DEEPCLOUDLABS

Training Courses and Consultancy Services

2025 Catalog

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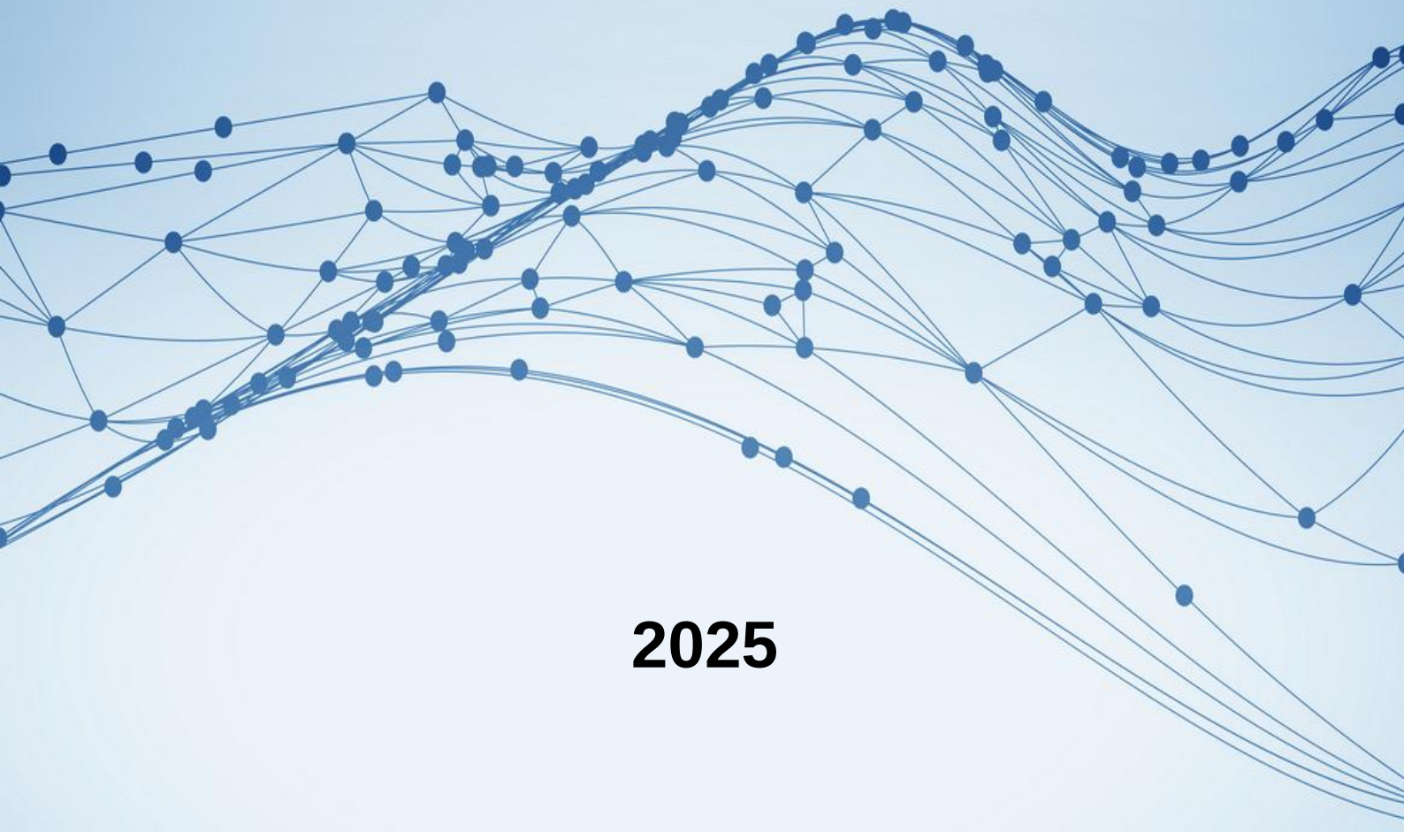

2025

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1 INTRODUCTION

DEEPCLOUDLABS offers instructor-led, technical classroom training for the Information Technology industry. This is the most effective way to learn and improve technical skills. Our proven training solution helps corporates enhancing organizational capabilities through empowering their employees with technical skills. Our fully configured lab environment provides students hands-on access to applications taught in our classrooms, enabling them to learn on their schedules. Our mentoring service helps students to learn at their own pace with our highly skilled instructors in their workplace.

ABOUT DEEPCLOUDLABS

DEEPCLOUDLABS is an innovation company with Research and Development teams that focus on all aspects of the following topics.

- Cloud Computing
- Big Data Analytics
- Artificial Intelligence and Machine Learning
- Image and Video Analytics
- Blockchain and Cryptocurrency
- Algorithmic and High-Frequency Trading
- Project Management and Software Process Enhancement

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DEEPCLOUDLABS Services provide access to the talent and systems you need to innovate faster and deliver real business value. We offer a full range of professional services:

- **CONSULTING: DEEPCLOUDLABS** provides advice, expertise, and consulting services for Blockchain Technology, AI-Machine Learning, and Software Development.
- **CORPORATE TRAINING: DEEPCLOUDLABS** provides hands-on training for real-world problems. We offer in-house and external corporate training and teaching seminars, workshops, and talks.
- **RESEARCH & DEVELOPMENT: DEEPCLOUDLABS** can help you study new concepts around Data Analytics, AI-Machine Learning, and Blockchain Technologies.
- **SOFTWARE DEVELOPMENT:** Agile implementation of advanced Big Data Analytics applications. Increase accuracy and productivity using cognitive technology to process data.
- **OUTSOURCED DEVELOPERS:** Hire our talented developers for a certain period.

Our engineering team has been comprised of great individuals with Ph.D. and M.Sc. degrees and engineering experience, capable of making innovations and transforming these innovations into products.

2 OUR TRAINING COURSES AND CONSULTANCY REFERENCES

Companies we have delivered **TRAINING COURSES** and **CONSULTANCY** services:

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Companies we have delivered **TRAINING COURSES** and **CONSULTANCY** services:

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3 TRAINING COURSES OVERVIEW

DEEPCLOUDLABS offers training in the following fields:

- **ARTIFICIAL INTELLIGENCE & MACHINE LEARNING TRAINING COURSES**

Course Code	Course Title	Duration (Days)
DCL-160	Python Programming	4
DCL-162	Advanced Python Programming	3
DCL-400	Big Data Essentials	3
DCL-402	Data Analytics using Python	3
DCL-410	Practical Machine Learning using Python	4
DCL-422	Deep Learning for Computer Vision	4
DCL-424	Deep Learning for Medical Image Analysis	4
DCL-426	Deep Learning with PyTorch	4
DCL-428	Deep Learning with TensorFlow	4
DCL-430	Foundation of Deep Learning with Backbone Architecture Papers	4
DCL-432	Deep Learning with Backbone Learning Paradigm Papers	4
DCL-434	Introduction to Generative AI with Python	3
DCL-436	Advanced Generative AI with Python	4
DCL-438	Introduction to ChatGPT	2
DCL-440	Introduction to Image Generation with Stable Diffusion	2
DCL-460	Edge Computing: Deployment & Inference with NVIDIA Jetson	4

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- **TRAINING COURSES FOR EXECUTIVES**

Course Code	Course Title	Duration (Days)
DCL-450	Big Data and Artificial Intelligence for Executives	1
DCL-452	Cloud computing and Microservice Architecture for Executives	1

- **JAVA SE TRAINING COURSES**

Course Code	Course Title	Duration (Days)
DCL-200	Java Performance Tuning and Optimization	3
DCL-204	Java SE 21 Programming	5
DCL-208	Clean Architecture and Code (Java SE and Spring Boot)	3
DCL-210	Advanced Java Programming	3
DCL-215	Test Driven Development with JUnit 5	3
DCL-220	OOP Principles and Design Patterns with Java SE 21	2
DCL-235	Effective Java Programming	3
DCL-252	New Features in Java SE 8-21	2

- **SPRING TRAINING COURSES**

Course Code	Course Title	Duration (Days)
DCL-168	Kotlin Programming	3
DCL-370	Spring Framework 6	4
DCL-374	Developing Spring Boot 3 Applications	3
DCL-376	Spring Data	3

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- **MICROSERVICE TRAINING COURSES**

Course Code	Course Title	Duration (Days)
DCL-350	Implementing Microservices Architecture using Spring Cloud	5
DCL-352	Domain-Driven Design Essentials	2
DCL-355	Microservices Patterns with examples in Java and Spring	2
DCL-356	Cloud Architecture Patterns	2
DCL-358	Implementing Event-Driven Microservices Architecture using Spring Boot and Apache Kafka	3
DCL-380	Apache Kafka: Architecture and Development	2
DCL-382	RabbitMQ: Architecture and Administration	2

- **JAVASCRIPT TRAINING COURSES**

Course Code	Course Title	Duration (Days)
DCL-302	Node.js Programming	3
DCL-304	Advanced JavaScript Programming	3
DCL-305	Developing Angular Applications	3
DCL-306	Developing React Applications	3
DCL-318	Developing Vue 3 Applications	3

- **JAKARTA EE TRAINING COURSES**

Course Code	Course Title	Duration (Days)
DCL-342	Jakarta Persistence 3.2	3
DCL-364	Best Practices in Jakarta EE 11	3
DCL-390	Developing Enterprise Applications on Jakarta EE 11	4

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- **C/C++ TRAINING COURSES**

Course Code	Course Title	Duration (Days)
DCL-100	C Programming	4
DCL-112	Object-Oriented Programming using C++20	4
DCL-113	Functional Programming in C++20	2
DCL-115	Multi-Threaded Programming in C++20	3
DCL-140	Linux System Programming	4

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4 BIG DATA AND MACHINE LEARNING TRAINING COURSES

Course Code	Course Title	Duration (Days)
DCL-160	Python Programming	4
DCL-162	Advanced Python Programming	3
DCL-400	Big Data Essentials	3
DCL-402	Data Analytics using Python	3
DCL-410	Practical Machine Learning using Python	4
DCL-422	Deep Learning for Computer Vision	4
DCL-424	Deep Learning for Medical Image Analysis	4
DCL-426	Deep Learning with PyTorch	4
DCL-428	Deep Learning with TensorFlow	4
DCL-430	Foundation of Deep Learning with Backbone Architecture Papers	4
DCL-432	Deep Learning with Backbone Learning Paradigm Papers	4
DCL-434	Introduction to Generative AI with Python	3
DCL-436	Advanced Generative AI with Python	4
DCL-438	Introduction to ChatGPT	2
DCL-440	Introduction to Image Generation with Stable Diffusion	2
DCL-460	Edge Computing: Deployment & Inference with NVIDIA Jetson	4

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4.1 Python Programming

Course Code : DCL-160
Course Title : Python Programming
Duration : 4 Days

Course Overview

This course introduces Python programming. The main goal of this course is to become a Python programmer, to truly understand basics of Python, data structures, conditionals, loops, variables, file operations, functions, and usage of Python Standard Library modules.

DCL-160 is suitable for beginners to programming and Python and minimal prior programming exposure may be helpful but not needed for this course.

Course Modules

Module 1 - Introduction to Programming and Basics of Python

Module 2 - Variables and Expressions

Module 3 - Python Data Types

Module 4 - Conditional Control Statements

Module 5 - Loop Control Statements

Module 6 - Defining Functions for Code Reuse

Module 7 - Error and Exception Handling

Module 8 - File Operations

Module 9 - Object Oriented Programming

Module 10 - Modules and Packages

Module 11 - Python Standard Library

Module 12 - Python Projects: Use Case Examples

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4.2 Advanced Python Programming

Course Code : DCL-162
Course Title : Advanced Python Programming
Duration : 3 Days

Course Overview

This training picks up where Python Programming left off, covering some topics in more detail and adding new ones. For instance, classes are covered in greater detail, functional programming, file data, unit testing, database connectivity, writing RESTful services, and implementing event-driven architecture using Apache Kafka.

Course Modules

Module 1 - Object-Oriented Programming in Python

Module 2 - Functional Programming in Python

Module 3 - Unit Testing in Python using PyTest

Module 4 - File Operations in Python

Module 5 - XML Processing in Python

Module 6 - Thread Programming

Module 7 - MySQL Programming in Python

Module 8 - MongoDB Programming in Python

Module 9 - Introduction Web Architectures

Module 10 - Designing and implementing RESTful services in Python using Flask

Module 11 - Event-Driven Architecture using Apache Kafka

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4.3 Big Data Essentials

Course Code : DCL-400
Course Title : Big Data Essentials
Duration : 3 Days

Course Modules

Module 1 – Understanding Big Data
Module 2 – Understanding Hadoop
Module 3 – HDFS
Module 4 – MapReduce
Module 5 – Hadoop Ecosystem
Module 6 – Planning Hadoop Cluster
Module 7 – Hadoop Installation
Module 8 – Managing Jobs
Module 9 – Apache Hive
Module 10 – Apache Spark
Module 11 – Apache Spark SQL
Module 12 – Apache Spark Streaming
Module 13 – Data Science
Module 14 – Machine Learning
Module 15 – Machine Learning with Spark

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4.4 Data Analytics using Python

Course Code : DCL-402
Course Title : Data Analytics using Python
Duration : 3 Days

Course Modules

Module 1 - Python Language Basics

Module 2 - Built-in Data Structures, Functions, and Files

Module 3 - NumPy Basics: Arrays & Vectorized Computation

Module 4 - Pandas

Module 5 - Data Loading, Storage, and File Formats

Module 6 - Data Cleaning and Preparation

Module 7 - Data Wrangling: Join, Combine, and Reshape

Module 8 - Plotting and Visualization

Module 9 - Data Aggregation and Group Operations

Module 10: Data Analytics Practices with Real World Data

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4.5 Practical Machine Learning using Python

Course Code : DCL-410
Course Title : Practical Machine Learning using Python
Duration : 3 Days

Course Modules

Module 1 - Introduction to Machine Learning

Module 2 - Machine Learning Project

Module 3 - Classification

Module 4 - Training Models

Module 5 - Support Vector Machines

Module 6 - Decision Trees

Module 7 - Ensemble Learning and Random Forests

Module 8 - Dimensionality Reduction

Module 9 - Unsupervised Learning Techniques

Module 10 - Introduction to Artificial Neural Networks

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4.6 Deep Learning for Computer Vision

Course Code : DCL-422
Course Title : Deep Learning for Computer Vision
Duration : 3 Days

Course Modules

Module 1 - Fundamentals of Machine Learning

Module 2 - Introduction to Deep Learning

Module 3 - Introduction to Computer Vision

Module 4 - Open Datasets for Computer Vision Tasks

Module 5 - Python Review for Deep Learning

Module 6 - Basics of Deep Learning Frameworks (PyTorch or TensorFlow)

Module 7 - Convolutional Neural Networks

Module 8 - Fundamental Model Development Pipeline

Module 9 - Pre-trained Models, Transfer Learning and Fine-Tuning

Module 10 - Image Classification

Module 11 - Object Detection

Module 12 - Semantic Segmentation

Module 13 - Image Generation

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4.7 Deep Learning for Medical Image Analysis

Course Code : DCL-424
Course Title : Deep Learning for Medical Image Analysis
Duration : 3 Days

Course Modules

Module 1 - Fundamentals of Machine Learning

Module 2 - Introduction to Deep Learning

Module 3 - Open Datasets for Medical Imaging Tasks

Module 4 - Python Review for Deep Learning

Module 5 - Basics of Deep Learning Frameworks (PyTorch or TensorFlow)

Module 6 - Convolutional Neural Networks

Module 7 - Medical Image Processing

Module 8 - Fundamental Model Development Pipeline (using Medical Image Data)

Module 9 – Pre-trained Models, Transfer Learning and Fine-Tuning

Module 10 - Medical Image Classification (Chest X-ray)

Module 11 - Medical Image Segmentation (CT)

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4.8 Deep Learning with PyTorch

Course Code : DCL-426
Course Title : Deep Learning with PyTorch
Duration : 4 Days

Course Modules

Module 1: Short Review of Machine Learning

Module 2: Introduction to Deep Learning

Module 3: Basics of PyTorch

Module 4: Training Deep Neural Networks

Module 5: Convolutional Neural Networks

Module 6: Deep Sequence Modeling

Module 7: Generative AI

Module 8: Computer Vision Applications

Module 9: Natural Language Processing Applications

Module 10: Serving Deep Learning Model

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4.9 Deep Learning with TensorFlow

Course Code : DCL-428
Course Title : Deep Learning with TensorFlow
Duration : 4 Days

Course Modules

Module 1: Short Review of Machine Learning

Module 2: Introduction to Deep Learning

Module 3: Basics of TensorFlow

Module 4: Training Deep Neural Networks

Module 5: Convolutional Neural Networks

Module 6: Deep Sequence Modeling

Module 7: Generative AI

Module 8: Computer Vision Applications

Module 9: Natural Language Processing Applications

Module 10: Serving Deep Learning Model

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4.10 Foundation of Deep Learning with Backbone Architecture Papers

Course Code : DCL-430
Course Title : Foundation of Deep Learning with Backbone Architecture Papers
Duration : 3 Days

Course Overview

This training aims to get trainees gained hands-on experience with backbone papers of deep learning as well as theoretical foundations of these papers.

Trainees will have a solid understanding of commonly used architectures, how to implement them from scratch and be familiar with various datasets used for computer vision & image recognition. They will also become proficient in PyTorch.

Course Modules

Module 1 - Introduction to Deep Learning

Module 2 - Python Review for Deep Learning

Module 3 - Intensive PyTorch Training

Module 4 - Visualizing and Understanding Convolutional Networks

Module 5 - AlexNet

Module 6 - VGG Net

Module 7 - Res Net

Module 8 - Dense Net

Module 9 - U-Net

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4.11 Deep Learning with Backbone Learning Paradigm Papers

Course Code : DCL-432
Course Title : Deep Learning with Backbone Learning Paradigm Papers
Duration : 3 Days

Course Overview

This training aims to get trainees to gain hands-on experience with different applications of deep learning from natural language processing, computer vision and image generation to advanced CNN features and various learning paradigms.

Trainees will have a broad view of deep learning and do the best practice. They will also gain a deep Pytorch knowledge.

Course Modules

Module 1 - Fundamentals of Machine Learning

Module 2 - Introduction to Deep Learning

Module 3 - Intensive PyTorch Training

Module 4 - Object Detection with YOLO

Module 5 - Attention Is All You Need

Module 6 - Sequence to Sequence Learning with Neural Networks

Module 7 - Image Generation with DCGAN

Module 8 - FaceNet & Metric Learning

Module 9 - Prototypical Networks for Few-shot Learning

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4.12 Introduction to Generative AI with Python

Course Code : DCL-434
Course Title : Introduction to Generative AI with Python
Duration : 3 Days

Course Modules

Module 1: Introduction to Generative AI

Module 2: Python Review for Generative AI

Module 3: Variational Autoencoders (VAEs)

Module 4: Generative Adversarial Networks (GANs)

Module 5: Transformer Neural Networks

Module 6: Diffusion Models

Module 7: Prompt Engineering

Module 8: Text Generation

Module 9: Image Generation

Module 10: Using Large Pretrained Models

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4.13 Advanced Generative AI with Python

Course Code : DCL-436
Course Title : Advanced Generative AI with Python
Duration : 4 Days

Course Modules

Part 1: Introduction and Review

Module 1: Introduction to Generative AI

Module 2: Python Review for Generative AI

Part 2: Deep Generative Modeling Methods

Module 3: Variational Autoencoders (VAEs)

Module 4: Generative Adversarial Networks (GANs)

Module 5: Autoregressive Models

Module 6: Transformer Neural Networks

Module 7: Diffusion Models

Part 3: Generative AI Applications

Module 8: Prompt Engineering

Module 9: Text Generation with Transformer Neural Networks

Module 10: Image Generation with Multimodal Models

Module 11: Audio and Music Generation

Module 12: Using Large Pretrained Models

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4.14 Introduction to ChatGPT

Course Code : DCL-438
Course Title : Introduction to ChatGPT
Duration : 2 Days

Course Modules

Part 1: Introduction:

Module 1: Introduction to Generative AI

Module 2: General Introduction to ChatGPT

Module 3: Generative AI Ethics

Part 2: Using ChatGPT for Productivity and Efficiency

Module 4: Prompt Engineering

Module 5: Using ChatGPT as a Personal Assistant

Module 6: Using ChatGPT for Software Development

Module 7: Using ChatGPT for Problem Solving

Module 8: Using ChatGPT for Creative Ideas

Module 9: Using ChatGPT for Researching

Part 3: OpenAI ChatGPT API

Module 10: Introduction to OpenAI ChatGPT API

Module 11: Building Applications with ChatGPT using Your Own Documents

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4.15 Introduction to Image Generation with Stable Diffusion

Course Code : DCL-440
Course Title : Introduction to Image Generation with Stable Diffusion
Duration : 2 Days

Course Modules

Module 1: Introduction to Generative AI

Module 2: General Introduction to Stable Diffusion

Module 3: Generative AI Ethics

Module 4: Prompt Engineering

Module 5: Introduction to Stable Diffusion WebUI

Module 6: Text-to-Image Generation

Module 7: Image-to-Image Generation

Module 8: Controlling Image Generation

Module 9: Image Inpainting and Outpainting

Module 10: Styling Images

Module 11: Text-to-Video Generation

Module 12: Useful Stable Diffusion WebUI Extensions

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4.16 Edge Computing: Deployment & Inference with NVIDIA Jetson

Course Code : DCL-460
Course Title : Edge Computing: Deployment & Inference with NVIDIA Jetson
Duration : 3 Days

Course Overview

This training introduces the NVIDIA Jetson Nano Development Kit which is small, powerful and capable of employing deep neural networks in parallel. First, an introduction to deep learning with a well-known Python framework will be made. Then, the NVIDIA Jetson Nano Kit will be explored through the fundamentals, system setup and comprehensive edge computing modules.

Moreover, practical applications and possible future research directions will be covered as well in order to prepare you for the real-world problems.

Course Modules

Module 1 - Fundamentals of Machine Learning

Module 2 - Introduction to Deep Learning

Module 3 - Python Review for Deep Learning

Module 4 - Introduction to Nvidia Jetson Nano

Module 5 - Nvidia Jetson System Setup

Module 6 - Nvidia Jetson Model Deployment

Module 7 - Nvidia Jetson Inference

Module 8 - Edge Computing with Nvidia Jetson

Module 9 - Computer Vision Applications on Nvidia Jetson

Module 10 - Future Directions with Nvidia Jetson

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5 TRAINING COURSES FOR EXECUTIVES

PROGRAM OUTLINE

Course Code	Course Title	Duration (Days)
DCL-450	Big Data and Artificial Intelligence for Executives	1
DCL-452	Cloud computing and Microservice Architecture for Executives	1

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5.1 Big Data and Artificial Intelligence for Executives

Course Code : DCL-450
Course Title : Big Data and Artificial Intelligence for Executives
Duration : 1 Day

Course Overview

Governments recognize big data and AI as a system change, transforming what organizations do and how they do it. This creates challenging tasks for executives and managers. Training suitable for all senior managers seeking basic data and AI literacy. You will also learn and practice creative data-driven strategies to enhance decision making across every facet of your organization:

- Uncover hidden or unexpected connections, correlations, patterns, and trends to drive better decisions.
- Apply design thinking and Agile methodologies to develop big data solutions that are usable and deliver value.
- Explore the future of big data, machine learning, and artificial intelligence.

Recommended Audience

C-Level and D-Level Executives.

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5.2 Cloud computing and Microservice Architecture for Executives

Course Code : DCL-452
Course Title : Cloud computing and Microservice Architecture for Executives
Duration : 1 Day

Course Overview

This course will teach you what cloud computing is, why and how to adopt a microservices architecture for your own applications. You will find the answers for the following questions:

- What is Cloud Computing?
- What are the challenges of Architecting Software for the Cloud?
- What Are Microservices?
- What Problems Do Microservices Solve?
- How Can Microservices Help?
- What Does a Typical Microservices Architecture Look Like?
- What Are Some Challenges of Microservices?
- What Tools and Technologies Do I Need?
- How Can I Successfully Lead a Microservices Project?

Recommended Audience

IT Directors, Technology Department Directors, Technology Project Managers, Project Managers.

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6 JAVA SE TRAINING COURSE

Overview: Java Platform, Standard Edition lets you develop and deploy Java applications on desktops and servers. Java offers the rich user interface, performance, versatility, portability, and security that today's applications require. Our development team uses Java in projects. We offer comprehensive training on the latest Java technology developed in collaboration with our development team.

PROGRAM OUTLINE

Course Code	Course Title	Duration (Days)
DCL-200	Java Performance Tuning and Optimization	3
DCL-204	Java SE 24 Programming	5
DCL-208	Clean Architecture and Code (Java SE and Spring Boot)	3
DCL-210	Advanced Java Programming	3
DCL-215	Test Driven Development with JUnit 5	3
DCL-220	OOP Principles and Design Patterns with Java SE 24	3
DCL-235	Effective Java Programming	3
DCL-252	New Features in Java SE 8-24	2

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6.1 Java Performance Tuning and Optimization

Course Code : DCL-200
Course Title : Java Performance Tuning and Optimization
Duration : 3 Days

Course Overview

At the completion of this course, you should be able to describe basic principles of performance, monitor operating system performance on Linux, and Windows, monitor performance at the JVM and application level, profile the performance of a Java application, describe various garbage collection schemes, tune garbage collection in a Java application, apply basic performance tuning principles to a Java application, tune the performance of a Java application at the language level, apply best practices for performance testing.

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Course Modules

Module 1 - JVM Overview and Performance Methodology

Module 2 - Monitoring Operating System Performance

Module 3 - Monitoring JVM and JIT Performance

Module 4 - Profiling (JVisualVM/MissionControl)

Module 5 - Garbage Collection Schemes

Module 6 - Garbage Collection Tuning

Module 7 - Language and GC Concerns

Module 8 - Performance Tuning at Language Level

Module 9 - Performance Tuning at API Level

Module 10 - Benchmarking Java Applications

Module 11 - Maximizing Performance with GraalVM and Quarkus

6.2 Java SE 24 Programming

Course Code : DCL-204
Course Title : Java SE 24 Programming
Duration : 5 Days

Course Overview

Java SE 24 Programming training covers the core language features and Application Programming Interfaces (API) you will use to design object-oriented applications with Java Standard Edition 24 Platform.

Course Modules

Module 1 - Java Platform Overview

Module 2 - Java Syntax and Class Review

Module 3 - Encapsulation and Sub-classing

Module 4 - Overriding Methods, Polymorphism, and Static Classes

Module 5 - Abstract and Nested Classes

Module 6 - Interfaces and Lambda Expressions

Module 7 - Module System

Module 8 - Collections and Generics

Module 9 - Collections Streams, and Filters

Module 10 - Lambda Built-in Functional Interfaces

Module 11 - Lambda Operations

Module 12 - Exceptions and Assertions

Module 13 - Java Date/Time API

Module 14 - I/O Fundamentals and NIO.2

Module 15 - Concurrency API

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6.3 Clean Architecture and Code (Java SE and Spring Boot)

Course Code : DCL-208
Course Title : Clean Architecture and Code (Java SE and Spring Boot)
Duration : 3 Days

Course Modules

Module 1 – Introduction to Software Architectures
Module 2 – Introduction to Clean Architecture
Module 3 – SOLID Principles
Module 4 – Clean Architecture Components
Module 5 – Introduction to Clean Code
Module 6 – Meaningful Names
Module 7 – Functions
Module 8 – Comments
Module 9 – Formatting
Module 10 – Objects and Data Structures
Module 11 – Error Handling
Module 12 – Boundaries
Module 13 – Clean Test
Module 14 – Clean Concurrency

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6.4 Advanced Java Programming

Course Code : DCL-210
Course Title : Advanced Java Programming
Duration : 3 Days

Course Overview

The main goal of this training is to become a better Java programmer and a true master of the Java Programming Language, to truly understand threading, Java NIO, to understand the intricacies of Java memory model to improve the performance of your Java application.

Course Modules

Module 1 - Annotations and Reflection API

Module 2 - Collection API, Stream API, Flow API

Module 3 - XML Processing

Module 4 - RMI and Distributed Programming

Module 5 - JMX and Programming MBeans

Module 6 - Threads and Concurrent Programming

Module 7 - Database Programming: JDBC, JPA, JTA

Module 8 - NIO and NIO2

Module 9 - Networking (Non-Blocking Sockets, Selector)

Module 10 - Security: Digital Signatures, Message Digests, Symmetric/Asymmetric Ciphers

Module 11 - New Language Features in Java 8-24

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6.5 Test-Driven Development with JUnit 5

Course Code : DCL-215
Course Title : Test-Driven Development with JUnit 5
Duration : 3 Days

Course Overview

JUnit is a unit testing framework for the Java programming language. JUnit has been important in the development of test-driven development. In this training, the student will get a deep understanding of JUnit and will be able to use and execute test frameworks, test cases for Java programs.

Course Modules

Module 1 - Java SE 8-24: New Features Boot Camp

Module 2 - Introduction to JUnit 5

Module 3 - Unit Testing with JUnit 5

Module 4 - Microservice Architecture, Domain-Driven Design, Hexagonal Architecture

Module 5 - Test-Driven Development

Module 6 - Test Doubles: Dummy Object, Stub, Spies, Mocking

Module 7 - Testing Strategies in Microservice Architecture

Module 8 - Spring Boot Testing

Module 9 - Guidelines for Testable Design (Java SE 24, Spring Framework 6)

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6.6 Object-Oriented Programming Principles and Design Patterns with Java SE 24

Course Code : DCL-220
Course Title : Object-Oriented Programming Principles and Design Patterns with Java SE 24
Duration : 3 Days

Course Overview

This course provides an overview of all the Gang of Four (GoF) design patterns as outlined in their seminal book, together with modern-day variations, adjustments, discussions of intrinsic use of patterns in the Java language.

Course Modules

Module 1 - Object Design Fundamentals

Module 2 - OOP Principles and Design Patterns

Module 3 - Interface Patterns: Adapter, Facade, Composite, Bridge

Module 4 - Responsibility Patterns: Singleton, Observer, Mediator, Proxy, Responsibility, Flyweight

Module 5 - Construction Patterns: Builder, Factory Method, Abstract Factory, Prototype, Memento

Module 6 - Operation Patterns: Template Method, State, Strategy, Command, Interpreter

Module 7 - Extension Patterns: Decorator, Iterator, Visitor

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6.7 Effective Java Programming

Course Code : DCL-235
Course Title : Effective Java Programming
Duration : 3 Days

Course Modules

Module 1 – Creating and Destroying Objects

Module 2 - Methods common to all objects

Module 3 - Classes and Interfaces

Module 4 - Generics

Module 5 - Enums and Annotations

Module 6 - Lambdas and Streams

Module 7 - Methods

Module 8 - General Programming

Module 9 - Exceptions

Module 10 - Concurrency

Module 11 - Serialization

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6.8 New Features in Java SE 8-21

Course Code : DCL-250
Course Title : New Features in Java SE 8-24
Duration : 2 Days

Course Overview

This training summarizes features and enhancements in Java SE 8-24.

Course Modules

Module 1 - Language Changes (Java SE 7-24)

Module 2 - JVM Changes (Java SE 7-24)

Module 3 - Changes in APIs (Java SE 8-24)

Module 4 - Using Lambda Expressions and Method Enhancements (Java SE 8)

Module 5 - Collections and Streams API (Java SE 8-24)

Module 6 - Using the New Date and Time API (Java SE 8)

Module 7 - Miscellaneous New Features (Java SE 8-24)

Module 8 - Module System (Java SE 9)

Module 9 – Reactive Programming (Java SE 9)

Module 10 - New Language Features in Java SE 9-24

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7 SPRING TRAINING COURSES

Overview: Spring technologies help you to build enterprise applications that are scalable, mobile, secure and robust. Our Spring Framework training empowers software developers to solve concrete business problems by mapping application-level issues to Spring-centric solutions.

PROGRAM OUTLINE

Course Code	Course Title	Duration (Days)
DCL-168	Kotlin Programming	3
DCL-370	Spring Framework 6	4
DCL-374	Developing Spring Boot 3 Applications	3
DCL-376	Spring Data	3

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7.1 Kotlin Programming

Course Code : DCL-168
Course Title : Kotlin Programming
Duration : 3 Days

Course Modules

Module 1 - Introduction to Kotlin

Module 2 - Control flow

Module 3 - Classes and Objects

Module 4 - Collections Framework

Module 5 - Getting started with Functional Programming

Module 6 - Functions – Function Types and Side Effects

Module 7 - Lambda, Generics, Recursions, Correcursion

Module 8 - Delegates in Kotlin

Module 9 - Asynchronous processing with Coroutines

Module 10 - Collections and Data Operations in Kotlin

Module 11 - Functional Programming, OOP, and Reactive Programming

Module 12 - Monads, Functors and Applicatives

Module 13 - Working with Streams

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7.2 Spring Framework 6

Course Code : DCL-370
Course Title : Spring Framework 6
Duration : 4 Days

Course Overview

This training presents hands-on experience with Spring and its major features, including configuration, data access, web and REST applications, Spring Boot, Spring Security and Spring Boot to build enterprise-ready applications.

Course Modules

Module 1 - Introduction to Spring: Inversion of Control and Containers

Module 2 - Bean Configuration

Module 3 - Dynamic Proxy and Spring AOP

Module 4 - Spring Boot

Module 5 - Spring JDBC Template

Module 6 - Spring Transaction

Module 7 - Spring ORM

Module 8 - Spring Data

Module 9 - Spring REST

Module 10 - Spring Testing

Module 11 - Spring Web Services

Module 12 - Spring Security

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7.3 Developing Spring Boot 3 Applications

Course Code : DCL-374
Course Title : Developing Spring Boot 3 Applications
Duration : 3 Days

Course Overview

This training presents hands-on experience with Spring and its core features, including configuration, data access, web and REST applications, and Spring Boot to build enterprise-ready applications.

Course Modules

Module 1 - Introduction to Spring Boot

Module 2 - Spring Boot Auto-Configuration and Features

Module 3 - Spring Boot Essentials

Module 4 - Building REST APIs Using Spring Boot

Module 5 - Spring Data with Spring Boot

Module 6 - Spring Testing with Spring Boot

Module 7 - Spring Security with Spring Boot

Module 8 - Spring Messaging with Spring Boot

Module 9 - Health Monitoring with Spring Boot Actuator

Module 10 - Deploying Spring Boot Applications

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7.4 Spring Data

Course Code : DCL-376
Course Title : Spring Data
Duration : 3 Days

Course Overview

Hibernate is the most popular object-relational mapping framework and the most used JPA provider. Hibernate maps our java classes to database tables. Spring data JPA makes it super easy to use powerful features of Hibernate by removing all the configuration and use of low-level APIs. Spring Data makes it possible to remove the DAO implementations entirely.

Course Modules

Module 1 - Core Spring and Spring Boot Review

Module 2 – Spring Data JDBC

Module 3 - Introduction to the Java Persistence API

Module 4 - Modeling Relational Databases with JPA Entities

Module 5 - Working with the Entity Manager

Module 6 - Persisting Enums and Collections

Module 7 - Java Persistence Query Language

Module 8 - Mapping Stored Procedures

Module 9 - Criteria API

Module 10 - Entity Inheritance Relationships

Module 11 - Spring ORM

Module 12 - Spring Transaction

Module 13 - Spring Data JPA

Module 14 - Spring Data Mongo

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8 MICROSERVICE TRAINING COURSES

Course Code	Course Title	Duration
DCL-350	Implementing MicroService Architecture using Spring Cloud	5
DCL-352	Domain-Driven Design Essentials	2
DCL-355	MicroService Patterns with examples in Java and Spring	3
DCL-356	Cloud Architecture Patterns	2
DCL-358	Implementing Event-Driven MicroService Architecture using Spring Boot and Apache Kafka	3
DCL-380	Apache Kafka: Architecture and Development	2
DCL-382	RabbitMQ: Architecture and Administration	2

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8.1 Implementing Microservices Architecture using Spring Cloud

Course Code : DCL-350
Course Title : Implementing Microservices Architecture using Spring Cloud
Duration : 5 Days

Course Overview

This training will give you the tools and techniques to build, manage and deploy containerized Microservices. This course is based on Spring Framework, Spring Boot, and Spring Cloud. On the other hand, we focus on the key considerations for well-planned Microservices Architectural Design.

Course Modules

Module 1 - Introduction to Microservices Architecture

Module 2 - The Evolutionary Architecture

Module 3 - Modeling Services

Module 4 - Spring Boot Bootcamp

Module 5 - Integrating Services with Spring MVC

Module 6 - Integrating Services with Spring WebSocket

Module 7 - Spring Cloud and Microservices

Module 8 - Spring Boot Actuator

Module 9 - Spring Cloud Config

Module 10 - Service Discovery with Spring Netflix Eureka

Module 11 - Client Resiliency patterns with Resilience4j

Module 12 - Service Routing with Gateway

Module 13 - Data Integration with Spring Data

Module 14 - Data Integration with Spring Messaging

Module 15 - Distributed Logging and Tracing

Module 16 - Microservices Deployment with Docker

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8.2 Domain-Driven Design Essentials

Course Code : DCL-352
Course Title : Domain-Driven Design Essentials
Duration : 2 Days

Course Modules

Module 1 – Introduction to DDD

Module 2 – DDD: Modeling Problems in Software

Module 3 – Elements of a Domain Model

Module 4 – Aggregates in Domain-Driven Design

Module 5 – Repositories

Module 6 – Domain Events and Anti-corruption Layers

Module 7 – Extending Domain-Driven Design

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8.3 Microservices Patterns with examples in Java and Spring

Course Code : DCL-355
Course Title : Microservices Patterns with examples in Java and Spring
Duration : 3 Days

Course Modules

Module 1 - Microservices Architecture Basics

Module 2 - Application Architecture Patterns

Module 3 - Decomposition Patterns

Module 4 - Messaging style Patterns

Module 5 - Reliable Communications Patterns

Module 6 - Service Discovery Patterns

Module 7 - Transactional Messaging Patterns

Module 8 - Data Consistency Patterns

Module 9 - Business Logic Design Patterns

Module 10 - Querying Patterns

Module 11 - External API Patterns

Module 12 - Testing Patterns

Module 13 - Security Patterns

Module 14 - Cross-cutting Concerns Patterns

Module 15 - Observability Patterns

Module 16 - Deployment Patterns

Module 17 - Refactoring to Microservices Patterns

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8.4 Cloud Architecture Patterns

Course Code : DCL-356
Course Title : Cloud Architecture Patterns
Duration : 2 Days

Course Modules

Module 1 - Cloud Design Patterns

Module 2 - Scalability Primer

Module 3 - Horizontally Scaling Compute Pattern

Module 4 - Queue-Centric Workflow Pattern

Module 5 - Auto-Scaling Pattern

Module 6 - Eventual Consistency Primer

Module 7 - Map-Reduce Pattern

Module 8 - Database Sharding Pattern

Module 9 - Multi-tenancy and Commodity Hardware Pattern

Module 10 - Busy Signal Pattern

Module 11 - Node Failure Pattern

Module 12 - Network Latency Primer

Module 13 - Colocate Pattern

Module 14 - Valet Key Pattern

Module 15 - CDN Pattern

Module 16 - Multi-Site Deployment Pattern

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8.5 Implementing Event-Driven Microservices Architecture using Spring Boot and Apache Kafka

Course Code : DCL-358
Course Title : Implementing Event-Driven Microservices Architecture using Spring Boot and Apache Kafka
Duration : 3 Days

Course Modules

Module 1 - Software Architecture and Microservices

Module 2 - Event Patterns and Event-Driven Architecture

Module 3 - Designing Domain Model using Event Sourcing

Module 4 - Overview of Apache Kafka and Kafka Broker

Module 5 - Events and Commands

Module 6 - Event Sourcing and CQRS

Module 7 - Event Streams and Event Stores

Module 8 - Consistency, Concurrency, and Transactions in Event-Driven Systems

Module 9 - Implementing Event-Driven MS using Spring Boot and Apache Kafka

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8.6 Apache Kafka: Architecture and Development

Course Code : DCL-380
Course Title : Apache Kafka: Architecture and Development
Duration : 2 Days

Course Overview

This training will introduce you to Apache Kafka and provides a detailed tour of its architecture so you can develop your solution based on Apache Kafka using Java and Spring Boot.

Course Modules

Module 1 - Introduction to Apache Kafka

- Kafka Architecture
- Core Concepts and Features
- Kafka Components and Installation

Module 2 - Developing Kafka Producer

- Sending a Message Synchronously & Asynchronously in Java and Spring Boot
- Configuring Kafka Producer

Module 3 - Developing Kafka Consumer

- Creating a Kafka consumer and subscribing to Topics in Java and Spring Boot
- Configuring Kafka Consumer
- Implementing different types of commits

Module 4 - Kafka CLI

- Kafka Topic CLI
- Kafka Console Producer/Consumer CLI
- Kafka Consumer Group CLI

Module 5 - Kafka Connect

- Kafka Connect Architecture and Use-cases
- Building Data pipelines using Kafka Connect

Module 6 - Kafka Stream Processing

- Kafka Stream Architecture and Stream Processing Design Patterns
- Kafka Stream API
- Kafka Stream with Spring Boot

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8.7 RabbitMQ: Architecture and Administration

Course Code : DCL-382
Course Title : RabbitMQ: Architecture and Administration
Duration : 2 Days

Course Overview

This training provides a deep dive into how to install, configure and develop applications which leverage RabbitMQ messaging. The course begins with RabbitMQ installation and general configuration. It continues with developing messaging applications using Spring AMQP and Node.js and delves into more advanced topics including clustering, high availability, performance tuning.

Course Modules

Module 1 - Enterprise Messaging and RabbitMQ

Module 2 - Messaging Patterns in RabbitMQ

Module 3 - Administration and Configuration

Module 4 - Developing Messaging Applications using Spring AMQP and Node.js

Module 5 - Clustering

Module 6 - High Availability

Module 7 - Performance Tuning and Troubleshooting

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9 JAVASCRIPT TRAINING COURSES

Overview: Whether you want a career in front end or back-end development, it's essential that you have a solid understanding of JavaScript. This curriculum focuses on the job-ready skills in highest demand for front-end web developers, from HTML, CSS, and JavaScript, to Angular, Bootstrap, and jQuery. Students will learn, practice, and prove they have the skills employers are looking for in a series of training courses with hands-on labs.

Course Code	Course Title	Duration (Days)
DCL-302	Node.js Programming	3
DCL-304	Advanced JavaScript Programming	3
DCL-305	Developing Angular Applications	3
DCL-306	Developing React Applications	3
DCL-318	Developing Vue Applications	3

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9.1 Node.js Programming

Course Code : DCL-302
Course Title : Node.js Programming
Duration : 3 Days

Course Overview

In this training, you will learn how to build, test, and launch node applications. This training also studies how to create REST APIs using Express.js. You will study persistence using MongoDB and Mongoose API. Finally, you will develop real-time web applications using Socket.io. In the training you will use ES6-13 JavaScript.

Course Modules

Module 1 - Scalable Web Architectures

Module 2 - Server-side JS with Node.js

Module 3 - JavaScript

Module 4 - Advanced JavaScript

Module 5 – New Features in ES6-ES13

Module 6 - Writing Node Modules

Module 7 - Node Package Manger

Module 8 - MongoDB

Module 9 - Node.js and MongoDB integration

Module 10 - Express.js

Module 11 - Socket-IO

Module 12 – Reactive Programming using RxJs

Module 13 – Event-Driven Programming using Node and Apache Kafka

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9.2 Advanced JavaScript Programming

Course Code : DCL-304
Course Title : Advanced JavaScript Programming
Duration : 3 Days

Course Overview

In this training, you will learn advanced JavaScript techniques that include working with the ECMAScript 6-13. This training includes a thorough exploration of advanced objects, arrays, and functions; Training also includes reactive programming using RxJS.

Course Modules

Module 1 - Accustoming Yourself to JavaScript

Module 2 - Variable Scope

Module 3 - Working with Functions

Module 4 - Objects and Prototypes

Module 5 - Arrays and Dictionaries

Module 6 - Library and API Design

Module 7 - Concurrency

Module 8 - Functional Programming

Module 9 - Reactive Programming using RxJs

Module 10 – Event-Driven Architecture and Event-Driven Programming

Module 11 - New Features in ES6-ES13

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9.3 Developing Angular Applications

Course Code : DCL-305
Course Title : Developing Angular Applications
Duration : 3 Days

Course Overview

This training helps students to learn Angular and build responsive, enterprise-strength applications that run smoothly on desktop and mobile. Angular provides a robust framework that facilitates the development of richly interactive applications running on multiple platforms. In this training, you will gain experience building components, creating directives, modularizing applications, and building template-driven forms.

Course Modules

Module 1 - Introduction to Angular

Module 2 - Writing Applications using Angular CLI

Module 3 - TypeScript Essentials

Module 4 - Template, Binding, and Directives

Module 5 - Components

Module 6 - Services and Dependency Injection

Module 7 - RxJS and Observables

Module 8 - HTTP Service

Module 9 - Routing

Module 10 - Pipes

Module 11 - Validation Directives

Module 12 - Testing

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9.4 Developing React Applications

Course Code : DCL-306
Course Title : Developing React Applications
Duration : 3 Days

Course Overview

React is a declarative, efficient, and flexible JavaScript library for building Web Applications. It follows a component-based approach. It is easy to create smaller components and build large-scale applications. This training will teach you the core knowledge you need to deeply understand, and build React components and structure applications with Redux.

Course Modules

Module 1 - Introduction to React

Module 2 - HTML, CSS, and JSX

Module 3 - Data Flow and Life Cycle Events

Module 4 - Handling Events

Module 5 - Working with Forms

Module 6 - React Routing

Module 7 - Working with Data using Hooks Context API and Reducer

Module 8 - Working with Data using Redux

Module 9 - Performance Tuning of React Applications

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9.5 Developing Vue 3 Applications

Course Code : DCL-318
Course Title : Developing Vue 3 Applications
Duration : 3 Days

Course Overview

Vue is a JavaScript Framework for building Frontend Applications. Vue.js mixes the best features of Angular and React Frameworks. You will learn the theory behind Vue and how to use Vue to build highly interactive and large enterprise-level web applications.

Course Modules

Module 1 - Introduction to Web Architectures and Vue

Module 2 - Writing Applications in Vue using Vue-Cli

Module 3 - Writing a Component

Module 4 - Data Binding and Directives

Module 5 - State Management with Pinia

Module 6 - Vue-Router

Module 7 - Composition API

Module 8 – Working with External Data

Module 9 - Advanced Rendering, Dynamic Components, and Plugin Composition

Module 10 - Transitioning and Animation

Module 11 - Testing Vue Components

Module 12 - Server-Side Rendering in Vue

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10 JAKARTA EE TRAINING COURSES

Overview: Jakarta EE training teaches you the concepts, tools, and functions you will need to know in order to build web applications using Jakarta Enterprise Edition. By the completion of these trainings, you will have the knowledge and skills needed to create fully functional Jakarta EE applications.

Course Code	Course Title	Duration (Days)
DCL-342	Jakarta Persistence 3.1	3
DCL-364	Best Practices in Jakarta EE 10	3
DCL-390	Developing Enterprise Applications on Jakarta EE 10	4

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10.1 Jakarta Persistence 3.2

Course Code : DCL-342
Course Title : Jakarta Persistence 3.2
Duration : 3 Days

Course Overview

This training explores the Jakarta Persistence API within the context of a web-based Java Enterprise Edition application, as well as within a stand-alone Java Standard Edition application. This includes using Jakarta Persistence API with the Enterprise JavaBeans technology and Context and Dependency Injection.

Course Modules

Module 1 - Introduction to the Jakarta Persistence API

Module 2 - Working with JPA in a Jakarta EE Environment

Module 3 - Modeling Relational Databases with JPA Entities

Module 4 - Working with the Entity Manager

Module 5 - Persisting Enums and Collections

Module 6 - Creating Queries with Java Persistence Query Language

Module 7 - Using the Criteria API

Module 8 - Implementing Bean Validation with JPA

Module 9 - Applying Transactions and Locking

Module 10 - Entity Inheritance Relationships

Module 11 - Optimizing JPA Performance

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10.2 Best Practices in Jakarta EE 11

Course Code : DCL-364
Course Title : Best Practices in Jakarta EE 11
Duration : 3 Days

Course Overview

This training reviews common and emerging patterns specific to Java SDK and EE development. You'll learn the depth and evolution of pattern-based techniques in Java, with particular emphasis on Jakarta EE 10 conventions.

Course Modules

Module 1 - Reviewing Object-Oriented Principles in Java

Module 2 - Reviewing Gang of Four Patterns

Module 3 - Implementing Patterns in Java

Module 4 - Jakarta EE 11: Overview

Module 5 - Implementing Integration Patterns

Module 6 - Implementing Patterns in Business Components

Module 7 - Implementing Infrastructural Patterns in Jakarta EE 11

Module 8 - Implementing More Infrastructure Patterns

Module 9 - Exploring Anti-Patterns

Module 10 - Selecting Patterns for Architecture

Module 11 - Domain Driven Design Essentials

Module 12 - Introduction to Microservices Architecture

Module 13 - Implementing Microservices Architecture in Jakarta EE 11 using MicroProfile

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10.3 Developing Enterprise Applications on Jakarta EE 11

Course Code : DCL-390
Course Title : Developing Enterprise Applications on Jakarta EE 11
Duration : 4 Days

Course Overview

This training teaches you the skills you need to successfully build and deploy enterprise applications. You'll explore applications that comply with the Java Platform, Enterprise Edition 9 Platform.

Course Modules

Module 1 - Introduction to Jakarta EE 11 Platform

Module 2 – Servlet 6 and Java Server Pages 3.1

Module 3 - Jakarta Server Faces 4

Module 4 - Enterprise JavaBeans 4

Module 5 - Contexts and Dependency Injection 2.0

Module 6 – Concurrency 3.0

Module 7 - Bean Validation 3.0

Module 8 - Java Persistence 3.1

Module 9 - Java Transaction 2.0

Module 10 - Java Message Service 3.1

Module 11 - Batch Processing 2.1

Module 12 - Jakarta Restful Web Services: JAX-RS 4

Module 13 - Jakarta XML Web Services 4.0

Module 14 - JSON-P 2.1 and JSON-B 3.0

Module 15 - WebSocket 2.1

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11 C/C++ TRAINING COURSES

Overview: Even with the rise of more modern programming languages, C/C++ remains the most popular language in the world. C/C++ code is platform independent and found in almost every OS. Developers fluent in this language can produce a wide variety of applications for embedded systems, mobile devices, games and much more.

PROGRAM OUTLINE

Course Code	Course Title	Duration (Days)
DCL-100	C Programming	3
DCL-112	Object-Oriented Programming using C++23	4
DCL-113	Functional Programming in C++23	2
DCL-115	Multi-Threaded Programming in C++23	3
DCL-140	Linux System Programming	4

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11.1 C Programming

Course Code : DCL-100
Course Title : C Programming
Duration : 3 Days

Course Overview

This course introduces you to the basics of programming in C. You will learn how to work with data, how to control program flow, and how to use functions. You will also learn how to create data structures, how to build complex C programs and how to run them.

Course Modules

Module 1 - Introduction to Computing

Module 2 - Basic C Constructs

Module 3 - Selection

Module 4 - Repetition

Module 5 - Derived DataTypes

Module 6 - Arrays and Strings

Module 7 - Multidimensional Arrays

Module 8 - Functions

Module 9 - Pointers

Module 10 - File Operations

Module 11 - Preprocessor

Module 12 - Recursion

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11.2 Object-Oriented Programming using C++23

Course Code : DCL-112
Course Title : Object-Oriented Programming using C++23
Duration : 4 Days

Course Overview

This course introduces several programming paradigms including Object-Oriented Programming, Generic Programming, Functional Programming and how to use these programming schemes with the C++23 programming language to build “good” programs.

Course Modules

Module 1 - Introduction to Object-Oriented Programming

Module 2 - C++: A Better C

Module 3 - Classes and Objects

Module 4 - Constructors and Destructors

Module 5 - Operator Overloading

Module 6 - Inheritance

Module 7 - Pointers to Objects

Module 8 - Polymorphism

Module 9 - Lambda Expressions and Closure

Module 10 - Exceptions

Module 11 - Templates

Module 12 - The Standard Template Library – STL

Module 13 - Multithreading

Module 14 - Advanced I/O: C++ Streams

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11.3 Functional Programming in C++23

Course Code : DCL-113
Course Title : Functional Programming in C++23
Duration : 2 Days

Course Overview

This training is not just designed to teach the C++ programming language itself. It is also about functional programming and how it fits in with C++. Functional programming provides a different way to think about software design and a different way of programming, compared to the imperative, object-oriented styles commonly used with C++. The training is split into two parts. The first part covers functional programming idioms, and how they can be applied to C++. The second part of the training deals with more advanced concepts, mostly pertaining to functional software design.

Course Modules

Module 1 - Introduction to Functional Programming

Module 2 - Getting started with functional programming.

Module 3 - Function objects

Module 4 – Partial Functions

Module 5 – Pure Functions and Lazy evaluation

Module 6 - Ranges

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11.4 Multi-Threaded Programming in C++23

Course Code : DCL-115
Course Title : Multi-Threaded Programming in C++23
Duration : 3 Days

Course Overview

Multithreaded applications execute multiple threads in a single processor environment, allowing developers achieve concurrency. This training will teach you the finer points of multithreading and concurrency concepts and how to apply them efficiently in C++23. Divided into ten modules, we start with a brief introduction to the fundamentals of multithreading and concurrency concepts. We then take an in-depth look at how these concepts work at the hardware-level as well as how both operating systems and frameworks use these low-level functions. We will also learn about the native multithreading and concurrency support available in C++ since the 2011 revision, synchronization, and communication between threads.

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Course Modules

Module 1 - Introduction to Concurrency in C++23

Module 2 - Managing Threads

Module 3 - Sharing Data between Threads

Module 4 - Synchronizing concurrent operations

Module 5 - C++ memory model and operations on atomic types

Module 6 - Designing lock-based concurrent data structures

Module 7 - Designing lock-free concurrent data structures

Module 8 - Designing concurrent code

Module 9 - Advanced thread management

Module 10 - Parallel Algorithms: Parallel STL and Ranges

11.5 Linux System Programming

Course Code : DCL-140
Course Title : Linux System Programming
Duration : 4 Days

Course Overview

This training is designed to bring C developers up to speed with a variety of tools and capabilities of Linux. This includes development and debugging tools as well as system and library functions. You will learn

- How to use GNU tools for compiling and debugging
- How to use an integrated development environment.
- How to write POSIX Threaded applications
- How to use system calls for such things as inter-process communication, interacting with the file system, signals, time, creating a daemon and scheduling.

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Course Modules

Module 1 - Introduction to Linux Programming

Module 2 - Spawning New Tasks

Module 3 - System and Process Information

Module 4 - Files

Module 5 - Directories

Module 6 - Signals

Module 7 - Threads

Module 8 - Overview of IPC

Module 9 - Short Messages

Module 10 - Shared Memory

Module 11 - Synchronization

Module 12 - Sockets

12 BOOTCAMPS

12.1 Machine Learning Bootcamp

- Python Programming
- Advanced Python Programming
- Data Analytics using Python
- Practical Machine Learning using Python
- Deep Learning with PyTorch
- Deep Learning with TensorFlow
- Foundation of Deep Learning with Backbone Architecture Papers

12.2 Full-stack Development Bootcamp

- Java SE 21 Programming
- Developing Enterprise Applications Using Spring Framework 6
- Developing React Applications
- Implementing MicroServices Architecture using Spring Cloud

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13 CONSULTANCY SERVICES: APPLICATION DEVELOPMENT

13.1 Machine Learning Solution and Application Development

13.2 Big Data Solution and Application Development

13.3 Scalable Web Application Development

13.4 Advanced Computer Vision Solution and Application Development

13.5 Advanced Image Processing Solution and Application Development

13.6 Cloud Native Application Development

13.7 Algorithmic Trading Application Development for Stock Markets

13.8 Algorithmic Trading Application Development for Cryptocurrency Exchange Markets

13.9 Ultra-Low Latency & High Frequency Trading Application Development

13.10 Blockchain Application Development

13.11 Wallet Management Application Development for Cryptocurrencies

13.12 Cryptocurrency Exchange Platform Development

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14 CONSULTANCY SERVICES: PROJECT MANAGEMENT

14.1 Application Lifecycle Management Consultancy Service

14.2 Managing Enterprise Transition to Agile Methodologies

14.3 Key Performance Indicator (KPI) Development and Measurement

14.4 Proof of Concept Development and Project Benefits and Risks Analysis

14.5 Scrum based Project Management and Software Development

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15 PRIVATE GROUP CLASSES

DEEPCLOUDLABS offers a private group of classes that provide flexible, customizable training solutions to fit your organization's unique needs. Private training allows organizations to train an entire team or department with one unified learning experience ensuring that everyone obtains the same knowledge and skills. Courses can be delivered "off the shelf", slightly modified or completely customized to meet your organization's learning initiatives. Private training can be delivered in any of our locations, on-site at your offices, or at a location of your choice.

Contact us to learn more about our private group class options through phone call or e-mail:

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16 COMPANY INFORMATION

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