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1 contributor

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minor addition to readme

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University of York Model-Driven Engineering (MODE) lecture on *Textual Modelling with Xtext*

This repository contains instructions on how to install Eclipse and Xtext as well as how to create a new Xtext project. Moreover, it contains the source code of two exemplary domain-specific modeling languages implemented with the Eclipse Xtext language workbench: *Entity DSL* and *State Machine DSL*.

How to install Eclipse and Xtext:

First, download Eclipse Epsilon distribution from the [Eclipse Epsilon website](#) and follow the installation instructions.

Secondly, once Eclipse is installed, the Xtext framework needs to be installed through the *Install New Software...* dialog. Copy the [Xtext Update Site link](#) (found on the [Xtext website](#)) and add it as a new repository to the Eclipse software installer.

Available Software

Work with: type or select a site

Add... | Manage...

type filter text

Select All | Deselect All

There is no site selected.

Add Repository

Name: XTEXT

Local...

Location: http://download.eclipse.org/modeling/tmf/xtext/updates/

Archive...

Cancel | Add

Details

Show only the latest versions of available software

Hide items that are already installed

Group items by category

What is already installed?

Show only software applicable to target environment

Contact all update sites during install to find required software

Back | Next > | Cancel | Finish

Available Software

Check the items that you wish to install.

Work with: XTEXT - http://download.eclipse.org/modeling/tmf/xtext/updates/

Add... | Manage...

type filter text

Select All | Deselect All

EMF Core and MDT XSD

EMF Xcore

LSP4J

MWE

Uncategorized

Xtend

Xtext

7 items selected

Details

Show only the latest versions of available software

Hide items that are already installed

Group items by category

What is already installed?

Show only software applicable to target environment

Contact all update sites during install to find required software

Back | Next > | Cancel | Finish

How to import an existing Xtext projects:

First, right-click in the *Package Explorer* view and select *Import...*

New

Show In: \

Copy

Copy Qualified Name

Paste

Delete

Import...

Export...

Refresh

Close

Secondly, select *Existing Projects into Workspace*.

Import

Select

Create new projects from an archive file or directory.

Select an import wizard:

type filter text

General

Archive File

Existing Projects into Workspace

File System

Preferences

Projects from Folder or Archive

CDO

Git

Maven

Oomph

Plug-in Development

Run/Debug

Tasks

Team

XML

Back | Next > | Cancel | Finish

Then, use the *Browse...* button located on the right-hand side of the *Select root directory* text-field to choose the location of your Xtext projects. Finally, click *Finish* to import the projects into your workspace.

Import Projects

Select a directory to search for existing Eclipse projects.

Select root directory: Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects

Browse...

Select archive file:

Browse...

Projects:

uk.ac.york.cs.entities (Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects/uk.ac.york.cs.entities)

uk.ac.york.cs.entities.edit (Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects/uk.ac.york.cs.entities.edit)

uk.ac.york.cs.entities.editor (Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects/uk.ac.york.cs.entities.editor)

uk.ac.york.cs.entities.example (Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects/uk.ac.york.cs.entities.example)

uk.ac.york.cs.entities.xtext (Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects/uk.ac.york.cs.entities.xtext)

uk.ac.york.cs.entities.xtext.ide (Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects/uk.ac.york.cs.entities.xtext.ide)

uk.ac.york.cs.entities.xtext.ui (Users/blizfire/REPOS/UoY-MODE-XTXT/Entity DSL Projects/uk.ac.york.cs.entities.xtext.ui)

Select All | Deselect All | Refresh

Options:

Search for nested projects

Copy projects into workspace

Hide newly imported projects upon completion

Hide projects that already exist in the workspace

Working sets:

Add project to working sets

New...

Select...

Back | Next > | Cancel | Finish

How to run your Xtext DSL editor:

First, a launch configuration needs to be created to launch an *Eclipse Application*.

Run Configurations

Create, manage, and run configurations

Create a configuration to launch an Eclipse application.

Configure launch settings from this dialog:

New Configuration

New Prototype

Export

Duplicate

Delete

Link Prototype

Unlink Prototype

Reset with Prototype Values

Press the 'New Configuration' button to create a launch configuration profile to export the selected configurations.

Click the 'Export' button to copy the selected configuration.

Click the 'Delete' button to remove the selected configuration.

Click the 'Link Prototype' button to enable configuration filtering by selecting it.

Click the 'Unlink Prototype' button to disable configuration filtering by selecting it.

Click the 'Reset with Prototype Values' button to reset the configuration with the prototype values.

Select launch configuration(s) and then select 'Link Prototype' menu item.

Select launch configuration(s) and then select 'Unlink Prototype' menu item.

Select launch configuration(s) and then select 'Reset with Prototype Values' menu item.

Configure launch perspective settings from the 'Perspectives' preference page.

Secondly, make sure that enabled plugins do not cause validation problems by selecting the *plug-ins* tab and clicking *Validate Plug-ins*. In case you encounter validation problems, select *plugins selected below only in the Launch with*; drop-down menu followed by de-selecting plug-ins that cause validation problems.

Next, run the dedicated launch-configuration (a new Eclipse instance will start) and create a new (empty) project by using the Eclipse creation wizard. Finally, create a new (empty) file inside the created project that exactly matches the file-extension that your Xtext DSL specifies. If you are unsure about the file extension that your Xtext DSL defines, take a look at the *fileExtensions* attribute value in the *.mwe2 file.

To check if the dedicated editor for your Xtext DSL has been loaded properly, press *CTRL + Space* on your keyboard to open content-assist window. If it has been loaded correctly, it will suggest content that appears in the definition of your DSL.

Model.entity

entity

type

How to create a new Xtext project (in general):

Once Xtext is installed (a restart of Eclipse is required), the Eclipse creation wizard will show two entries for Xtext: *Xtext Project* and *Xtext Project From Existing Ecore Models*.

How to create a new Xtext project from an existing Ecore model:

Use the Eclipse wizard to create a *Xtext Project From Existing Ecore Models*.

New

Select a wizard

Create an Xtext project from existing Ecore models

Wizards:

type filter text

OCL

Oomph

Plug-in Development

Sirius

User Assistance

XML

Xtend

Xtext

Xtext Project

Xtext Project From Existing Ecore Models

Examples

Other

Examples

Back | Next > | Cancel | Finish

Use the *Add* button to add the *.genmodel of your DSL to the wizard for selection.

New Xtext Project From Ecore

Select EPackages

Select the EPackages to generate an Xtext grammar for.

EPackages:

Add...

Set Default

Remove

Selection Needed

Choose EMF generator model

entities.genmodel - /uk.ac.york.cs.entities/model

Select All | Deselect All

Cancel | OK

Entry rule:

Back | Next > | Cancel | Finish

Select the *Entry Rule* for your grammar and finalize the wizard by clicking the *Finish* button. As a result, you will see a set of new projects appearing in the *Package Explorer*. If the project that contains the *.xtext file, i.e. the grammar of your DSL, appears as erroneous, right-click on your *.ecore file and select *Register EPackages*; if any change is made to the *.xtext file that allows it to be saved, the errors will disappear (try adding an empty line at the bottom and saving the file).

New Xtext Project From Ecore

Select EPackages

Select the EPackages to generate an Xtext grammar for.

EPackages:

uk.ac.york.cs.entities.EntitiesPackage (default package)

Add...

Set Default

Remove

Entry rule:

Model - entities

Entity - entities

Model - entities

Property - entities

SimpleType - entities

Union - entities

Back | Next > | Cancel | Finish

At this point in time you may edit your grammar and once you are satisfied with its state, you can trigger the MWE2 workflow to auto-generate the components of your DSL by right-clicking on the *.mwe2 file and selecting *Run As > MWE2 Workflow* and finally launch your editor as described above (see "How to run your Xtext DSL editor").

uk.ac.york.cs.entities.xtext [UoY-MODE-XTXT master]

src

uk.ac.york.cs.entities

EntityDSLRuntimeModule.java

EntityDSLStandaloneSetup.java

EntityDSL.xtext

GenerateEntityDSL.mwe2

uk.ac.york.cs.entities.formating

uk.ac.york.cs.entities.generator

uk.ac.york.cs.entities.scoping

uk.ac.york.cs.entities.validation

src-gen

xtend-gen

JRE System Library [JavaSE-1.8]

Plug-in Dependencies

META-INF

build.properties

uk.ac.york.cs.entities.xtext.ide [UoY-MODE-XTXT master]

uk.ac.york.cs.entities.xtext.ui [UoY-MODE-XTXT master]

New

Open

Open With

Show In

Copy

Copy Qualified Name

Paste

Delete

Remove from Context

Mark as Landmark

Build Path

Refresh

Assign Working Sets...

Validate

Run As

Debug As

Epsilon Flock

Team

Compare With

Properties

1 MWE2 Workflow

Run Configurations...

Further resources:

Xtext documentation and tutorials

Xtext scoping documentation

Xtext documentation

Xtext Declarative Scope Provider documentation