



Professional Training Services Course Description

Professional Training

Year 2014-2015

Table of Contents

Introduction.....	3
Professional Training Courses Description.....	4
UML.....	5
GUI Prototyping and Software Methodology.....	7
Telecommunications Systems and Software Applications.....	8
JAVA Technology Direction.....	10
 Introduction to JAVA Technology JINT_01.....	11
 Migration to JAVA Technology for C#.NET Developers, J2CS_01.....	13
 Implementing Database Access with JAVA Database Connectivity, JDBC_01.....	14
 Web Applications Development with JAVA Server Pages JSP_01.....	16
 Mobile Applications Development with J2ME JME_01.....	18
 Graphical User Interface Development with JAVA Swing JSW_01.....	20
 Application Development with JAVA Native Interface (JNI_01).....	22
 Course "JAVA Technology Overview" JOV_01.....	23
LINUX COURSES.....	28
 Specialized LINUX Courses.....	28
 Linux Fundamentals (LF_01).....	29
 Enterprise Linux Administration I (ELA_01).....	31
 Enterprise Linux Networking Services (ELNS_01).....	32
 Linux Network Security (LNSEC_01).....	34
The trainers short CV.....	35
 Course Language	35
 Trainer's Short Curriculum	35
 Course Schedule.....	37
 Training Material.....	37
 LAB Preparation.....	37

Introduction

The present document is ILLUMINE's training services presentation. The document is divided in the following sections:

- ³⁵₁₇ The first section describes the training courses to be offered
- ³⁵₁₇ The second Section presents the course establishment and financial proposal.

In the Second section, for each one of the offered training courses the following topics are analyzed:

- ³⁵₁₇ Abstract course description
- ³⁵₁₇ Educational Material Description – Lab needs

Professional Training Courses Description

The following training direction are introduced in the professional training offered by Illumine Consulting:

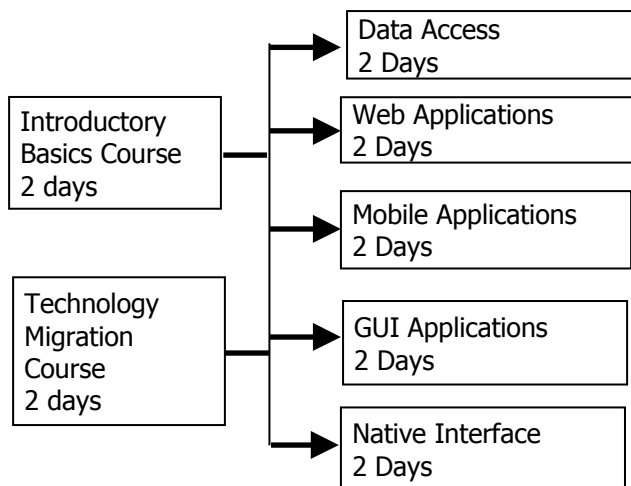
- UML (2 days)
- Specifications Writing and GUI Prototyping (2 Days)
- Telecommunications Systems and Software Applications (2-Days)
- LINUX Training
- **Custom Training for Developer Team**

For Development Specific Training two mainstream technologies are proposed:

- JAVA¹
- C# .NET²

The reason for suggesting both those two technologies is that 95% of today's Greek Software market's projects are based on one of those technologies in the development of the application's front-end.

The idea is to present a complete training path for the potential attendees ranging from the technology introductory course to solution courses focusing on a specific topic. The proposed topics to be covered from both technologies are:



¹ JAVA is a registered trademark of Oracle Microsystems

² .NET is a registered trademark of Microsoft

UML

Market needs

Unified Modeling Language is the number one tool for specification and documentation of modern O.O. Based software projects. The following training scheme is suggested:

UML Day One: Class Diagrams, Transitional Diagrams, Deployment Diagrams, Sequence Diagrams + LAB

UML Day Two: UML Methodology, Use Case Diagrams, Activity Diagrams, State Diagrams + LAB

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ UML Theory
- ³⁵/₁₇ Strengths and weakness of modeling with UML
- ³⁵/₁₇ Software Engineering using UML
- ³⁵/₁₇ Hands on experience and familiarization with modeling tools

Analytic Course Description

- **Theory:** Modeling Theory, O.O. In modeling techniques, Entities, Relations - Collaborations, Diagrams, Basic Object Oriented aspects, Code to UML, UML to code, Round trip engineering.
- **Strengths and weakness of UML:** Cost effectiveness of an extended solution, why so much time in modeling, where modeling should be used, what diagrams of UML to use depending on my problem case.
- **Hands on Experience:** Installing and using Rational Rose Argo UML, . Four cases studies will be presented.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ For the training purposes access to a Linux server with JAVA SDK is required.

Platform H/W	Intel x86 Based Workstation	Licensing
Windows	Microsoft	Required
JAVA	JAVA latest SDK	Free
IDE	Eclipse	Free

Suggested Profile of the Trainee

Each trainee should



Illumine Consulting Services
Keas 17 | 15234 | Halandri| Greece
<http://www.illumine.gr>

- Have basic previous programming experience
- be familiar with Windows Operating System
- Can be also an IT manager who wishes to explore the UML and O.O. Standards.

GUI Prototyping and Software Methodology

Market needs

One of the most difficult parts in software engineering projects is to describe the target software artifact. The emerge need of engineers to be able to read and write technical specifications made us to include this course on our training scheme, offering this way our experience to the young engineers. This 2-Day course has two objectives:

- To make the trainee confident in describing large scale systems from the functional-operational point of view.
- To make the trainee able to specify the Graphical User Interface of large scale systems.

The following training scheme is suggested:

Day One: Pseudocode and Software Methodology: How to use pseudocode to describe the functional and operational in technical documentation. + LAB

Day Two: GUI Prototyping with HTML. + LAB

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ Knowledge of how to define structured pseudo-languages
- ³⁵/₁₇ How to choose semantics that fit to the underlying technology
- ³⁵/₁₇ What obstacles can arise from mistreating of semantics
- ³⁵/₁₇ How to design effective GUI
- ³⁵/₁₇ How to describe the target GUI
- ³⁵/₁₇ How to build GUI prototypes using HTML

Analytic Course Description

- **Theory:** Semantics, Basic aspects in using pseudo code, obstacles from semantics mistreating. Aspects of modern GUI design. HTML Tags, HTTP Basic Theory
- **Hands on Experience:** Four cases studies will be analyzed and presented and the trainee will be asked to build prototypes using HTML.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications

Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	JAVA latest SDK	Free
IDE	Eclipse	Free

Suggested Profile of the Trainee

Each trainee should

- be familiar with Windows Operating System
- Elementary HTML

Telecommunications Systems and Software Applications

Market needs

This is a very specific training course, a must for the software engineer that wishes to be involved with Telecommunications. Since Telecoms is one of the most rapid development industries, technology changes occur every day this course is the absolute catch-up for the one who wishes to be involved with Telecommunications

The following topics will be covered:

Telecommunications Introductory Day One: DSL technology, GSM Technology, SS7 Technology, Introduction to IN + LAB

Telecommunications Applications Day Two: Switching and Routing, Mediation Devices, IPTV, Billing Systems, Revenue Loss, Fraud Detection, Commissioning Systems + LAB

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ Basic Theory of GSM, DSL, SS7, IN, Routing and Switching
- ³⁵/₁₇ Systems Description: Switching Elements, Routing Elements, Mediation Devices, IN Service Points
- ³⁵/₁₇ Software Applications like Soft Mediation Devices, Billing Systems, Fraud Detection, Revenue Loss and Assurance, Number Portability
- ³⁵/₁₇ Hands on experience and familiarization with some specific cases taken from real industry business.

Analytic Course Description

- **Theory:** International Numbering Plan, Number Analysis, Call Routing, Call Switching, Signaling, Number Portability, GSM, DSL, SS7 IN.
- **Software Applications:** Basic Design of a billing System, Fraud Detection System, Commissioning System, Revenue Assurance, Number Portability System
- **Hands on Experience:** Selected examples from real industry cases that have been developed from Illumine's Engineers in the past. Cases include CDR transformations, Call Analysis, VLR/HLR implementation, Basic Device Provisioning, SMPP SMS-C Client.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ For the training purposes access to a Linux server with JAVA SDK is required.

Platform H/W	Intel x86 Based Workstation	Licensing
---------------------	------------------------------------	------------------

Windows	Microsoft	Required
JAVA	JAVA latest SDK	Free
C++ Compiler & IDE	Bloodshed Dev	Free
IDE	Eclipse	Free

Database Server H/W	Linux Server	Licensing
OS	Linux with software patches	Required
JAVA	JAVA latest SDK	Free
JBOSS		Free
Database	MySQL	Free
Access	FTP/Telnet	

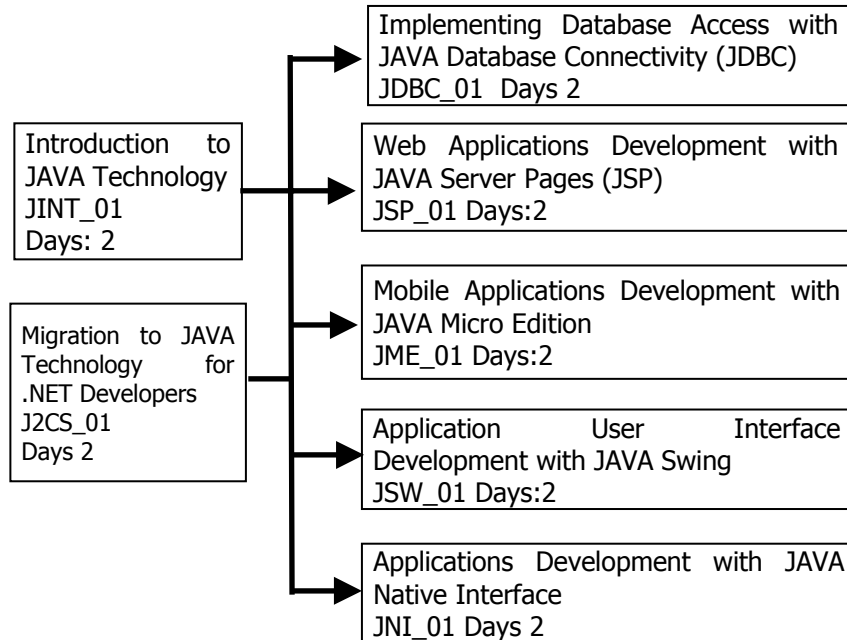
Suggested Profile of the Trainee

Each trainee should

- have previous Basic Telecommunications Basic Training
- have basic previous programming experience
- be familiar with Windows Operating System

JAVA Technology Direction

Introduced from SUN Microsystems in 1997 JAVA is one of the leading technologies in application development. The JAVA proposed training path can be illustrated in the following scheme:



Introduction to JAVA Technology JINT_01

Market needs

This course aims to present an overview of JAVA technology to professional developers. Since JAVA is one of the basics technologies used in the development process, the value of attending such a course is a must for anyone who wishes to be actively involved in modern software engineering.

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ JAVA Theory
- ³⁵/₁₇ Strengths and weakness of JAVA
- ³⁵/₁₇ The dominant topics covered by JAVA technology
- ³⁵/₁₇ Hands on experience and familiarization with development tools
- ³⁵/₁₇ Prizing and estimation of software development process using JAVA as a solution

Analytic Course Description

- **Theory:** The JAVA Virtual Machine, Platform Independence Development, JAVA Language Semantics, the JAVA Compiler, the JAVA Runtime, JAVA Libraries, Basic Object Oriented aspects.
- **Strengths and weakness of JAVA:** Platform Independence Development, Target Platform JAVA implementations, the Sandbox Security Model, Prizing in development process.
- **Topics explained:** Lab File I/O, Text Processing, Memory Placeholders and Containers, WEB Applets, Threads, Simple Database Access, XML processing
- **Hands on Experience:** Installing and using JAVA Software Development Toolkit (SDK), Choosing, Installing and Using of an Integrated Development Environment IDE, Several Examples for learning JAVA Basics, Case studies WEB Applets, Threads, Simple Database Access. IDE to be used is Eclipse.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ For the training purposes access to a Linux server with JAVA SDK is required.

Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	JAVA latest SDK	Free
IDE	Eclipse	Free , Xinox Software



Suggested Profile of the Trainee

Each trainee should

- Have basic previous programming experience
- Be familiar with Windows Operating System
- Can be also an IT manager who wishes to explore the JAVA technology

Migration to JAVA Technology for C#.NET Developers, J2CS_01

Market needs

This course aims to present an overview of JAVA technology to professional developers previously using C#.NET. Due to expensive Microsoft product licensing, professional training and certification, JAVA is the only available alternative solution technology in the software development process that has effective lower prizes while offering the same robust and confident development tools. The value of attending such a course will be a key factor to success in migrating to JAVA as an alternative solution. The C# language is the only Microsoft introduced language that has semantics very close to JAVA and as a result makes this course not only interesting but also efficient for the attendee.

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ JAVA Theory
- ³⁵/₁₇ Strengths and weakness of JAVA
- ³⁵/₁₇ The dominant topics covered by JAVA technology
- ³⁵/₁₇ Hands on experience and familiarization with development tools
- ³⁵/₁₇ Prizing and estimation of software development process using JAVA as a solution

Analytic Course Description

- **Theory:** The JAVA Virtual Machine as alternative to Microsoft's Just in Time Compiler. Common Language Runtime, JAVA Language Semantics cross-referenced to C# Semantics, the JAVA Compiler, JAVA Libraries cross-referenced with C# libraries.
- **Strengths and weakness of JAVA:** Platform Independence Development, Target Platform JAVA implementations, the Sandbox Security Model, Prizing in development process.
- **Topics explained:** File I/O, Text Processing, Memory Placeholders and Containers, WEB Applets, Threads, Simple Database Access, XML processing
- **Hands on Experience:** Installing and using JAVA Software Development Toolkit (SDK), Choosing, Installing and Using of an Integrated Development Environment IDE, Several Examples for learning JAVA Basics, Case studies WEB Applets, Threads, Simple Database Access. IDE to be used : Eclipse

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ For the training purposes access to a linux server with JAVA SDK is required.

Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	latest SDK	Free
IDE	Eclipse	Free

Suggested Profile of the Trainee

Each trainee should

- Have basic previous programming experience in C#.NET
- Be familiar with Windows Operating System
- Can be also an IT manager who wishes to explore the JAVA technology as an alternative of .NET

Implementing Database Access with JAVA Database Connectivity, JDBC_01

Market needs

This course aims to present the JAVA solution for accessing databases. Due to extended usage of JAVA in software development industry, each database provider vendor has implemented libraries for bridging his product to a JAVA based Application. Most of the offered third party component libraries are coming for free and fit with the free JAVA SDK making the attendance of this course a very good opportunity for the professional developer to adopt JAVA technology for the software development process. The course's added value is that it presents JAVA accessing two dominant Database solutions (Oracle and MySQL). Oracle is oriented in large databases while MySQL is a free database that is used from almost all low budget applications

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ JDBC Theory
- ³⁵/₁₇ Strengths and weakness of JDBC
- ³⁵/₁₇ The Components of JDBC library
- ³⁵/₁₇ Hands on experience and familiarization with development tools
- ³⁵/₁₇ Prizing and estimation of software development process using JAVA as a solution

Analytic Course Description

- **Theory:** The JDBC library, How thin clients work, Importing Database JDBC Drivers, managing connections, Converting Database types to JAVA types, Result Sets, Implementing Retrieve, Insert, Update, Delete, Calling Database Functions and Procedures.
- **Strengths and weakness of JDBC:** Driver availability, Platform Independence Development, Database Security Model, Cross Types Conversion, Performance and Code optimization, Prizing in development process.
- **Topics explained:** JAVA to Oracle, JAVA to MySql, tools for database live connectivity, tools for generating JAVA source code for database interaction.
- **Hands on Experience:** Installing and using JDBC Oracle archive, Installing and using JDBC MySQL archive, Implementation of Retrieve, Insert, Update, Delete, Calling Database Functions and Procedures for Oracle access, Implementation of Retrieve, Insert, Update, Delete, Calling Database Functions and Procedures for MySQL.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ For the training purposes access to an UX-11i server with JAVA SDK is required.

Workstation Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	latest SDK	Free
IDE	Eclipse	Free

Database Server H/W	Linux Server	Licensing
OS	RedHat Linux with software patches	Required
JAVA	latest SDK	Free
Database	Oracle DBMS MySQL DBMS	Free Free
Access	FTP/Telnet	

Suggested Profile of the Trainee

Each trainee should

- have previous basic programming experience in JAVA (prerequisite courses JINT_01, J2CS_01)
- have previous basic programming experience in SQL

Web Applications Development with JAVA Server Pages JSP_01

Market needs

This course aims to present the JAVA solution for development of WEB based applications. Dominant EU organizations like European Commission has adopted JAVA WEB technology as their basic development tool along with interoperability with other JAVA based applications implying this way the JAVA WEB solution as the only tool for subcontracting. JAVA offers an extend variety of tools to complete the development of WEB Based Applications.

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ JSP Theory, Client / Server Theory
- ³⁵/₁₇ Strengths and weakness of JSP
- ³⁵/₁₇ The Components of JSP Architecture
- ³⁵/₁₇ Hands on experience and familiarization with development tools
- ³⁵/₁₇ Pricing and estimation of software development process using JAVA as a solution

Analytic Course Description

- **Theory:** The Client Server model, 2-tier, 3-tier architectures, applications server and architecture, development WEB applications Circle, JSP library, accessing JSP pages, development of POST/GET methods, packaging and deploying JAVA Web based applications.
- **Strengths and weakness of JSP:** Supported platforms, Application Servers and servers, Performance and Code optimization, Pricing in development process.
- **Topics explained:** JAVA JSP with JBOSS interaction.
- **Hands on Experience:** Installing and using Apache Tomcat, Implementing simple JSP applications, HTML Forms processing using JSP, Development – Deployment - testing of JSP applications. Introduction to Struts or JSF (depending the attendee JAVA expertise level).

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications

Workstation Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	Latest SDK	Free
JBOSS		Free
IDE	Eclipse	Free

Database Server H/W	Linux Server	Licensing

OS	Linux	Free
JAVA	latest SDK	Free
JBOSS		Free
Database	MySQL DBMS	Free
Access	FTP/Telnet	

Suggested Profile of the Trainee

Each trainee should

- have previous basic programming experience in JAVA (prerequisite courses JINT_01, J2CS_01)
- Have previous basic experience in HTML/XML

Mobile Applications Development with J2ME JME_01

Market needs

This course aims to present the JAVA Micro Edition technology solution for development of portable applications for micro devices like mobile phones, PODs and palm tops. Since JAVA is the only standard followed by almost all mobile devices vendors, this course is probably the most valuable tool for developers wishing to get involved with mobile applications development.

Abstract Course Description

The outcome of the course is to provide the attendee with:

- JAVA Micro Edition overview
- Strengths and weakness of J2ME
- The Components of J2ME Architecture
- Hands on experience and familiarization with development tools
- Prizing and estimation of software development process using J2ME as a solution

Analytic Course Description

- **Theory:** The J2ME Architecture overview, Device Profiles MIDP, Device Configuration CLDC and CDC, the embedded micro JVM, MIDP, along with the optional Mobile Media API (MMAPI), Multimedia APIs used in mobile development and, control of the mobile device using JAVA, Midlet class, basics on simulating mobile applications.
- **Strengths and weakness of J2ME:** Supported platforms, vendors and implementers of J2ME, Midlets and the JAVA Sandbox preventing device controls, device security, Performance and Code optimization, Prizing in development process.
- **Topics explained:** J2ME SDK, J2ME Wireless Toolkit, iPAQ Pocket PC.
- **Hands on Experience:** Installing and using J2ME, JAVA Wireless Toolkit, Implementing simple Midlet applications, accessing WML pages, Internet programming using J2ME, Development – Deployment - testing of J2ME applications.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ An Hand-held device with workstation connectivity toolkit and software

Workstation Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	JAVA J2ME	Free
Development Toolkit	J2ME Wireless Toolkit	Free
Handheld	Software Drivers provided from	

Device	manufacturer	
Handheld Device		
OS	Windows ME	Required
Software Drivers		

Suggested Profile of the Trainee

Each trainee should

- have previous basic programming experience in JAVA (prerequisite courses JINT_01, J2CS_01)
- Have previous experience in using a pocket pc.
- Have previous basic experience in Bluetooth, WLAN 802.11b, Serial IR, WML/XML

Graphical User Interface Development with JAVA Swing JSW_01

Market needs

This course aims to present JAVA technology as the desktop application development tool. Since JAVA provides platform independence, adopting JAVA technology is the only solution for rapid development of platform independent applications, making this course the most valuable tool for developers wishing to get involved with cross-platform applications development.

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ JAVA Swing overview
- ³⁵/₁₇ Strengths and weakness of JAVA Swing
- ³⁵/₁₇ The Components of Swing Architecture, Event driven programming
- ³⁵/₁₇ Hands on experience and familiarization with development tools
- ³⁵/₁₇ Pricing and estimation of software development process using JAVA Swing

Analytic Course Description

- **Theory:** Swing API Architecture, introduction to the Swing Event Driven Model, Swing Components and Containers (Frames, Labels, TextFields...), How to design scalable GUIs using Swing API, packaging and installation of applications.
- **Strengths and weakness of Swing:** Supported platforms, how to make a Swing application scalable and truly platform independent. Selection of IDE that fits the development process.
- **Topics explained:** JAVA Swing API, Event Driven GUI Development.
- **Hands on Experience:** Development of several example GUIs using Swing, examples of using Swing Controls, data binding to Swing Controls, deployment - testing of JAVA Swing applications.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ Access to an UX Risk server

Workstation Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	Latest SDK	Free
Development IDE	Eclipse	Free

Database Server H/W	UX11	Licensing
OS	Linux	Free
JAVA	latest SDK	Free
Database	Oracle DBMS/MySQL DBMS	Free
Access	FTP/Telnet	

Suggested Profile of the Trainee

Each trainee should

- have previous basic programming experience in JAVA (prerequisite courses JINT_01, J2CS_01)
- Have previous experience in GUI development

Application Development with JAVA Native Interface (JNI_01)

Market needs

One of the greatest abilities of JAVA is to reuse already implemented application code written in other languages. To do so, the developer must utilize the JAVA Native Interface (JNI). The present course aims to explain this rather difficult side of JAVA to professional developers in order to assist them mastering cross – language development process.

Abstract Course Description

The outcome of the course is to provide the attendee with:

- ³⁵/₁₇ JAVA Native Interface overview
- ³⁵/₁₇ Strengths and weakness of JAVA Native Interface
- ³⁵/₁₇ Hands on experience and familiarization with development tools gcc, Bloodshed Dev
- ³⁵/₁₇ Pricing and estimation of software development process using JAVA JNI

Analytic Course Description

- **Theory:** How JAVA bytecode communicates with compiled code in static and dynamic libraries, the use of JAVA wrapper classes, calling methods implemented in C++, how to marshal and de-marshal argument parameters.
- **Strengths and weakness of JAVA JNI:** Supported platforms and languages, why platform independence is lost using JNI, how can we achieve Windows C++ running also on UNIX using POSIX C++ implementations.
- **Topics explained:** JAVA JNI.
- **Hands on Experience:** Development of several examples of methods in ANSI C++ compile them and create JAVA wrapping classes to call them. Use of JAVA header compiler. Two example cases will be illustrated, the first one deals with development over UX using aCC while the second will deal with development on Microsoft Windows using gcc.

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ Presentation Notes
- ³⁵/₁₇ Lab Notes
- ³⁵/₁₇ A workstation with the following specifications
- ³⁵/₁₇ Access to an UX Risk server

Workstation Platform H/W	Intel x86 Based Workstation	Licensing
OS	Microsoft Windows	Required
JAVA	Latest SDK	Free
Development IDE	Eclipse	Free
C++ Compiler & IDE	Bloodshed Dev	Free

Database Server H/W	Linux Server	Licensing
OS	Linux	Free
JAVA	latest SDK	Free
C++	gcc compiler	Free
Access	FTP/Telnet	

Suggested Profile of the Trainee

Each trainee should

- have previous basic programming experience in JAVA (prerequisite courses JINT_01, J2CS_01)
- Have previous experience in C++ development in Linux

Course “JAVA Technology Overview” JOV_01

Introduced from SUN Microsystems in 1997 JAVA is one of the leading technologies in application development. This JAVA course targets to introduce the attendees to Java Technology. Practically is a topic that covers the basic JAVA technology directions except Internet Applications Programming.

Market needs

This course aims to present an overview of JAVA technology to professional developers. Since JAVA is one of the basics technologies used in the development process, the value of attending such a course is a must for anyone who wishes to be actively involved in modern software engineering.

Abstract Course Description

The outcome of the course is to provide the attendee with:

- Java Language Theory, Description of Utilities package.
- Java Data Model, Collections
- Java String operations and Regular Expressions
- Java I/O Streaming Files and Streams
- Java XML Processing
- Java Concurrency
- Java Reflection
- Object Serialization
- Java Networking, Protocol Libraries
- Java Remote Method Invocation
- Database Connectivity – JDBC
- Java Native Interface

Analytic Course Description

- **Theory:** The JAVA Virtual Machine, Platform Independence Development, JAVA Language Semantics, the JAVA Compiler, the JAVA Runtime, Strengths and weakness of JAVA Theory, Platform Independence Development, Target Platform JAVA implementations, the Sandbox Security Model, Prizing in development process, JAVA Libraries, Basic Object Oriented aspects, the main directions of Java technology.
- **Specific Topics explained:** Data Types, Classes, Data Members, Methods, Error Handling and Exceptions, Memory Placeholders, Containers and Data Access, The String Class, Text Processing, , File I/O, XML Processing Xerxes Parser, DOM Model, The Run time and Threads Class, Reflection, Dynamic Object Discovery, Object Serialization, Networking Packages, TCP, IP, HTTP, Java RMI, Database Access, the JDBC package, Theory of JNI, Simple examples of JNI.
- **Hands on Experience:** Install and use JAVA Software Development Toolkit (SDK), Choose and Install and Use of an Integrated Development Environment IDE, Installation of Eclipse, Downloading Libraries and pluggin for Eclipse, use of Eclipse IDE to cover all labs on specific java topics.

1. Introduction (Java Review, IDE, Packages and Jar Basics)

- ³⁵/₁₇ IDE (Eclipse), Packages, and Jar Basics
- ³⁵/₁₇ Review Java topics, language semantics
- ³⁵/₁₇ Class introduction : data, methods, visibility, inheritance
- ³⁵/₁₇ Exceptions
- ³⁵/₁₇ String Class
- ³⁵/₁₇ String Regular Expressions
- ³⁵/₁₇ Object Serialization
- ³⁵/₁₇ Reflection API

2. A. File I/O and Streams

- ³⁵/₁₇ Streams
- ³⁵/₁₇ Various Stream classes
- ³⁵/₁₇ Using Streams
- ³⁵/₁₇ Object Streams
- ³⁵/₁₇ File Management

3. Java Concurency

- ³⁵/₁₇ What are Threads
- ³⁵/₁₇ Thread Properties
- ³⁵/₁₇ Thread States: Life Cycle of a Thread
- ³⁵/₁₇ Interrupting Threads
- ³⁵/₁₇ Thread Priorities
- ³⁵/₁₇ Thread Groups
- ³⁵/₁₇ Synchronization
- ³⁵/₁₇ Animation
- ³⁵/₁₇ Timers
- ³⁵/₁₇ Runnable Interface

4. Collections

- 35
17 Arrays
- 35
17 Collection Interfaces
- 35
17 Concrete Collections
- 35
17 The Collections Framework
- 35
17 Algorithms
- 35
17 Legacy Collections

5. Java and XML

- 35
17 Overview of XML and XSL
- 35
17 Creating XML Document
- 35
17 Parsing XML
- 35
17 Validating XML

6. Java Network Programming

- 35
17 Connecting to a server
- 35
17 Implementing Servers in Java
- 35
17 URL Connections
- 35
17 Reading and Posting data
- 35
17 Security and the Network
- 35
17 Java Beans

7. Java Remote Method Invocation

- 35
17 RMI theory, client, server, object implementation
- 35
17 Stubs and skeletons
- 35
17 Setting up Remote Method Invocation
- 35
17 Parameter Passing in Remote Methods
- 35
17 Implementing RMI client
- 35
17 Server Implementation
- 35
17 Compilation of Client Server and Server Registration
- 35
17 Java IDL and CORBA

8. Java Database Connectivity

- 35
17 Database Systems – an Introduction
- 35
17 SQL
- 35
17 JDBC sources
- 35
17 Basic JDBC Programming concepts
- 35
17 Populating a database
- 35
17 Executing Queries

9. Java Native Interface

- 35
17 JNDI basics Why and where not to use it.

- ³⁵/₁₇ Creating the
- ³⁵/₁₇ Java Wrapper Classes and Native Methods prototypes
- ³⁵/₁₇ Marshaling of arguments to native methods
- ³⁵/₁₇ Compiling C/C++ methods to a heterogenous system
- ³⁵/₁₇ Registering a DLL or Archive Library (Windows/UNIX)
- ³⁵/₁₇ Call of native methods

Duration of the Seminar

5 Days

Days	Topics per Day
1	Introduction :Java Language Description and Review, Strings, Exceptions, Serialization Lab: Eclipse IDE, Packages and Jar Basics)
2	File I/O and Streams Multithreading
3	Collections Java and XML
4	Java Network Programming Java Remote Method Invcation
5	Java Database Connectivity JDBC (Choose the database that serves your needs) Java Native Interface

Preparation of the Seminar

- Time required for the trainee is two weeks before the actual seminar starting date.
- Time to install the LAB at HP or customer's premises 2 days before first day of seminar

Educational Material

Each attendee will be provided with

- ³⁵/₁₇ A book suggested from the Trainee.
- ³⁵/₁₇ Presentation Notes: Includes Presentation Slides with Comments
- ³⁵/₁₇ Lab Exercises: Includes Lab Exercises with solutions, source codes for questions and solutions
- ³⁵/₁₇ Local Network between Workstation and Servers
- ³⁵/₁₇ For the **trainer** a workstation with the following specifications:

Platform	Intel x86 Based Workstation	Licensing
H/W	Intel x86 based 2 GB Memory 500 GB HD Real machine or Virtual.	
OS	Linux	Free.

C compiler	Gcc and Make	Free
Database	MySQL	Free
JAVA	Latest JAVA SDK	Free.
IDE	Eclipse	Free.

³⁵/₁₇ For **each trainee** a workstation with the following specifications:

Platform	Intel x86 Based Workstation	Licensing
H/W	Intel x86 based 2 GB Memory 200 GB HD Real machine or Virtual.	
OS	Microsoft Windows	Required.
JAVA	Latest JAVA SDK	Free
IDE	Eclipse	Free

Suggested Profile of the Trainee

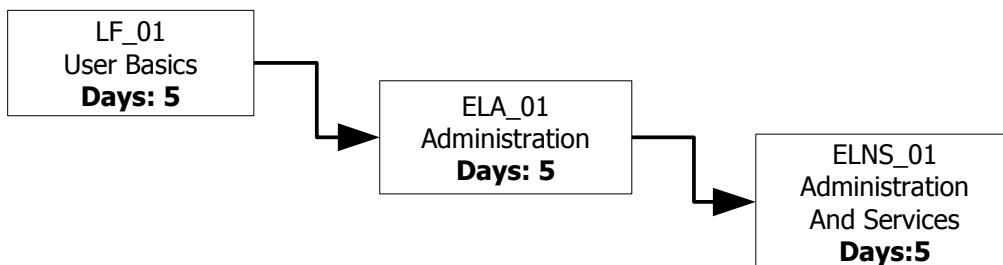
Each trainee should

- Have basic previous Java programming experience
- Have basic Object Oriented knowledge
- Be familiar with LINUX Operating System
- Can be also an IT manager who wishes to explore the JAVA technology

LINUX COURSES

In the 90s, LINUX used to be the “alternative” Operating System compared to MS Windows. Nowadays, LINUX is probably the most promising technology platform, offering a wide range of distributions to cover any specific needs. Linux distributions are used in numerous domains, from embedded systems to supercomputers and have secured a place in server installations with the popular LAMP application stack. Use of Linux distributions in home and enterprise desktops has been expanding. They have also gained popularity with various local and national governments.

ILLUMINE has a long experience in LINUX, since its founders were using LINUX from day one of its life back in 1991. The structure of offered LINUX courses start from the introductory operating system course to the advanced administrator's training. The course path is the following one:



Specialized LINUX Courses

Since LINUX offers a great variety of distributions and having in mind that your organization may have specific needs, ILLUMINE decided **to give you the ability to select the distribution of the course and also decide which services/tools or applications the course will focus on.**

Linux Fundamentals (LF_01)

The LF_01 is a challenging course that focuses on the fundamental tools and concepts of Linux and Unix. The course's focus on proficient use of the command line benefits all skill levels. Beginners develop a solid foundation in Unix, while advanced users discover patterns and fill in gaps in their knowledge.

Abstract Course Description

The course material is designed to provide extensive hands-on experience. Topics include:

- basic file manipulation
- basic and advanced filesystem features
- I/O redirection and pipes
- text manipulation and regular expressions
- managing jobs and processes
- vi, the standard Unix editor
- automating tasks with shell scripts
- managing software
- secure remote administration and more.

Prerequisites

Students should be comfortable with computers. No familiarity with Linux or other Unix operating systems is required.

Supported Distributions

- Red Hat Enterprise Linux 5 Update 4
- SUSE Linux Enterprise 11
- Ubuntu 8.04 LTS

Course Outline

- What is Linux?
- Multi-User Concepts
- The X Window System
- The Linux Filesystem
- Manipulating Files
- Shell Basics
- Archiving and Compression
- Text Processing
- Regular Expressions
- Text Editing
- Command Shells
- Introduction to Shell Scripting
- Process Management and Job Control
- Managing Software
- Messaging
- Printing
- The Secure Shell (SSH)



Illumine Consulting Services
Keas 17 | 15234 | Halandri| Greece
<http://www.illumine.gr>

- Mounting Filesystems & Managing Removable Media

Enterprise Linux Administration I (ELA_01)

The ELA_01 is an in-depth course that explores installation, configuration and maintenance of Linux systems. The course focuses on issues universal to every workstation and server.

Abstract Course Description

The course material is designed to provide extensive hands-on experience. Topics include:

- installation and configuration
- the boot process
- user and group administration
- filesystem administration, including quotas, ACLs, RAID and LVM
- task automation
- client networking
- SELinux; configuring Netfilter firewalls with iptables
- Troubleshooting
- and more

Prerequisites

Students should already be comfortable working in a Linux or Unix environment. Fundamentals such as the Linux filesystem, process management, and how to edit files will not be covered in class. An understanding of network concepts and the TCP/IP protocol suite is helpful. These skills are taught in "Linux Fundamental" course.

Supported Distributions

- Red Hat Enterprise Linux 5
- SUSE Linux Enterprise 11

Course Outline

- Pre-Installation Considerations
- Installing RHEL5/FC6
- Installing SLES10/SL10.1
- PC Hardware & Linux
- Post-Install System Configuration
- Boot Process and SYSV Init
- User/Group Administration & NFS
- Filesystem Administration
- LVM & RAID
- Task Automation & Process Accounting
- Client Networking
- The X Window System
- Security Concepts
- Linux Kernel Compilation
- Xen Virtualization
- Troubleshooting

Enterprise Linux Networking Services (ELNS_01)

The ELNS_01 is expansive course that covers a wide range of network services useful to every organization. Special attention is paid to the concepts needed to implement these services securely, and to the trouble-shooting skills which will be necessary for real-world administration of these network services.

Abstract Course Description

The course material is designed to provide extensive hands-on experience. Topics include:

- DNS concepts and implementation with Bind
- LDAP concepts and implementation using OpenLDAP
- Web services with Apache
- FTP with vsftpd
- caching, filtering proxies with Squid
- SMB/CIFS (Windows networking) with Samba
- and e-mail concepts and implementation with either Sendmail or Postfix combined with either Dovecot or Cyrus. On request, discussion of NIS is also included.

Prerequisites

Students should already be comfortable with basic Linux or Unix administration. Fundamentals such as the Linux filesystem, process management, and how to edit files will not be covered in class. A good understanding of network concepts, the TCP/IP protocol sILLUMINEe, SELinux, and firewalling with iptables is also assumed. These skills are taught in the "Linux Fundamentals" and "Enterprise Linux Systems Administration" courses.

Supported Distributions

- Red Hat Enterprise Linux 5
- Fedora Core 6
- SUSE Linux Enterprise 11

Course Outline

- DNS Concepts
- Configuring BIND
- Creating DNS Hierarchies
- Securing BIND and DNS
- LDAP Concepts and Clients
- OpenLDAP Servers
- Using OpenLDAP
- Using Apache
- Virtual Hosting with Apache
- Apache Security
- Apache Server-Side Programming Basics
- Implementing an FTP Server
- The Squid Proxy Server
- Samba Concepts
- Using Samba



- SMTP Theory
- Sendmail
- Postfix
- IMAP, POP, Spam Filtering & Web Mail

Illumine Consulting Services
Keas 17 | 15234 | Halandri| Greece
<http://www.illumine.gr>

Linux Network Security (LNSEC_01)

The LNSEC_01 is focuses on network security, and makes an excellent companion class to the “Entrprise Linux Network Services”.

Abstract Course Description

After a detailed discussion of the TCP/IP sILLUMINEe component protocols and ethernet operation, the student practices using various tools to capture, analyze, and generate IP traffic. Students then explore the tools and techniques used to exploit protocol weaknesses and perform more advanced network attacks. After building a thorough understanding of network based attacks, course focus shifts to the defensive solutions available. Students install, configure, and test two of the most popular and powerful NIDS solutions available. Finally, students create a Linux based router / firewall solution, including advanced functionality such as NAT, policy routing, and traffic shaping.

Prerequisites

Since the tools used in class are compiled and run on a Linux system, Linux or UNIX system experience is helpful, but not necessary. A solid background in networking concepts will greatly aid in comprehension.

Supported Distributions

- Red Hat Enterprise Linux 5
- Fedora Core 6

Course Outline

- Ethernet and IP Operation
- IP And ARP Vulnerability Analysis
- UDP/TCP Protocol and TELNET Vulnerability Analysis
- FTP And HTTP Vulnerability Analysis
- DNS Protocol Vulnerability
- SSH and HTTPS Protocol Vulnerability Analysis
- Remote Operating System
- Attacks and Basic Attack Detection
- Intrusion Detection Technologies
- Advanced Snort Configuration
- Snort Rules
- Linux and Static Routing
- Linux Firewalls
- Network and Port Address
- IP Policy Routing

The trainers short CV

ILLUMINE provides fully experienced trainers that have prior working experience in software development industry but also have been involved in professional and academic training. All our trainers are experienced and active Software Engineering Consultants offering consulting services for the dominant Greek Telecommunications Organizations and Software Vendors. See the Appendix A for more details.

Course Language

All courses will be presented in Greek or English from a native Greek-American speaker. It is possible to present the courses in Spanish and French but this must be agreed at minimum one month before the course take place.

Trainer's Short Curriculum

Michael Mountrakis Κωδ. ΑΑΕΚ 38718

Graduate of Dpt of Mathematics Aristotle's University Thessaloniki Greece, MSc Telematics (Middlesex University), HND Parallel Systems (University of Edinburgh). Worked as a consultant with ABN-AMRO Bank (Amsterdam/Holland) , Teleworks (Britain/London), Intracom (Athens/Hellas, Middle East), Siemens Enterprise (Athens/Hellas) and in academic Institutions like Aristotle's University, EPCC Ediburgh Parallel Computing Center, Dpt of Informatics of Middlesex University. Currently, he works as a Software Consultant/ Trainer in telecommunications projects regarding the following areas: Telecommunications Software Applications BSS, Network and Service Provisioning OSS, Network Infrastructure Security and Management. During period 1998-2000 he was teaching the following modules for the students of Middlesex University:

Module	Title	Task	Hours
CCM3091	Formal Methods and Software Engineering	Lecture/LAB	25
CSY3031	Object Orientation and Computer Algorithms	Lab	22
CSY3081	Advanced C++ and JAVA	Lab	66
CSY2081	Micro-processing and C++	Lab	36
CCM1041	Network Communications	Lab	109
CSY1051	Software Design Using JAVA	Lecture/Lab	66

Assessed from the British Educational External Reviewer (Ministry of Education) in for the year 1999 with a Final Assessment Score 95%.

Delivered Professional Training Seminars for:

Company	Title	Task	Hours
SIEMENS Enterprise	LINUX Device Drivers Development	Lecture/LAB	40
YUBOTO LTD	Formal Methods and Software Engineering	Lecture/LAB	24
Neuropublic S.A	UML I	Lecture/LAB	24

Neuropublic S.A	UML II	Lecture/LAB	24
MOD S.A Ministry of Finance	Testing Techniques to support Web Service Based Infrastructure	Lecture/LAB	24
MOD S.A Ministry of Finance	Documentation of Software Engineering	Lecture	24
MOD S.A Ministry of Finance	RUPs Methodology for Software Applications Development	Lecture	24
Mediterranean College	Documentation of Software Engineering	Lecture	48

Course Schedule

- ³⁵/₁₇ Courses are ordered per item. Each course should have a unique order.
- ³⁵/₁₇ Courses are scheduled at minimum per quarter basis (i.e. every three months) so that ILLUMINE can check the availability of the instructors.
- ³⁵/₁₇ In any case of instant requirement of an instructor, your company should warn ILLUMINE for the demand at minimum a week before the actual course scheduled date. This is because before each course our instructors prepare themselves for their course, regardless if the course belongs to those previously taught.

Training Material

- Training Material should be treated as confidential. You should not pass it to someone else without prior asking ILLUMINE.
- Training Material is a property of ILLUMINE.
- ILLUMINE is responsible for the disclosure and confidentiality of the following concepts:
 - Training material. The redistribution of training material is strictly prohibited.
 - Information about the course preparation, method of tuition, LAB technical information
 - Information about the students and other professionals that attend the course.

LAB Preparation

Some of the seminars require at least 5 days lab preparation that must be undertaken by the tutor at your site. In this case, the lab preparation is without extra charges.

Due to rapid technology changes, there can be several changes in the Lab components. In this case, the trainer must inform your company's responsible lab supervisor or course manager about those changes at minimum 5 working days before the course takes place.