

TILDA- GETTING STARTED

2019-09-25

INTRO

- This presentation should allow you to get started with Tilda
 - Should take 1h to 90mn
 - Set up your development environment with Java, Eclipse, Tomcat and Postgres
 - Create a project
 - Learn the Tilda conventions to get started
 - Go through a simple yet non-trivial set of example to build an app

• Pre-requisits

- You need to be somewhat familiar with Java development and a Java IDE
- You need some passing experience/familiarity with JSON
- You need some passing experience/familiarity with SQL

GENERAL ARCHITECTURE

- Tilda rests on human-readable and editable JSON-based model definitions that can be edited in any JSON-capable editor and are processed via a variety of commandline utilities:
 - Gen: validate the model(s), generate ORM code artifacts and searchable/navigatable HTML documentation
 - Docs: Outputs HTML and SQL documentation to the file system from the model(s)
- The 'T' in Tilda stands for "Transparent", and all artifacts are generated in humanreadable form, fully commented and documented

Although Tilda allows to model complex data, the framework is architected from the ground up so that all
artifacts generated are clear and clean so that the connection between an element in a Tilda definition file and its
impact on the runtime or database is easy to see

 Generated code relies heavily on the Java compiler to actualize in code many patterns, so that complex migrations (moving tables, changing indices, adding/removing columns etc...) has a direct compile-time impact that can then be easily remedied with standard code editors and refactoring methodologies.

- The 'l' in Tilda stands for "Iterative", and all processes and utilities when working with the framework encourage a fluid team-based iterative approach from design to deployment.
 - Migrate: migrates a database to the model(s)

DEVELOPMENT ENVIRONMENT

• For this tutorial, we'll use the following software

- Java SE JDK 11.0.3
 - https://www.techspot.com/downloads/5553-java-jdk.html
- Apache Tomcat 9.0.24
 - <u>http://tomcat.apache.org</u>
- Eclipse IDE for Enterprise Java Developers 2019-06 R
 - https://www.eclipse.org/downloads/packages/
- PostgreSQL 11.5
 - https://www.postgresql.org/

Be aware that

• There are no direct dependencies on Tomcat or Eclipse. Any Servlet container or Java IDE will do if you prefer something else.

- Java 8 is the minimum requirement, but we like to use the latest and greatest
- Postgres 9.6 is the minimum required, but we like to use the latest and greatest.

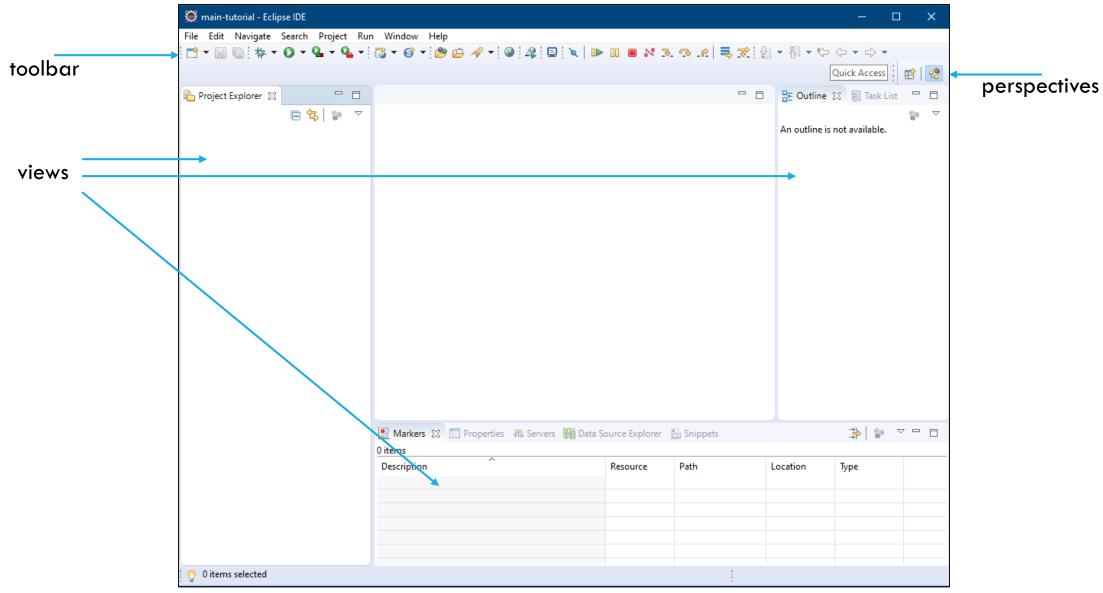


A BEGINNER'S ENVIRONMENT

A BEGINNER'S PROJECT

- Different organizations have different standards in how they set up their Java-based projects.
- We like to set up a base-line project where dependencies and environment configurations are set up and inherited from other projects where application code lives
- The application will be composed of a few JARs and a really basic Web application
- If you are a seasoned developer, then you might want to skim through this section very quickly to get set up.
 - This is really targeted at beginners, younger new employees and so on...

STARTING WITH A CLEAN WORKSPACE



SIMPLE CUSTOMIZATIONS

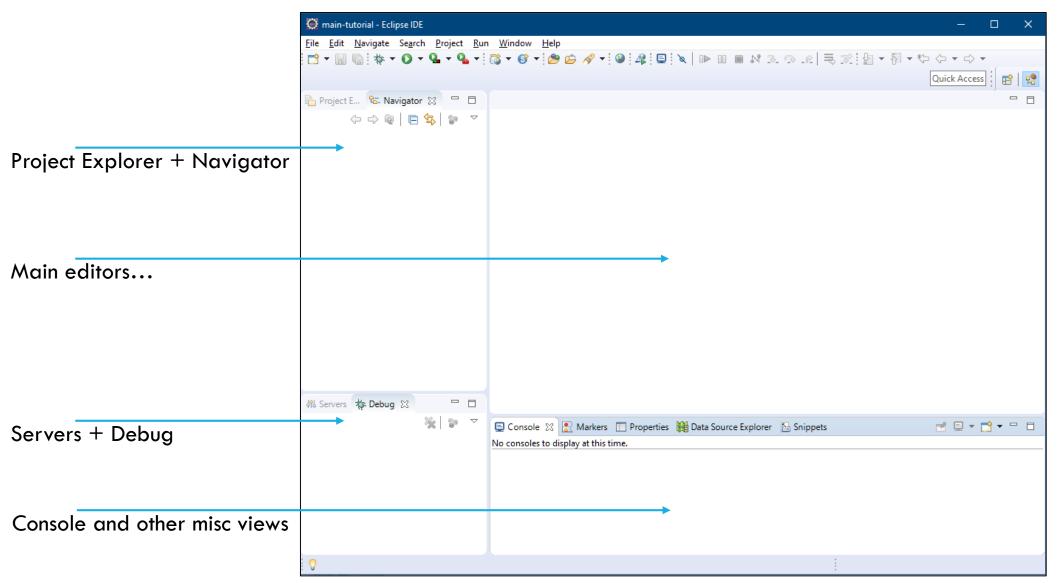
- I have never found a use for the Task List and Outline views.
- The "Project Explorer" is nice, but I also like the "Navigator" as it gives you a view of projects that mirrors more closely the actual file system layout.
- The "Console" view will be critical for us as we use many commandline utilities
- Eclipse supports perspectives where you can customize the views you want. I have found this to not be as useful and like for example to have the "debugger" view in the main perspective
- We'll configure Tomcat and so we also need the "Servers" view.

EXTRA VIEWS

- You can add new views via the "Window" menu
- Select "other..." to find the other views we like
- You can then drag and drop your views according to taste

💭 main-tutorial - Eclipse IDE		
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		Properties
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		📔 Snippets
		Task List Alt+Shift+Q, K
		Other Alt+Shift+Q, Q

OPTIMIZED PERSPECTIVE (ACCORDING TO SOMEONE!)



CREATE A "ROOT" PROJECT

- The next few slides show the details of creating a root project.
- Right-click in the Navigator.

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Project E % Navigator X □ □	Wizards: type filter text Java Project
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Image: Servers Servers Image: Servers Servers <td< td=""><td>Cancel Cancel</td></td<>	Cancel Cancel
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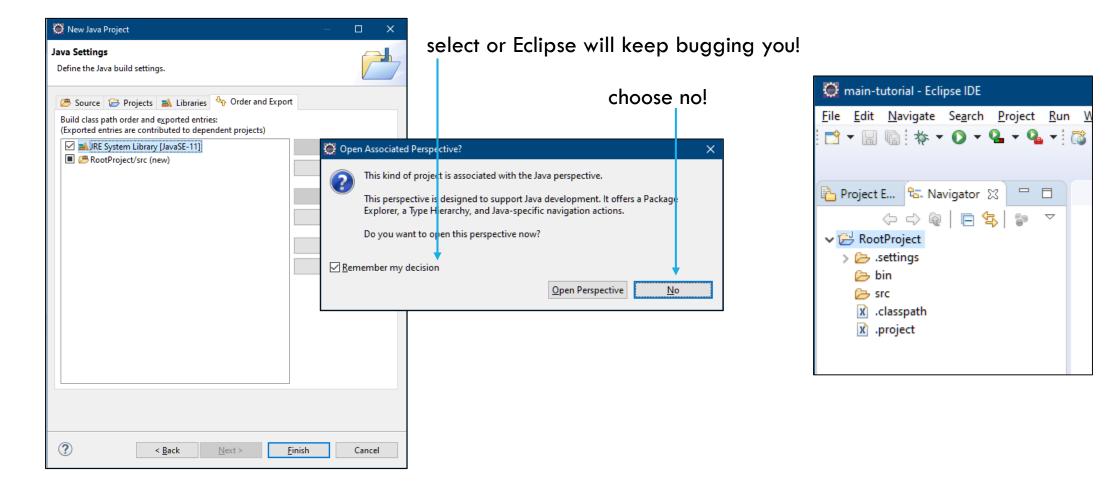
CREATE A "ROOT" PROJECT

- "RootProject" name
- C:\Projects\TildaTutorial
- Disable the Module file

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Project layout ○ <u>U</u> se project folder as root for sources and class files ④ <u>C</u> reate separate folders for sources and class files	Configure default	 Create new source folder: use this if you want to add a new source folder to you project. Link additional source: use this if you have a folder in the file system that should be used as additional source folder. Add project 'RootProject' to build path: Add the project to the build path if the project is the root of packages and source files. Entries on the build path are visi
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CREATE A "ROOT" PROJECT

Export the JRE and don't switch perspective



SET UP TOMCAT

- On the "Servers" view, add a new server
- pick where you installed Tomcat

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11 J				Tomcat installation directory:
🖻 🅸 🔘 🖉 🔳 🖽 🔻	📮 Cor	Select the server type:		C:\Program Files\ApacheTomcat9
No servers are available. Click this link to create a new server	No con	type filter text	^	JRE:
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Installed JREs...

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💭 New Server

SET UP TOMCAT

🥘 main-tutorial - Eclipse IDE

Right click on "RootProject" and select "Properties"

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"Java Build Path", "Libraries", "Add Library"

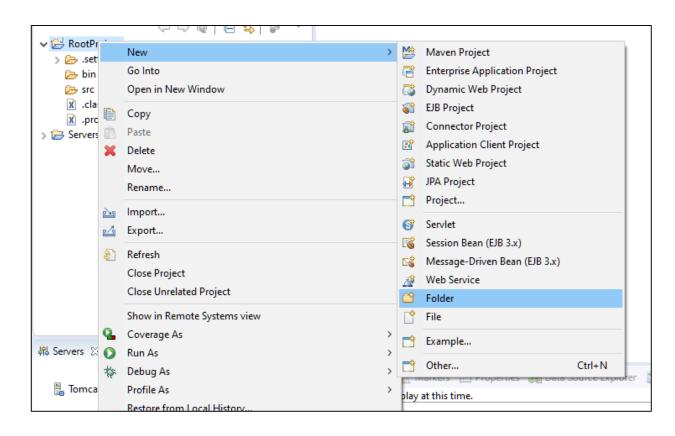
SET UP TOMCAT

- Select Tomo
- Export

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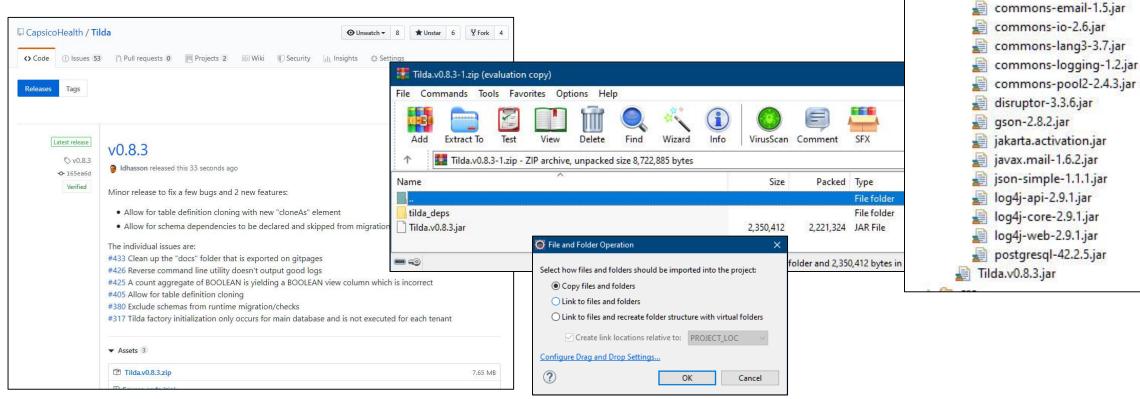
• Add a "lib" folder to the project



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Download the <u>latest</u> Tilda release

- <u>https://github.com/CapsicoHealth/Tilda/releases</u>
- Drag'n'Drop the contents of the Zip to the "lib" folder



RootProject

> > bin

V B lib

> .settings

✓ → tilda deps

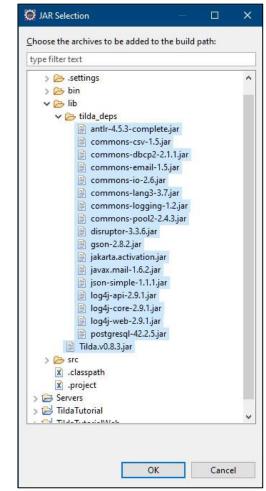
antlr-4.5.3-complete.jar

commons-csv-1.5.jar commons-dbcp2-2.1.1.jar

• Right click on "RootProject", select "Properties", "Java Build Path"

Select "Libraries", "Add JARs"

💓 Properties for RootProject		– D X
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Export all

Apply and close

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• In this section, we are going to be creating a bit of infrastructure:

- A Java project to hold our Tutorial sample
- A Dynamic Web project to serve as our runtime baseline and which we'll build upon in a follow-up tutorial for Java-based usages of Tilda.
- Configuration files log4j2.xml and tilda.config.json
- Setting up "Run Configurations" for Gen and Migrate
- Skeleton _tilda.TildaTutorial.json file
- Running Gen
- Creating the TildaTutorial database
- Running Migrate
- These steps are typically a one-time affair for any new project and take a few minutes to set up.

• We want to set up a simple relationship hierarchy of projects where in the future:

- It's easy to add new dependencies in the Root project that automatically percolate across the entire project
- Each "component" of the tutorial is packaged as a JAR and we can add more in the future
- The Web project provides an overall runtime for execution.



- Sample files can be found in
 - https://github.com/CapsicoHealth/Tilda/tree/master/docs/documentation/tutorial_sample_files
- Documentation for Gen can be found in
 - <u>https://github.com/CapsicoHealth/Tilda/wiki/Tilda-Command-Line-Utilities%3A-Gen</u>
- Documentation for Migrate can be found in
 - <u>https://github.com/CapsicoHealth/Tilda/wiki/Tilda-Command-Line-Utilities%3A-Migrate</u>

TUTORIAL PROJECT

Create a new Java project "TildaTutorial"

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💓 New Java Project

Create a Java Project

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TUTORIAL PROJECT

- Make sure that "module-info.java" is unchecked
- In the Projects tab, select "Classpath" and add "RootProject"

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TUTORIAL PROJECT

• In the "Order and Export" tab, make sure all are exported

• Then create a folder tilda_tutorial/data

Java Settings Define the Java build settings.		<u>F</u> ile <u>E</u> dit <u>N</u> avigate Se <u>a</u> rch <u>P</u> roject <u>R</u> u : ☐
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	Select All Deselect All	

😇 New Folder		×
Folder Create a new folder resource.		-
Enter or select the parent folder:		
> 🔁 RootProject		
> 🔁 Servers		
✓ → TildaTutorial		
➢ bin ➢ src		
Folder name: tilda_tutorial/data		
Advanced >>		

- Create a new Dynamic Web Project "TildaTutorialWeb"
- Select "Generate web.xml deployment descriptor".

Working sets

Working sets

?

Add project to working sets

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	earch Project Run Window Help II▶ III ■ M 3. ③ .R 元 愛 ☆ •	• O • Q • Q • 🖧 • I • 😕 😂 •	Dynamic Web Project Create a standalone Dynamic Web project or add it to a new or existing Enterprise A	Application.
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x .project	🔊 Refresh	Image: Static Web Project Image: Static Web Project Image: Static Web Project	Configuration	
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🔘 New Dynamic Web Project

Configure project for building a Java application.

Java

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New...

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Copy the files log4j2.xml and tilda.config.json from the sample files folder into your project's src folder

Configure "log-path" and your database connection details to 🥘 main-tutorial - TildaTutorialWeb/si Edit Navigate Search Proje match your environment Project Explorer 15 Navigator

<pre> Classradh Classr</pre>

File

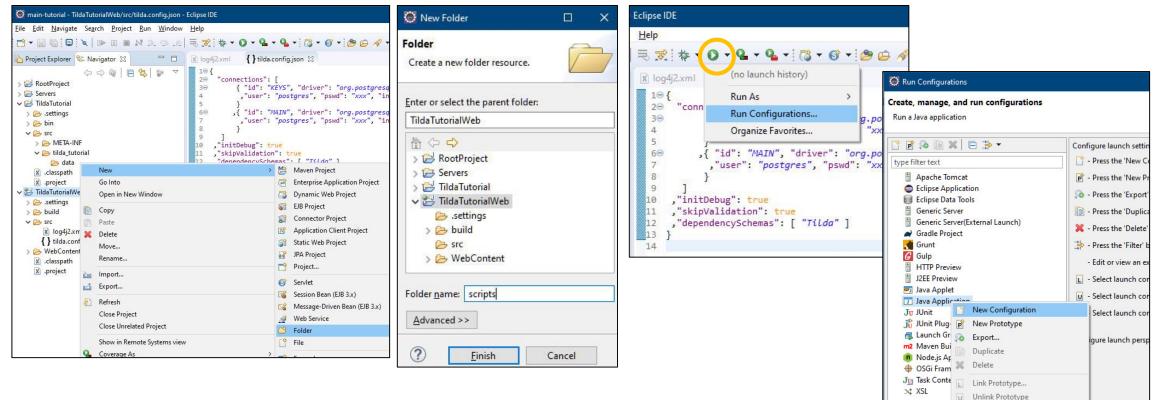
- Configure the project's java build path properties
- Select the "Project" tab and add "TildaTutorial" to the Classpath

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TildaTutorialWeb	Configure Source	> WikiText OK Cancel	Apply
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• Configure the Web Deployment Assembly details and add the 2 projects we have created previously.

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Java Build Path Source Deploy Path Add Java Code Style Java Code Style Java Code Style Java Code Style Java Scrip New Assembly Directive Itel Project R Java Scrip New Assembly Directive Itel Java Scrip Add a new assembly directive. Itel Project R Add a new assembly directive. Itel Project R Archive via Path Variable Server Server Folder Archives from File System Server Archives from Vorkspace Tarsgetad Task Rep Task Rep Task Rep Validation Web Con Web Con Web Con Web Con </td <td></td> <td>Define packaging structure for this Java EE Web Appli</td> <td>cation project.</td> <td></td> <td>Define packaging structure</td> <td>for this Java EE Web Application project.</td>		Define packaging structure for this Java EE Web Appli	cation project.		Define packaging structure	for this Java EE Web Application project.
 > JavaScript ○ New Assembly Directive > JavaScript ○ New Assembly Directive > Select Directive Type > Add a new assembly directive. > Project R Run/Deb Server Server Service Project R > Archives from File System > Archives from Workspace > Folder > JavaBuild Path Entries > Folder > JavaBuild Path Entries > Project R > Validation Web Proj Web Proj WikiText > XDoclet > Next > Entrie > Cancel > XDoclet 	> Java Code Style > Java Compiler > Java Editor	Source Deploy Path	Edit	> Java Code Style > Java Compiler > Java Editor	Source	WEB-INF/classes Edit
(?) Apply and Close Cancel	 > JavaScript New Assembly JSP Fragn Project Fa Project R Run/Debt Server Service Po Targeted I > Task Repo Task Repo Task Tags > Validation Web Con Web Page Web Proje WikiText 	e Type mbly directive. via Path Variable from File System from Workspace		 JavaScript New Assembly JSP Fragn Project Fa Project R Project R Run/Deby Server Server Service Po Task Repo Task Tags Validation Web Con Web Proj WikiText XDoclet 	o include in the deployment as	sembly.

 Create a new folder "scripts" for the run configurations we will create.



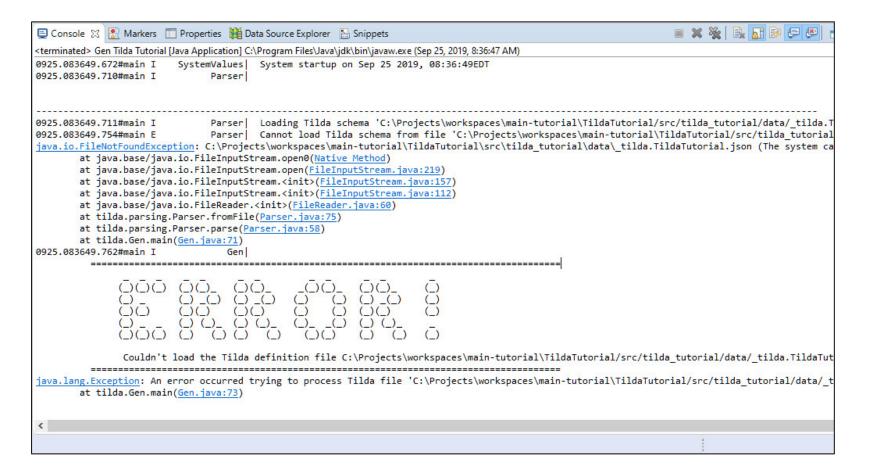
Reset with Prototype Values

- Create a new run configuration for Gen called "Gen Tilda Tutorial"
- Project is "TildaTutorialWeb", main class is "tilda.Gen", parameters is
 - \${project_loc:TildaTutorial}/src/tilda_tutorial/data/_tilda.TildaTutorial.json
- Save to the scripts folder

Name: Gen Tilda Tutorial	
🕝 Main 🖉 Arguments 🛋 JRE 🍫 Depende	encies 🧤 Source 🚾 Environment 🔲 <u>C</u> ommon 🕑 Prototype
Project:	
TildaTutorialWeb	Browse
Main class:	
tilda.Gen	Search
Includ <u>e</u> system libraries when searching for a	main class
☐ Include in <u>h</u> erited mains when searching for a ☐ St <u>o</u> p in main	Name: Gen Tilda Tutorial
	Varjable
	VM arguments:

Save as \ Lgcal file Shared file: \TildaTutorialWeb\scripts Browse Display in favorites menu Display in favorites menu Display in favorites menu Default - inherited (Cp1252) Other ISO-8859-1 Other ISO-8859-1 Other ISO-8859-1 Standard Input and Output Allocate console (necessary for input) Input Eile: Output File: Output File: Append Launch in background Show Command Line Revert Apply.		ependencies 🕸 Source 🔚 Environment 🔲 🖸	ommon P Prototype
Shared file: \TildaTutorialWeb\scripts Browse Display in favorites menu Encoding Default - inherited (Cp1252) Coverage Coverage Run Standard Input and Output Allocate console (necessary for input) Input Eile: Workspace File System Variables Append Show Command Line Reyert			
Display in favorites menu			
Debug Coverage Run Standard Input and Output Allocate console (necessary for input) Input File: Workspace File System Variables Agpend Show Command Line	Shared file: \TildaTutorialWeb\so	cripts	<u>B</u> rowse
Coverage Co	Display in favo <u>r</u> ites menu	Encoding	
Coverage Run Standard Input and Output Allocate console (necessary for input) Input File: Workspace File System Variables Append Launch in background Show Command Line Revert Apply	☑ ☆ Debug	Defa <u>u</u> lt - inherited (Cp1	252)
Standard Input and Output Allocate console (necessary for input) Input File: Workspace Output File: Workspace File System Variables Append Launch in background Show Command Line		Other ISO-8859-1	~
☑ Allocate console (necessary for input) ☑ Input Eile: ☑ Output File: ☑ Output File: ☑ Append ☑ Launch in background ☑ Show Command Line	🖂 💽 Run		
☐ Allocate console (necessary for input) ☐ Input Eile: ☐ Output File: ☐ Output File: ☐ Append ☐ Launch in background ☐ Show Command Line			
Allocate console (necessary for input) Input Eile: Workspace Output File: Workspace Append Launch in background Show Command Line Revert Apply			
☐ Allocate console (necessary for input) ☐ Input Eile: Workspace File System ☐ Output File: Workspace File System ☐ Append] Launch in background Show Command Line Revert			
Input Eile: Workspace File System Variables Output File:	Standard Input and Output		
Workspace File System Variables Output File:		a	
Output File: Workspace File System Variables Append Launch in background Show Command Line Reyert Apply		6)	
Workspace File System Variables Append		Ð	
Workspace File System Variables Append			ile System Variables
Append] Launch in background Show Command Line Revert Apply	Input <u>F</u> ile:		ile System Variables
Launch in bac <u>k</u> ground Sho <u>w</u> Command Line Re <u>v</u> ert Appl <u>v</u>	Input Eile:		ile System Variables
Sho <u>w</u> Command Line Re <u>v</u> ert Apply	Input <u>F</u> ile:	Workspace F	
Sho <u>w</u> Command Line Re <u>v</u> ert Apply	□ Input <u>F</u> ile:	Workspace F	
	Input <u>File:</u> Output Fi <u>le:</u> Append	Workspace F	
	Input <u>File:</u> Output Fi <u>le:</u> Append	Workspace F	
	Input <u>File:</u> Output Fi <u>le:</u> Append	Workspace Fr	ile <u>S</u> ystem Variables
Run Close	Input <u>File:</u> Output Fi <u>le:</u> Append	Workspace Fr	ile <u>S</u> ystem Variables

 If you run "Gen" at this time, you will get an error since we haven't created the Tilda definition file for the tutorial yet.



- Create a new run configuration for Migrate called "Migrate Tilda Tutorial"
- Project is "TildaTutorialWeb", main class is "tilda.Migrate", no parameters
- Save to the scripts folder

Main 🛛 (x)= Arguments 📑 JRE 🖧 Dependencies 🦆 Source 🖾 Environment 🔲 Com	mon 🛛 P Prototype
roject:	
TildaTutorialWeb	Browse
Main class:	
tilda.Migrate	Search
Include system libraries when searching for a main class	
Include inherited mains when searching for a main class	
Stop in main	

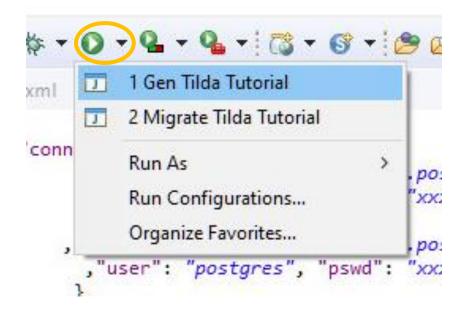
○ L <u>o</u> cal file	
Shared file: \TildaTutorialWeb\script	Is Browse
Display in favo <u>r</u> ites menu	Encoding
☑ ☆ Debug	Default - inherited (Cp1252)
🗌 🎴 Coverage	Other ISO-8859-1
🗹 🜔 Run	
Standard Input and Output	
Allocate console (necessary for input)	
] Input <u>F</u> ile:	Workspace File System Variables
	Workspace File System Variables
Input <u>F</u> ile:	
] Input <u>F</u> ile:	Workspace File System Variables Workspace File System Variables
Input <u>F</u> ile:	
Input Eile: Output File: Append	

If you run "Migrate" at this time, the utility will hang because we haven't created a database yet.

E Console 🛛 🔝 Markers	🔲 Properties 🙀 Da	ata Source Explorer 📔 Snippets 📃 🕷 📓 🗟	
Migrate Tilda Tutorial [Java App	plication] C:\Program I	Files\Java\jdk\bin\javaw.exe (Sep 25, 2019, 8:40:19 AM)	
0925.084020.603#main I	Migrate		
0925.084020.611#main I	Migrate	Tilda migration utility	
0925.084020.612#main I	Migrate		
0925.084020.612#main I	Migrate		####
0925.084020.612#main I	Migrate	## This utility will attempt to migrate automatically the database connected to via the 'MAIN'	##
0925.084020.612#main I	Migrate	## connection definined in tilda.config.json, using ALL the Tilda schema definitions found in	##
0925.084020.612#main I	Migrate	## JARs in the classpath.	##
0925.084020.612#main I	Migrate		####
0925.084020.612#main I	Migrate		
0925.084020.614#main I	ConnectionPool	Initializing Tilda: loading configuration file '/tilda.bootstrappers.config.json'.	
0925.084020.616#main I	ConnectionPool	Initializing Tilda: loading configuration file '/tilda.config.json'.	
0925.084020.617#main D	ConnectionPool	Cannot read the config file. Trying a secondary source as 'tilda.config.json'	
0925.084020.617#main I	ConnectionPool	Found tilda.config.json file in file:/C:/Projects/workspaces/main-tutorial/TildaTutorialWeb/	
0925.084020.693#main I	ConnectionPool	Initializing a fresh pool for Id=KEYS, DB=jdbc:postgresql://localhost:5433/Pepper?reWriteBatche	
0925.084020.751#main I	ConnectionPool	Merging pool with ID MAIN into prexisting pool jdbc:postgresql://localhost:5433/Pepper?reWriteB	atchedInse
0925.084020.752#main I	ConnectionPool	~~ GETTING CONNECTION KEYS	
0925.084020.918#main E	ConnectionPool	- Attempt #1 failed to obtain a connection: Cannot create PoolableConnectionFactory (FATAL:	password a
0925.084020.918#main E	ConnectionPool	(Sleeping for 30 seconds, and will re-try again, for a max of 100 times)	
<			

RUN CONFIGURATIONS

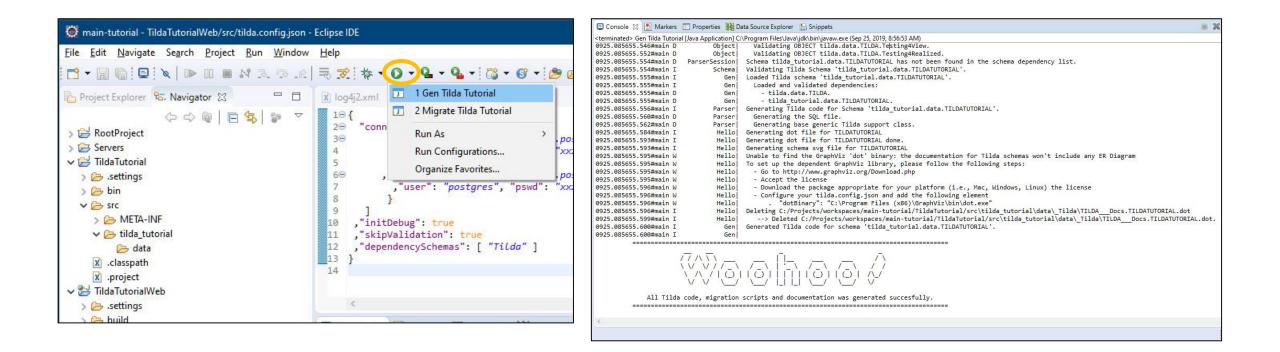
• From now on, the 2 run configurations are available through the shortcuts off the menu



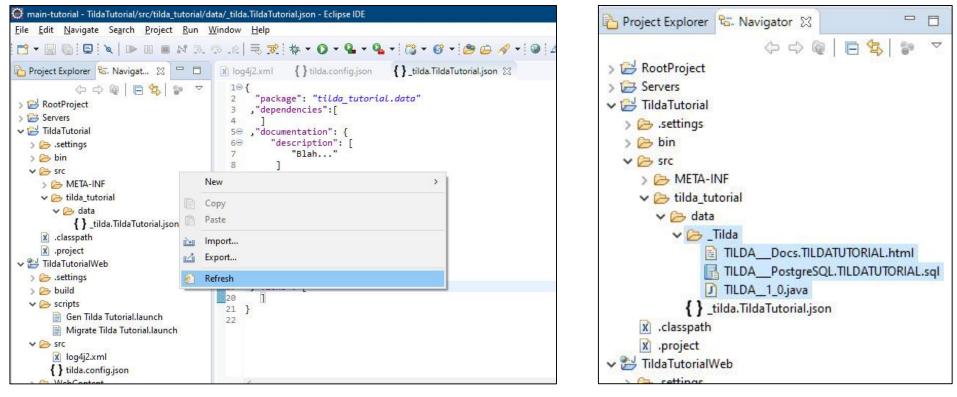
- Create your project's folder structure as "/tilda_tutorial/data"
- Copy the file _tilda.TildaTutorial.json from the samples file folder

😇 main-tutorial - Eclipse IDE	🥘 New Folder — 🗆 🗙	👹 main-tutorial - TildaTutorial/src/tilda_tutorial/data/_tilda.TildaTutorial.json - Eclipse IDE
 imain-tutorial - Eclipse IDE File Edit Navigate Search Project Run Imain Project Explorer Imain Project Explorer Imain Project Explorer Imain Project Explorer Imain Project Imain	New Folder - × Folder Image: Second se	File Edit Navigate Search Project Non-setting Project Project Navigator Project Navigator Project Navigator Project Navigator Project Navigator Project Project Navigator Project Project Navigator Project Project Project
	Advanced >>	> > META-INF 17 ~ >> tilda_tutorial 18 ~ >> data 19 { }_tilda.TildaTutorial.json 20 { }_tilda.TildaTutorial.json 21 X .classpath X .project > >> TildaTutorialWeb

Run Gen and get a Woohoo!

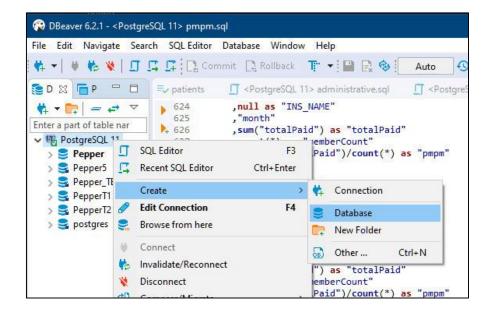


- Once complete, refresh your workspace so generated files are picked up.
 - Make sure no node is selected in the Navigator. Simply click on any node and then Ctrl-Click it again to unselect it
 - Right click on a white space in the navigator and select "Refresh"
 - Every Gen requires a Refresh
- You can see a new _Tilda sub-folder has been created with files in there



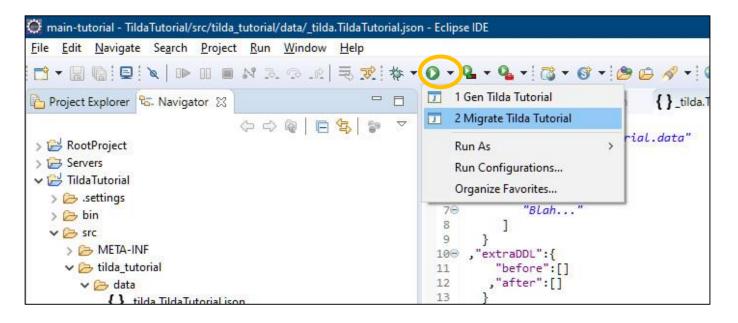
Create the TildaTutorial database using your favorite DB tool

- PGAdmin, Toad, Azure Studio or DBeaver for example.
- Here we use DBeaver



Database name:	TildaTutorial	
Owner:	postgres	~
Definition		
Template databas	е:	~
Encoding:	UTF8	~
Tablespace:	pg_default	~

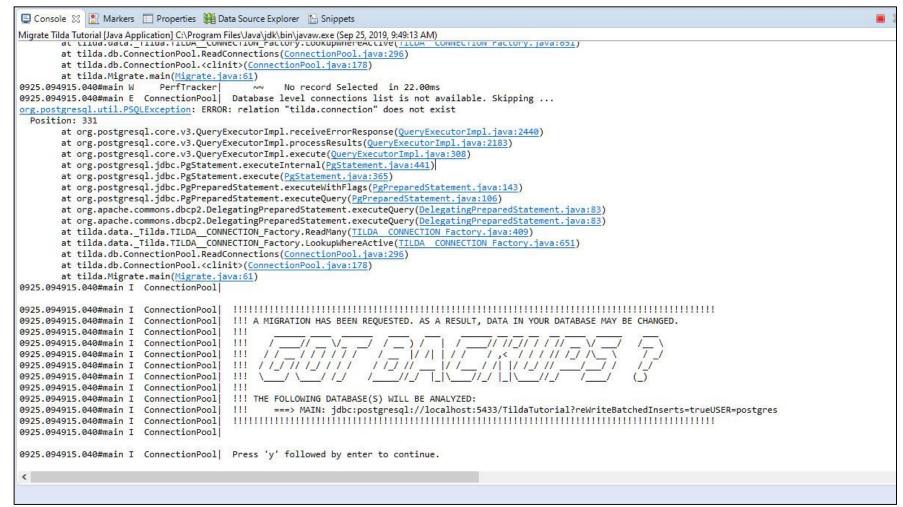
• Run Migrate



First time we run Migrate, the database is completely empty, so you'll get some errors that you can ignore.

🔄 Console 🙁 🔝 Markers 🔲 Properties 🎬 Da	ata Source Explorer 🛛 📔 Snippets
Migrate Tilda Tutorial [Java Application] C:\Program I	Files\Java\jdk\bin\javaw.exe (Sep 25, 2019, 9:49:13 AM)
0925.094914.552#main I Migrate	
0925.094914.567#main I Migrate	Tilda migration utility
0925.094914.567#main I Migrate	
0925.094914.567#main I Migrate	
0925.094914.567#main I Migrate	## This utility will attempt to migrate automatically the database connected to via the 'MAIN' ##
0925.094914.567#main I Migrate	## connection definined in tilda.config.json, using ALL the Tilda schema definitions found in ##
0925.094914.567#main I Migrate	## JARs in the classpath. ##
0925.094914.567#main I Migrate	***************************************
0925.094914.567#main I Migrate	
0925.094914.567#main I ConnectionPool	Initializing Tilda: loading configuration file '/tilda.bootstrappers.config.json'.
0925.094914.567#main I ConnectionPool	Initializing Tilda: loading configuration file '/tilda.config.json'.
0925.094914.567#main D ConnectionPool	Cannot read the config file. Trying a secondary source as 'tilda.config.json'
0925.094914.567#main I ConnectionPool	Found tilda.config.json file in file:/C:/Projects/workspaces/main-tutorial/TildaTutorialWeb/build/cla
0925.094914.636#main I ConnectionPool	Initializing a fresh pool for Id=KEYS, DB=jdbc:postgresql://localhost:5433/TildaTutorial?reWriteBatchedI
0925.094914.671#main I ConnectionPool	Merging pool with ID MAIN into prexisting pool jdbc:postgresql://localhost:5433/TildaTutorial?reWriteBat
0925.094914.671#main I ConnectionPool	~~ GETTING CONNECTION KEYS
0925.094915.008#main I ConnectionPool	~~ GOT CONNECTION KEYS, 1/2/20
0925.094915.008#main I ConnectionPool	Adding Connections from tilda.CONNECTIONS table to Pool
0925.094915.024#main D QueryDetails	~~ [TILDA.Connection]: select TILDA.Connection."active", TILDA.Connection."id", TILDA.Connection."d
0925.094915.040#main E Connection	JDBC Error: Fatal sql error: SQLState=42P01, ErrorCode=0
0925.094915.040#main E Connection	Catching org.postgresql.util.PSQLException: ERROR: relation "tilda.connection" does not exist
Position: 331	
	<pre>ixecutorImpl.receiveErrorResponse(<u>QueryExecutorImpl.java:2440</u>)</pre>
	xecutorImpl.processResults(<u>QueryExecutorImpl.java:2183</u>)
	<pre>xecutorImpl.execute(<u>QueryExecutorImpl.java:308</u>)</pre>
	ent.executeInternal(PgStatement.java:441)
	nt.execute(<u>PgStatement.java:365</u>)
	dStatement.executeWithFlags(<u>PgPreparedStatement.java:143</u>)
	dStatement.executeQuery(<u>PgPreparedStatement.java:106</u>)
	<pre>gatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:83)</pre>
	<pre>gatingPreparedStatement.executeQuery(DelegatingPreparedStatement.java:83)</pre>
	<pre>IECTION_Factory.ReadMany(TILDA CONNECTION Factory.java:409) IECTION Factory.LookupWhereActive(TILDA CONNECTION Factory.java:651)</pre>
	Connections(ConnectionPool.java:296)
at tilda.db.ConnectionPool. <clir< td=""><td></td></clir<>	
at tilda.Migrate.main(Migrate.ja	
0925.094915.040#main W PerfTracker	No record Selected in 22.00ms
	Database level connections list is not available. Skipping
	all relation "tilds connection" does not evict
<	

• The utility prompts to start the analysis. Press 'y' followed by enter.



 For Dev, it's OK to run with the "postgres" admin account, but the utility flags this as a risk. In prod, you would not use a super user account.

📃 Console 🔀 🖹 Markers	🔲 Properties 🉀 D	Data Source Explorer 🔚 Snippets	🛛 🖿 🗙 🧃
Migrate Tilda Tutorial [Java Ap	plication] C:\Program	Files\Java\jdk\bin\javaw.exe (Sep 25, 2019, 9:49:13 AM)	
0925.095036.428#main D	Object	Validating VIEW tilda.data.TILDA.Testing4View.	
0925.095036.428#main D	Object	Validating OBJECT tilda.data.TILDA.Testing4View.	
0925.095036.428#main D	Object	Validating OBJECT tilda.data.TILDA.Testing4Realized.	
0925.095036.544#main D	QueryDetails	<pre>~~ [SYSTEM.CURRENT_SETTING]: select current_setting('is_superuser');</pre>	
0925.095036.544#main D	PerfTracker	Selected 1 records in 4.00ms	
0925.095036.544#main W	ConnectionPool	***************************************	
0925.095036.544#main W		###	
0925.095036.544#main W	ConnectionPool	### WARNING: THIS CONNECTION USES A SUPERUSER ACCOUNT !!! ###	
0925.095036.544#main W	ConnectionPool	### ===================================	
		###	
0925.095036.544#main W	ConnectionPool		
0925.095036.544#main W		### _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ ###	
	ConnectionPool	### ###	
0925.095036.544#main W	ConnectionPool		12 (3 1222)41
0925.095036.544#main I		Loading database metadata for found Schemas from MAIN: jdbc:postgresql://localhost:5433/TildaTutorial?reWriteBatchedInsert	ts=trueUSER
0925.095036.544#main D		TILDATMP	
0925.095036.560#main D		TILDA	
0925.095036.560#main I	Parser	===> Analyzing DB (Url: MAIN: jdbc:postgresql://localhost:5433/TildaTutorial?reWriteBatchedInserts=trueUSER=postgres, Postgres, Postgre	stgreSQL V1
0925.095036.560#main I	Parser	Analyzing differences between the database and the application's expected data model	
0925.095036.560#main I	Parser	Comparing the application's data model with the database's for tilda.data.tmp.TILDATMP	
<			
			1

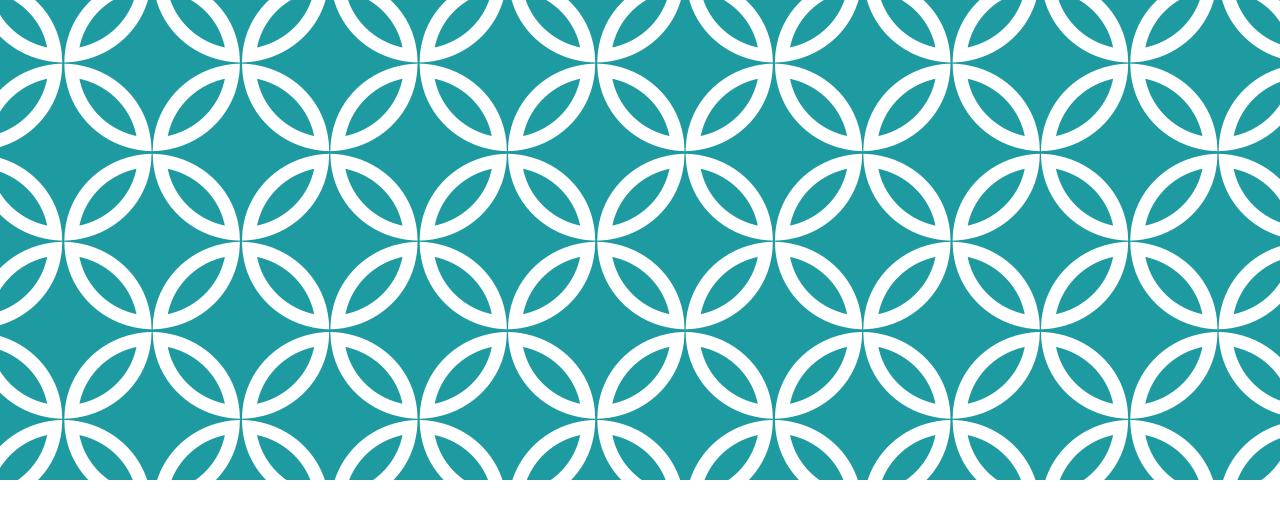
- The analysis yields a number of migration steps for your review.
- Type "yes" and enter to start the migration proper.
- Note how so far we only have an empty schema for the TildaTutorial app.
- lata Source Explorer 🛛 🔚 Snippets Files\Java\jdk\bin\javaw.exe (Sep 25, 2019, 10:49:01 AM) TILDATUTORIAL ===> Analyzing DB (Url: MAIN: jdbc:postgresql://localhost:5433/TildaTutorial?reWriteBatchedInserts=trueUSER=postgres, PostgreSQL Analyzing differences between the database and the application's expected data model... Comparing the application's data model with the database's for tilda.data.tmp.TILDATMP Comparing the application's data model with the database's for tilda.data.TILDA Comparing the application's data model with the database's for tilda tutorial.data.TILDATUTORIAL There were 28 discrepencies found between the application's required data model and the database MAIN: jdbc:postgresql://localhost: Schema 'TILDATMP': 1 - Create schema tilda.data.tmp.TILDATMP Schema 'TILDA': 2 - Create schema tilda.data.TILDA 3 - Adding Tilda start-helper stored procedures 4 - Create table tilda.data.TILDA.ZoneInfo 5 - Create table tilda.data.TILDA.Key 6 - Create table tilda.data.TILDA.Mapping 7 - Create table tilda.data.TILDA.ObjectPerf Create table tilda.data.TILDA.TransPerf 9 - Create table tilda.data.TILDA.Connection 10 - Create table tilda.data.TILDA.Job 11 - Create table tilda.data.TILDA.JobPart Create table tilda.data.TILDA.JobPartMessage 13 - Create table tilda.data.TILDA.RefillPerf 14 - Create table tilda.data.TILDA.Maintenance Create table tilda.data.TILDA.Formula Create table tilda.data.TILDA.Measure 17 - Create table tilda.data.TILDA.MeasureFormula 18 - Create table tilda.data.TILDA.FormulaDependency - Create table tilda.data.TILDA.FormulaResult - Create table tilda.data.TILDA.DependencyDDLDummyTable - Create table tilda.data.TILDA.DateDim 22 - Create table tilda.data.TILDA.DateLimitDim 23 - Create view tilda.data.TILDA.FormulaResultView 24 - Create view tilda.data.TILDA.FormulaDependencyView 25 - Create view tilda.data.TILDA.MeasureFormulaView 26 - Running an extra external DDL script 'tilda/data/ tilda.Tilda.postgres.helpers-after.sql' on schema 'TILDA' 27 - Adding Tilda end-helper stored procedures Schema 'TILDATUTORIAL': 28 - Create schema tilda_tutorial.data.TILDATUTORIAL A total of 28 migration steps will be applied. !!! THE FOLLOWING DATABASE WILL NOW BE MIGRATED: 111 ==> MAIN: jdbc:postgresql://localhost:5433/TildaTutorial?reWriteBatchedInserts=trueUSER=postgres, PostgreSQL V11.1 111 111 111 111111111 111 111 111 11111 Press 'yes' followed by enter to continue.

• Migrate also manages the necessary roles for further work

🔄 Console 🔀 📳 Markers 🔲 Properties 🏙 Data Source Explorer 🔚 Snippets <terminated> Migrate Tilda Tutorial [Java Application] C:\Program Files\Java\jdk\bin\javaw.exe (Sep 25, 2019, 10:49:01 AM) 0925.104959.689#main D OuervDetails ~~ [TILDA.*]: DO \$body\$ BEGIN IF NOT EXISTS (SELECT FROM pg catalog.pg authid WHERE rolname = 'tilda app') THEN CREATE ROLE tilda app; END IF; END \$body\$; DO \$body\$ BEGIN IF NOT EXISTS (SELECT FROM pg catalog.pg authid WHERE rolname = 'tilda read only') THEN CREATE ROLE tilda read only; END IF; END \$body\$; DO \$body\$ BEGIN IF NOT EXISTS (SELECT FROM pg catalog.pg authid WHERE rolname = 'tilda reporting') THEN CREATE ROLE tilda reporting; END IF: END \$body\$; GRANT ALL ON SCHEMA TILDATMP TO tilda app; GRANT ALL ON ALL TABLES IN SCHEMA TILDATMP TO tilda app; GRANT ALL ON ALL FUNCTIONS IN SCHEMA TILDATMP TO tilda app; GRANT ALL ON ALL SEQUENCES IN SCHEMA TILDATMP TO tilda app; GRANT USAGE ON SCHEMA TILDATMP TO tilda read only; GRANT SELECT ON ALL TABLES IN SCHEMA TILDATMP TO tilda read only; GRANT EXECUTE ON ALL FUNCTIONS IN SCHEMA TILDATMP TO tilda read only; GRANT SELECT ON ALL SEQUENCES IN SCHEMA TILDATMP TO tilda read only; GRANT ALL ON SCHEMA TILDA TO tilda app; GRANT ALL ON ALL TABLES IN SCHEMA TILDA TO tilda app; GRANT ALL ON ALL FUNCTIONS IN SCHEMA TILDA TO tilda app; GRANT ALL ON ALL SEQUENCES IN SCHEMA TILDA TO tilda app; GRANT USAGE ON SCHEMA TILDA TO tilda read only; GRANT SELECT ON ALL TABLES IN SCHEMA TILDA TO tilda read only; GRANT EXECUTE ON ALL FUNCTIONS IN SCHEMA TILDA TO tilda read only; GRANT SELECT ON ALL SEQUENCES IN SCHEMA TILDA TO tilda read only; GRANT ALL ON SCHEMA TILDATUTORIAL TO tilda_app; GRANT ALL ON ALL TABLES IN SCHEMA TILDATUTORIAL TO tilda_app; GRANT ALL ON ALL FUNCTIONS IN SCHEMA TILDATUTORIAL TO tilda app; GRANT ALL ON ALL SEQUENCES IN SCHEMA TILDATUTORIAL TO tilda app; GRANT USAGE ON SCHEMA TILDATUTORIAL TO tilda read only; GRANT SELECT ON ALL TABLES IN SCHEMA TILDATUTORIAL TO tilda read only; GRANT EXECUTE ON ALL FUNCTIONS IN SCHEMA TILDATUTORIAL TO tilda read only; GRANT SELECT ON ALL SEQUENCES IN SCHEMA TILDATUTORIAL TO tilda read only;

- Get a Woohoo!
- Check the DB to see the new schemas and tables created.

0925.104959.718#main I ConnectionPool ~~~ G O T C O N N E C T I O N KEYS, 3/0/20 0925.104959.720#main D QueryDetails ~~ [TILDA.Key]: select TILDA.Key."refnum", TILDA.Key."name", T 0925.104959.738#main I Connection ~~ Selected 5 records in 17.00ms 0925.104959.738#main I Connection ~~ C L O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I Connection ~~ C L O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I Connection ~~ C L O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I Connection ~~ C L O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I Connection ~~ C L O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I SystemValues System startup on Sep 25 2019, 10:49:59EDT 0925.104959.787#main I Migrate System startup on Sep 25 2019, 10:49:59EDT 0925.104959.787#main I Migrate	<terminated> Migrate Tilda Tu</terminated>	torial [Java Application] C:\Progr	-					pets bin\j	ava	w.e	xe (S	Sep	25	, 20)19,	10	49:	01 /	AM))						
0925.104959.738#main D PerfTracker ~~ Selected 5 records in 17.00ms 0925.104959.738#main I Connection ~~ R O L L B A C K KEYS: jdbc:p 0925.104959.738#main I Connection ~~ C L O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I Connection ~~ C U O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I Connection ~~ C U O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I ConnectionPool ~~ C U O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I ConnectionPool ~~ C U O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I ConnectionPool ~~ C U O S I N G A N D R E T U R N I N G C O N N E C T I 0925.104959.739#main I SystemValues System startup on Sep 25 2019, 10:49:59EDT System startup on Sep 25 2019, 10:49:59EDT 0925.104959.787#main I Migrate	0925.104959.718#main I	ConnectionPool																									
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CONCLUSION

READY TO PLAY

- At this point, you have the infrastructure in place to do your development with Tilda
 - We have used eclipse here, but any java IDE with the ability to run command-like tools can work.
 - We have done a Root/Jar/Web configuration of projects, but other configurations and approaches are entirely doable as well: Tilda doesn't dictate any of this.
 - Some people use notepad++ and the command line for their work
 - You can use whatever DB tool you like to work against the database.
- There are two tutorials which build on this "getting started" guide in the Wiki.

<u>https://github.com/CapsicoHealth/Tilda/wiki/First-Tutorial-Part-1%3A-Benefits-Of-A-Transparent-Iterative-Model-Driven-Approach</u>

<u>https://github.com/CapsicoHealth/Tilda/wiki/WebDev-Tutorial-Part-1%3A-Easy-Servlets</u>