools like audit logging and container scanning to ensure cluster security.

## Key Learning Objectives

- Understand the common attack types on a Kubernetes cluster
- Familiarity with the 4C's of cloud-native security
- Ability to perform cluster setup and hardening using CIS benchmarks for Kubernetes and Kube-bench
- Knowledge of Kubernetes security primitives such as Service Accounts, TLS, and Certificates API
- Understand the least privilege principle and how to limit node access and perform SSH hardening
- Knowledge of privilege escalation in Linux and removing obsolete packages and services
- Ability to identify and disable open ports and minimize IAM roles and external network access using UFW firewall
- Understand Linux Syscalls and security contexts
- Familiarity with Admission Controllers, Validating and Mutating Admission Controllers, and Pod Security Policies
- Knowledge of Open Policy Agent and its implementation in Kubernetes
- Understanding of managing Kubernetes Secrets and encrypting secret data at rest
- Familiarity with container sandboxing using gVisor and kata Containers
- Ability to minimize base image footprint and ensure image security by whitelisting allowed registries and scanning for known vulnerabilities
- Knowledge of performing behavioural analytics of the Syscall process using Falco and its configuration files
- Understanding of mutable vs immutable infrastructure and ensuring immutability of containers at runtime
- Ability to use audit logs to monitor access to a Kubernetes cluster

## Course Curriculum

- Lesson 1: Attack Explained
- Lesson 2: The 4C's of cloud-native security
- Lesson 3: Cluster Setup & Hardening -- Introduction
- Lesson 4: Introducing CIS Benchmarks
- Lesson 5: CIS Benchmarks for Kubernetes
- Lesson 6: Kube-bench
- Lesson 7: Kubernetes Security Primitives, Service Accounts, TLS in Kubernetes, Certificates API
- Lesson 8: Cluster Setup & Hardening -- Introduction
- Lesson 9: Introducing CIS Benchmarks
- Lesson 10: CIS Benchmarks for Kubernetes
- Lesson 11: Kube-bench
- Lesson 12: Kubernetes Security Primitives, Service Accounts, TLS in Kubernetes, Certificates API
- Lesson 13: Introduction
- Lesson 14: Least Privileges Principle, Limit Node Access, SSH Hardening, Privilege Escalation in Linux
- Lesson 15: Removing Obsolete Packages and Services, Restricting Kernel Modules, Identifying and Disable Open Ports
- Lesson 16: Minimize IAM roles, Minimize External Access to the Network, Introducing UFW Firewall, Linux Syscalls
- Lesson 17: Introduction
- Lesson 18: Security Context, Admission Controllers, Validating and Mutating Admission Controllers, Pod Security Policies
- Lesson 19: Open Policy Agent, Open Policy Agent Hands-On, Open Policy Agent in Kubernetes
- Lesson 20: Manage Kubernetes Secrets, Encrypting Secret Data at Rest, Container Sandboxing, gVisor, kata Containers
- Lesson 21: Introduction
- Lesson 22: Minimize Base Image Footprint, Image Security, Whitelist Allowed Registries -- Image Policy Webhook
- Lesson 23: Use Static Analysis of User Workloads, Scan Images for known Vulnerabilities
- Lesson 24: Introduction
- Lesson 25: Performing Behavioral Analytics of Syscall Process, Falco Overview and Installation
- Lesson 26: Using Falco to Detect Threats, Falco Configuration Files
- Lesson 27: Mutable vs Immutable Infrastructure, Ensuring Immutability of Containers at Runtime
- Lesson 28: Using Audit Logs to Monitor Access

# Comprehensive Assessment Approach

Assessments are an essential component of any diploma course, and at our online and distance learning platform, we ensure that our students are evaluated thoroughly. Multiple choice questions (MCQs) will be the standard form of assessment across all diploma courses. However, for certain individual courses, students may be required to deliver an oral presentation or participate in an interview. Additionally, after completing the entire diploma course, students will be required to present an oral presentation, which will be mandatory. This approach allows us to evaluate our students comprehensively and helps them develop essential skills for their future careers.

# EduQual Examinations:

Learners who are studying EduQual Level 3 and/or EduQual Level 4 diploma(s) will have to pay an examination fee as tabulated below.

Diploma	Total (£)
Diploma in Cloud Cyber Security (EduQual Level 3)	250*
DevOps and Cloud Advancement (EduQual Level 4)	250*
Diploma in SysOps and Cloud Advancement (EduQual Level 4)	250*
Diploma in Artificial Intelligence Advancement (EduQual Level 4)	250*

- **Learners will be required to pay the amount that is equal to the value of GBP (Great British Pound), and they should consult the current currency conversion rate to determine the amount in their local currency.**
- New learners must pay all examination fees of that respective diploma as soon as they are enrolled. Learners who are currently studying any advancement track can apply for a respective diploma by paying the examination fee of that respective diploma.
- Learners who successfully complete the EduQual Level 3 and/or Level 4 diplomas will be awarded a certificate by EduQual.
- Learners must provide accurate and up-to-date information during the application process as that information will be shared with the EduQual for awarding a certificate.
- Learners who paid full or yearly fees will get access to the full course contents of the diploma.

- Learners who paid half-yearly, quarterly, or monthly fees will get access to the course contents of the diploma as per the drip schedule defined in our LMS.
- All EduQual Level 3 and Level 4 diplomas will have content access for 12 months at most.
- Learners are responsible for ensuring that they have the necessary technology and resources to participate in the diploma.

## Assessments For EduQual Level 3 and EduQual Level 4 Diplomas

- The learner must appear for the exam within 1 year after registration with EduQual. If they don't appear for the exam within 1 year they have to again submit the examination fees.
- Learners enrolled in the EduQual level 4 Diploma may choose to take the EduQual level 3 Diploma exam, which is available as an option for all EduQual level 4 Diploma students.
- Learners must submit all assessments and coursework on time and to the required standard as per the diploma.
- Learners must follow the guidelines for academic integrity and avoid plagiarism or other forms of academic misconduct.
- Learners must attend all required classes and complete all assessments and coursework on time.

- **Assessment Formats**

- All customized courses in the diploma will include multiple-choice questions (MCQs) as part of the assessment.
- Some courses may also include coding assignments where applicable.
- The majority of courses will include oral presentations or interviews as part of the assessment.
- There will be a comprehensive exam covering the material from all courses in the diploma.

## • **Assessment Guidelines**

- Learners must follow the guidelines for each type of assessment as provided by Al Nafi in the specific assessment.
- Learners must complete all assessments honestly and to the best of their ability.
- Learners are responsible for ensuring that their work is original and not plagiarized from any other source

## • **Assessment Grading**

- The grading system for each type of assessment will be clearly explained in the course materials.
- Learners will be provided with feedback on their assessments and opportunities for improvement.
- The final grade for each course will be based on a combination of assessments.

## • **Oral Presentations/Interviews**

- Learners will be assessed on their ability to communicate effectively and demonstrate subject knowledge during oral presentations or interviews.
- The format and guidelines for oral presentations or interviews will be provided in the LMS.
- Learners must prepare and rehearse their presentations or interviews to ensure they meet the required standard.

## • **Coding Assignments**

- Learners in courses that include coding assignments must demonstrate their ability to write code that meets the requirements of the assignment.
- The coding assignments will be assessed based on factors such as functionality, readability, and efficiency.
- Learners must adhere to coding best practices and avoid plagiarism.



## • Comprehensive Exam

- The comprehensive exam will cover material from all courses in the diploma.
- The format and guidelines for the comprehensive exam will be provided in the LMS.
- Learners must prepare and review all course materials in advance of the comprehensive exam.

## • Assessment Grading

- The comprehensive exam will cover material from all courses in the diploma.
  - The format and guidelines for the comprehensive exam will be provided in the LMS.
  - Learners must prepare and review all course materials in advance of the comprehensive exam.
- Al Nafi reserves the right to investigate and take action in cases of academic misconduct, including plagiarism or cheating.
  - Learners who engage in academic misconduct may be subject to penalties, including a failing grade or expulsion from the diploma program.

## • Changes to Assessment Guidelines

- Al Nafi reserve the right to modify the assessment guidelines at any time.
- Learners will be notified of any changes to the assessment guidelines via email or other communication channels.
- Learners who do not agree to the modified assessment guidelines must inform support and may be subject to different assessment guidelines or cancellation of enrollment.

# This track allows you to work in multiple industries

Features	
Certified by ISACA	Yes
Accredited with EduQual	Yes
Access to Complete Course Content	Yes
Access to complete Hands On Labs	Yes
Resume Development	Yes
Interview Preparation	Yes
Internship Letter	Yes
Practice Exams	Yes
Weekly Live Sessions with Trainer	Yes
Multiple Languages	Yes

# Career Opportunities for this Track:

The demand for DevOps has been on the rise in the last 3 years. This track will cover all the major tools and best practices that are used by DevOps engineers all over the world. Dive right in.

1

## DevOps Engineer:

Average salary:  
**\$130,000** per year

2

## Security Engineer:

Average salary:  
**\$130,000** per year

3

## Automation Engineer:

Average salary:  
**\$100,000** per year



# Our students are working all over the globe in fortune 500 companies



\*Any third-party logos displayed in this booklet are the property of their respective companies.



## **Where Can I find more information?**

### **Headquarter (Canada):**

64 Fullerton Crecent,  
L3R 3G5 Markham, ON, Canada.

### **Regional Office (UK):**

167-169 Great Portland Street,  
5th Floor,  
London, W1W 5PF.

### **Regional Office (Pakistan):**

A-163, Block 13 – C, Gulshan – e – Iqbal, Karachi.

### **Contact:**

+92 304 1110400

### **Send us a Message:**

info@alnafi.edu.pk

**Visit:** [www.alnafi.com](http://www.alnafi.com)



To qualify for Al Razzaq Program, you must meet any 1 of the 4 criteria mentioned below:

### **Yearly Bundle:**

Students enrolled in the Yearly bundle are automatically eligible for the Al Razzaq Program without any additional conditions.

### **Monthly Bundle:**

Students enrolled in the Monthly bundle become eligible for the Al Razzaq Program after they have paid the monthly fees for a total of 12 consecutive months.

### **Half-Yearly Bundle:**

Students enrolled in the Half-Yearly Bundle qualify for the Al Razzaq Program once they have successfully paid the fees for two consecutive half-year terms.

### **Quarterly Bundle:**

Students enrolled in the Quarterly Bundle are eligible for the Al Razzaq Program after they have paid the fees for four consecutive quarters.