Madrid, a 20 de Octubre de 2009.

Computer Technical School Lasfor, locate in Av Industria, 37 Tres Cantos (Madrid) Spain.

CERTIFIES

That Mr. **Gorka Goenaga Irastorza**, with Tax Identification Number 44125168 - J, is accredited by the center's expertise and conditions that determine the current arrangements, the recognition that he has done in the Senior Master in Development of Enterprise Applications with Java for 320 hours.

And for the record to the appropriate purposes, signing this certificate, which has been entered in the register of training school with the number 10,419.

Department Training

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DETAILED INDEX

Senior Master in Development of Enterprise Applications with Java

1. TECNOLOGIA JAVA (JSE)

Module 1 - Explaining Java Technology

Describe key concepts of the Java programming language
List the three Java technology product groups
Summarize each of the seven stages of the product life cycle

Module 2 - Analyzing a Problem and Designing a Solution

Analyze a problem using object-oriented analysis
Design classes from which objects will be created

Module 3 - Developing and Testing a Java Technology Program

Identify the four components of a class in the Java programming language
Use the main method in a test class to run a Java technology program from the command line
Compile and execute a Java technology program

Module 4 - Object-Oriented Programming

Define modeling concepts: abstraction, encapsulation, and packages
Discuss Java technology application code reuse
Define class, member, attribute, method, constructor, and package
Use the access modifiers private and public as appropriate for the guidelines of encapsulation
Invoke a method on a particular object
Use the Java technology API online documentation

Module 5 - Identifiers, Keywords, and Types

Use comments in a source program
Distinguish between valid and invalid identifiers
Recognize Java technology keywords
List the eight primitive types
Define literal values for numeric and textual types
Define the terms primitive variable and reference variable
Declare variables of class type
Construct an object using new
Describe default initialization
Describe the significance of a reference variable

Module 6 - Declaring, Initializing, and Using Variables

Identify the use the syntax for variables and define the syntax for a variable
List the eight Java programming language primitive data types
Declare, initialize, and use variables and constants according to Java programming language guidelines and coding standards
Modify variable values using operators
Use promotion and type casting

Module 7 - Creating and Using Objects

Declare, instantiate, and initialize object reference variables
Compare how object reference variables are stored in relation to primitive variables
Use a class (the String class) included in the Java Software Developer Kit (SDK)
Use the Java 2 Platform, Standard Edition (J2SE[TM]) class library specification to learn about other classes in this application programming interface (API)

Module 8 - Class Design

Define inheritance, polymorphism, overloading, overriding, and virtual method invocation
Use the access modifiers protected and the default (package-friendly)
Describe the concepts of constructor and method overloading
Describe the complete object construction and initialization operation

Module 9 - Advanced Class Features

Create static variables, methods, and initializers
Create final classes, methods, and variables
Create and use enumerated types
Use the static import statement
Create abstract classes and methods
Create and use an interface

Module 10 - Expressions and Flow Control

Distinguish between instance and local variables
Describe how to initialize instance variables
Recognize, describe, and use Java software operators
Distinguish between legal and illegal assignments of primitive types
Identify boolean expressions and their requirements in control constructs
Recognize assignment compatibility and required casts in fundamental types
Use if, switch, for, while, and do constructions and the labeled forms of break and continue as flow control structures in a program

Module 11 - Using Loop Constructs

Create while loops
Develop for loops
Create do/while loops

Module 12 - Developing and Using Methods

Describe the advantages of methods and define worker and calling methods
Declare and invoke a method
Compare object and static methods
Use overloaded methods

Module 13 - Implementing Encapsulation and Constructors

Use encapsulation to protect data
Create constructors to initialize objects

Module 14 - Arrays

Declare and create arrays of primitive, class, or array types
Explain why elements of an array are initialized
Explain how to initialize the elements of an array
Determine the number of elements in an array
Create a multidimensional array
Write code to copy array values from one array to another

Module 15 - Implementing Inheritance

Define and test your use of inheritance
Explain abstraction
Explicitly identify class libraries used in your code

Module 16 - Exceptions and Assertions

Define exceptions
Use try, catch, and finally statements
Describe exception categories
Identify common exceptions
Develop programs to handle your own exceptions
Use assertions
Distinguish appropriate and inappropriate uses of assertions
Enable assertions at runtime

Module 17 - Collections and Generics Framework

Describe the general purpose implementations of the core interfaces in the Collections framework
Examine the Map interface
Examine the legacy collection classes
Create natural and custom ordering by implementing the Comparable and Comparator interfaces
Use generic collections
Use type parameters in generic classes
Refactor existing non-generic code
Write a program to iterate over a collection
Examine the enhanced for loop

Module 18 - I/O Fundamentals

Write a program that uses command-line arguments and system properties
Examine the Properties class
Construct node and processing streams, and use them appropriately
Serialize and deserialize objects
Distinguish readers and writers from streams, and select appropriately between them

Module 19 - Console I/ O and File I/O

Read data from the console
Write data to the console
Describe files and file I/O

Module 20 - Building Java GUIs Using the Swing API

Describe the JFC Swing technology
Define Swing
Identify the Swing packages
Describe the GUI building blocks: containers, components, and layout managers
Examine top-level, general-purpose, and special-purpose properties of container
Examine components
Examine layout managers
Describe the Swing single-threaded model
Build a GUI using Swing components

Module 21 - Handling GUI-Generated Events

Define events and event handling
Examine the Java SE event model
Describe GUI behavior
Determine the user action that originated an event
Develop event listeners
Describe concurrency in Swing-based GUIs and describe the features of the SwingWorker class

Module 22 - GUI-Based Applications

Describe how to construct a menu bar, menu, and menu items in a Java GUI
Understand how to change the color and font of a component

Module 23 - Threads

Define a thread
Create separate threads in a Java technology program, controlling the code and data that are used by that thread
Control the execution of a thread and write platform-independent code with threads
Describe the difficulties that might arise when multiple threads share data
Use wait and notify to communicate between threads
Use synchronized to protect data from corruption

Module 24 - Networking

Develop code to set up the network connection
Understand TCP/IP
Use ServerSocket and Socket classes to implement TCP/IP clients and servers

2. ARQUITECTURA WEB (JEE)

Module 1 - Introduction to Web Application Technologies

Describe web applications
Describe Java Platform, Enterprise Edition 5 (Java EE 5)
Describe Java servlet technology
Describe JavaServer Pages technology
Define three-tier architecture
Define Model-View-Controller (MVC) architecture

Module 2 - Developing a View Component

Design a view component
Describe the Hypertext Transfer Protocol
Describe the web container behavior
Develop a simple HTTP servlet
Configure and deploy a servlet

Module 3 - Developing a Controller Component

Design a controller component
Create an HTML form
Describe how HTML form data is sent in an HTTP request
Develop a controller servlet
Dispatch from a controller servlet to a view servlet

Module 4 - Developing Dynamic Forms

Describe the servlet life cycle
Customize a servlet with initialization parameters
Explain error reporting within the web form
Repopulating the web form

Module 5 - Sharing Application Resources Using the Servlet Context

Describe the purpose and features of the servlet context
Develop a servlet context listener to initialize a shared application resource

Module 6 - Designing the Business Tier

Describe the Analysis model
Design entity components
Design service components

Module 7 - Developing a Web Application Using Struts

Design a web application using the Struts MVC framework
Develop a Struts action class
Configure the Struts action mappings

Module 8 - Developing Web Applications Using Session Management

Describe the purpose of session management
Design a web application that uses session management
Develop servlets using session management
Describe the cookies implementation of session management
Describe the URL-rewriting implementation of session management

Module 9 - Using Filters in Web Applications

Describe the web container request cycle
Describe the Filter API
Develop a filter class
Configure a filter in the web.xml file

Module 10 - Integrating Web Applications With Databases

Map sample data structure into database entities
Design a web application to integrate with a DBMS
Configuring a DataSource and Java Naming and Directory Interface (JNDI) API

Module 11 - Developing JSP Pages

Describe JSP page technology
Write JSP code using scripting elements
Write JSP code using the page directive
Write JSP code using standard tags
Write JSP code using the Expression Language (EL)
Configure the JSP page environment in the web.xml file

Module 12 - Developing JSP Pages Using Custom Tags

Describe the Java EE job roles involved in web application development
Design a web application using custom tags
Use JSTL tags in a JSP page

Module 13 - Developing Web Applications Using Struts Action Forms

Describe the components in a Struts application
Develop an ActionForm class
Develop a JSP page for a View form
Configure the View forms

Module 14 - Building Reusable Web Presentation Components

Describe how to build web page layouts from reusable presentation components
Include JSP segments
Develop layouts using the Struts Tiles framework

3. ARQUITECTURA ENTERPRISE JAVA BEANS (JEE)

Module 1 - Placing the Java EE Model in Context

Describe the needs of enterprise applications and describe how Java EE 5 technology addresses these needs
Describe the Java EE 5 platform application programming interfaces (APIs) and supporting services
Describe the Java EE platform tiers and architectures
Describe how to simplify Java EE application development using architecture patterns

Module 2 - Java EE Component Model and Development Step

Describe the principles of a component-based development model
Describe the asynchronous communication model
Describe the process used and roles involved when developing and executing a Java EE application
Compare the different methods and tools available for developing a Java EE application and related components
Describe how to configure and package Java EE applications

Module 3 - Web Component Model

Describe the role of web components in a Java EE application
Define the HTTP request-response model
Compare Java servlets and components and JSP components
Describe the basic session management strategies
Manage thread safety issues in web components
Describe the purpose of web-tier design patterns

Module 4 - Developing Servlets

Describe the servlet API
Use the request and response APIs
Forward control and pass data
Use the session management API

Module 5 - Developing With JavaServer Pages Technology

Evaluate the role of JSP technology as a presentation mechanism
Author JSP pages
Process data received from servlets in a JSP page
Describe the use of tag libraries

Module 6 - EJB Component Model

Describe the role of EJB components in a Java EE application
Describe the EJB component model
Identify the proper terminology to use when discussing EJB components and their elements

Module 7 - Implementing EJB 3.0 Session Beans

Compare stateless and stateful behavior
Describe the operational characteristics of a stateless session bean
Describe the operational characteristics of a stateful session bean
Create session beans
Package and deploy session beans
Create a session bean client

Module 8 - The Java Persistence API

Describe the role of the Java Persistence API (JPA) in a Java EE application
Describe the basics of Object Relational Mapping
Describe the elements and environment of an Entity component
Describe the life cycle and operational characteristics of Entity components

Module 9 - Implementing a Transaction Policy

Describe transaction semantics
Compare programmatic and declarative transaction scoping
Use the Java Transaction API (JTA) to scope transactions programmatically
Implement a container-managed transaction policy
Support optimistic locking with the versioning of entity components
Predict the effect of transaction scope on application performance
Describe the effect of exceptions on transaction state

Module 10 - Developing Java EE Applications Using Messaging

Describe JMS technology
Create a queue message producer
Create a synchronous message consumer
Create an asynchronous message consumer
List the capabilities and limitations of EJB components as messaging clients

Module 11 - Developing Message-Driven Beans

Describe the properties and life cycle of message-driven beans
Create a JMS message-driven bean
Create lifecycle event handlers for a JMS message-driven bean

Module 12 - Web Service Model

Describe the role of web services
List the specifications used to make web services platform independent
Describe the Java APIs used for XML processing and web services

Module 13 - Implementing Java EE Web Services with JAX-WS

Describe endpoints supported by the Java EE 5 platform
Describe the requirements of JAX-WS Servlet Endpoints
Describe the requirements of JAX-WS EJB Endpoints
Develop Web Service Clients

Module 14 - Implementing a Security Policy

Exploit container-managed security
Define user roles and responsibilities
Create a role-based security policy
Use the security API
Configure authentication in the web tier

4. ARQUITECTURA SERVICIOS WEB (JEE)

Module 1 - Identifying the Building Blocks of Web Services

Define a web service
Explore the need for web services
Identify the characteristics of a web service
List the primary web service initiatives, specifications, and Application Programming Interfaces (APIs)
Recognize the Web Services Interoperability Organization (WS-I) Basic Profile and its importance to the web services community
Examine the sample application
Recognize the various example and demonstration scenarios used in this course
Deploy and test the sample application

Module 2 - Analyzing the Java Web Services Technology and Platform

Deploy and test a web service as a servlet endpoint
Deploy and test a web service as an Enterprise JavaBeans? (EJB?) component endpoint
Run client applications that consume a web service

Module 3 - Applying XML Processing APIs

Apply Java Architecture for XML Binding (JAXB) in a REST-based web service
Apply Simple API for XML (SAX) to format the output of a REST-based web service

Module 4 - Examining SOAP Messages

Examine various SOAP messages
Monitor SOAP messages being transmitted from a web service to a client and review SOAP fault messages

Module 5 - Developing Web Services Using the SOAP With Attachments API for Java (SAAJ

Create a web service using SOAP with Attachments API for Java (SAAJ)
Consume a SAAJ-based web service

Module 6 - Explaining the Web Services Description Language (WSDL)

Identify the abstract model and concrete model of a WSDL file
Create a WSDL file to describe a web service

Module 7 - Recognizing the Role of Service Registry

Describe the purpose of a service registry
Describe Universal Description, Discovery, and Integration (UDDI)
Describe electronic business XML(ebXML)
Identify the features of the ebXML registry
Use the Java API for XML Registries (JAXR) to access an ebXML registry
Describe the JAXR API

Module 8 - Implementing Web Services Using Java API for XML Web Services (JAX-WS) Technology

Create a web service from a WSDL file
Create a JAX-WS web service as a servlet endpoint
Create a JAX-WS web service as an EJB component endpoint

Module 9 - Developing Web Service Clients

Create a JAX-WS web-service client using a Dynamic Proxy
Enable a web application to consume a JAX-WS-based web service