Eclipse RCP, Plug-in development

Starter and Intermediate level

Eclipse Platform

Eclipse SDK is both, a leading Java Integrated Development Environment (IDE) and the single best tool available for building arbitrary tools and applications. It is composed of several Eclipse projects, including the Platform, Java Development Tooling (JDT), and the Plug-in Development Environment (PDE). Using a subset of these projects, you can build powerful IDE's and applications that work in conjunction with application servers, databases, and other backend resources to deliver a rich user experience.

Workshop

The goal of the workshop is to provide the first-hand experience of building Eclipse Plug-ins and RCP application using the Eclipse Platform. By the end of this course, the participants will have the required knowledge and experience to work on Eclipse-based projects.

Prerequisite

Knowledge of Java and experience of using Eclipse IDE for Java development is essential.

Modalities

Duration: 4 days
Structure: Instructor-led with 100% hands-on labs
Participants: Maximum 10 per workshop
Equipment: Participants supply their own computer with the latest Eclipse installed.

Agenda

(Day 01 - 04)

Introduction

- Introduction - Eclipse Platform
- Workbench - Window, Menu, Page, Perspective, Views, and Editors.

Standard Widget toolkit

- Basic Structure
- Layout and Layout Managers
- SWT Events - Key, Mouse, Selection.

JFace Components

- Viewers - Tree, Table, and List
- Content and Label providers
- Views and Editors
- Custom Dialogs and Wizards
- Perspective and Preferences.

Command framework

- Command framework
- Expression framework

Jobs framework

- Using the Jobs API for long-running operations.

Testing

- SWTBot for testing SWT applications

Packaging & Branding

- Eclipse Feature, Update site, Target platform, Product configuration
- Branding your application
- Packaging a custom IDE

Eclipse EMF

Advance level

EMF

The Eclipse Modeling Framework (EMF) project is a Modeling framework and Code generation facility for building tools and other applications based on a structured data model. It provides tools and the runtime support required to produce Java code and adapter classes that enable viewing and command-based editing of the models.

Workshop

The goal of the workshop is to provide the first-hand experience of building structured models using the EMF framework. By the end of this course, the participants will have the required knowledge and experience to build complex business models using EMF.

This course helps in building a solid base before taking the course on advanced frameworks like Xtext and Sirius.

Prerequisite

Knowledge of Java is essential
Experience of using Eclipse IDE for Java development

Modalities

Duration: 2 day
Structure: Instructor-led with 100% hands-on labs
Participants: Maximum 10 per workshop
Equipment: Participants supply their own computer with the latest Eclipse installed.

Agenda

(Day 05 - 07)

Introduction

- Model-Driven Development (MDD)
- Introduction to the Eclipse Modeling Framework (EMF)
- EMF Workflow - Meta-modeling, Java Code generation, Testing using the Reflective ECore editor.
- Code Generation
    - Factory, Package, Adapter Factory and Switch classes
    - Customizing Generated code

ECore and GenModel

- ECore Meta-model
    - EClass and EObject
    - Attributes - Single and Multi-Valued
    - References - Non-Containment, Containment, Bidirectional, and Map
    - DataTypes, Operations, and Annotations.
- GenModel
    - GenModel properties
    - Custom code generation

Runtime framework

- Notification and Adapters
    - Model change notification
    - Observing the model changes
    - `EContentAdapter`
    - Adapter Dos and Don’ts.
- Persistence framework

    - Persistence API - ResourceSet, Resource, and URI
    - EMF Package Registry - Local and Global Registry
    - EMF Resource Factory, and Resource Factory Registry.
- Proxy resolution
    - Proxies in EMF
    - Influencing Proxy resolution - Resolve Proxies, and Containment Proxies fields.
- Dynamic EMF
    - Creating and Instantiating model using EMF Dynamic API.
- Meta-modeling using XCore

Validation framework

- Defining Constraints and Invariants
- Invoking Validation.

Compare framework

- Comparing EMF Models
- Customizing the framework.

Eclipse Xtext

Advance course

Xtext is a Modeling framework for building Textual Domain-Specific Languages (DSL). It takes the language definition as input and generates infrastructure that can be fully customized, and has integration with popular IDE's like Eclipse and Intellij idea.

The framework can also be used to create fully-functional programming languages. Xtend is a Java-like language and is a proof of concept of how involved a language implementation in Xtext can be.

Workshop

In this workshop, we focus primarily on the advanced Xtext concepts described in the course content. Participants will have an opportunity to practically implement an expression-language based on Xbase, a custom code generator using Xtend, and make use of all the advanced concepts.

Key concepts mentioned in the training schedule is covered in-depth with appropriate hands-in exercises.

Prerequisite

Eclipse Xtext Basic course is mandatory.

Modalities

Duration: 3 days
Structure: Instructor-led with 100% hands-on labs
Participants: Maximum 8 per workshop
Equipment: Participants supply their own computer with the latest Eclipse and DSL tooling installed.

Agenda

Introduction

- Domain-Specific Language (DSL), and Model-Driven Engineering (MDE) concepts
- Xtext framework introduction
- Example use cases.

Xtext infrastructure

- Creating the Xtext project
- Understanding the Project layout
- Runtime, UI and Test projects
- Grammar definition and .MWE2 files
- Code generation.

Syntax definition

- Common Terminal garmmar
- Defining Grammar for our DSL
- EPackage declaration, Parser and DataType rules, Overriding grammar rules, Enum definition...etc
- Grammar reuse and Mixins.

Runtime concepts

- Validator for your language
- Scope provider
- Formatter.

IDE concepts

- Proposal providers
- Quick-fix provider
- Syntax highlighting.

Embedding expressions

- Introduction to the Xbase language
- Defining an expression-language based on Xbase
- Overriding Xbase Rules.

Runtime concepts (Adv.)

- Scoping, Linking, and Indexing
- Local and Global Scoping
- Providing a library.

Code Generation

- Introduction to the Xtend language
- Defining a Code generator for our language using Xtend
- Testing the code generation.

Testing

- Unit-testing language Runtime
- Unit-testing UI features.

Extending Xbase

- Extending the Xbase Compiler
- Customizing the Xbase Interpreter.

Eclipse Sirius

Advance level

Sirius

Sirius allows you to easily create your own graphical modeling workbench by leveraging the Eclipse Modeling technologies, including EMF and GMF.

Based on a viewpoint approach, Sirius makes it possible to equip teams who have to deal with complex architectures on specific domains.

Workshop

The goal of the workshop is to provide first-hand experience of building graphical modeling workbench using the Sirius framework. By the end of this course, the participants will have the required knowledge and experience of using the Sirius framework.

Prerequisite

It is assumed that the participants have taken the EMF and Xtex courses.

Modalities

Duration: 1 day
Structure: Instructor-led with 100% hands-on labs
Participants: Maximum 10 per workshop
Equipment: Participants supply their own computer with the latest Eclipse installed.

Agenda

(Day 04)

Sirius overview

- Introduction to Model-Driven Engineering (MDE) and Domain-Specific modeling concepts
- Eclipse Graphical modeling technologies - GEF, GMF...
- Sirius introduction
- Architecture overview

Diagram representations

- The Viewpoint specification model
- The mapping between the semantic and graphical notations
- Specification of the graphical representation

Editing diagrams

- Java services
- Edition tools - Editing label, double-click, Context menus...
- Conditional styles, filters, mapping specifications...

Xtext integration

- Sirius Xtext integration

Feedback

- One of the best, most useful workshops I've ever had, seriously! I think there are so many folks like me who kind of were thrown into it and didn't get a great basic foundation. Basic is good, and Neeraj presented it so clearly and with purpose. Thanks for the training!!!
  – Hemal Bavishi, Principal Architect, AVIN Systems

- It was an excellent hands-on workshop which helps to kick start my development activities. Neeraj presented in with great clarity and focus. Thanks for the training
  – Shashwat Anand, Majesco – Mastek

- It was a great experience and I learned a lot about the eclipse and its plug-in development capabilities. The workshop was full of knowledge and hands-on experience was quite impressive
  – Tarun Joshi, Syntel India

- The workshop was really good. It was helpful and we could relate much of it to our project requirements. The trainer also gave us direction and a lot of RCP tips
  – Niteen Magar, Syntel India

- The trainer covered more than expected. Really great experience
  – Sumeet Katariya, Syntel India

Clients

Classroom sessions

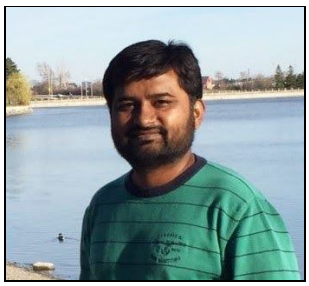
NOKIA	TATA CONSULTANCY SERVICES	BOSCH Invented for life
TATA TATA ELXSI	KPIT	Cleo
GoldenSource	Atos | Syntel	BUREAU VERITAS 1828 BUREAU VERITAS

Virtual sessions, Workshops

IBM, AVIN Systems, Sapient, Majesco – Mastek, Aricent, Ancit Consulting.

Instructor

Neeraj M. Bhusare



Eclipse expert with more than a decade of experience in building commercial applications based on the Eclipse platform. He has contributed to well-known products like MyEclipse and Reprezen API studio. In his current role, he has developed an Eclipse-based modeling tool that is used for product modeling at top banks around the world.

He is an active member of the Eclipse community and has organized and presented at various Eclipse demo. Camps in India. He has presented at the Eclipse day and Eclipse Con. India.

Besides his regular day job, he enjoys undertaking contractual work and training assignments. His workshops have been widely appreciated, and all his students are working with multinational companies on big commercial projects.

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