Slides: http://bit.ly/uar-propel2

Propel

Up & Running with Propel 2

for MySQL

Ben Bankes

OpenWest

Follow along:

```
$ mysql example_com --user=un --password=pw < <(curl http://bit.ly/spj-data)
```

Outline

What is Propel

Why Propel

Quickstart!

Use Propel

Extend Propel

About me

- Lead Developer at Small Business Networks
- Build apps that solve business needs (3+ years)
  - Project Management
  - Inventory
  - Time & Payroll
  - Legal Conflict Management

  … with existing business data
- First Child!

MOM
Baby
DAD

What is Propel?

“A highly customizeable and blazing fast **ORM** library for PHP 5.5+”

- propelorm.org

Object Relational Mapping

```
<?php

namespace Models\Base;

use ...

/** Base class that represents a row from t
abstract class User implements ActiveRecord
{
    /** TableMap class name ...*/
    const TABLE_MAP = '\\Models\\Map\\UserT

    /** attribute to determine if this obje
    protected $new = true;

    /** attribute to determine whether this
    protected $deleted = false;

    /** The columns that have been modified
    protected $modifiedColumns = array();

    /** The (virtual) columns that
    protected $virtualCol

    /** The value
    protected $

    /** The valu
    protected $
```

Why Propel?

Main Features

- ORM Code generation
- IDE Friendly
- Database versioning & migrations
- Highly customizeable

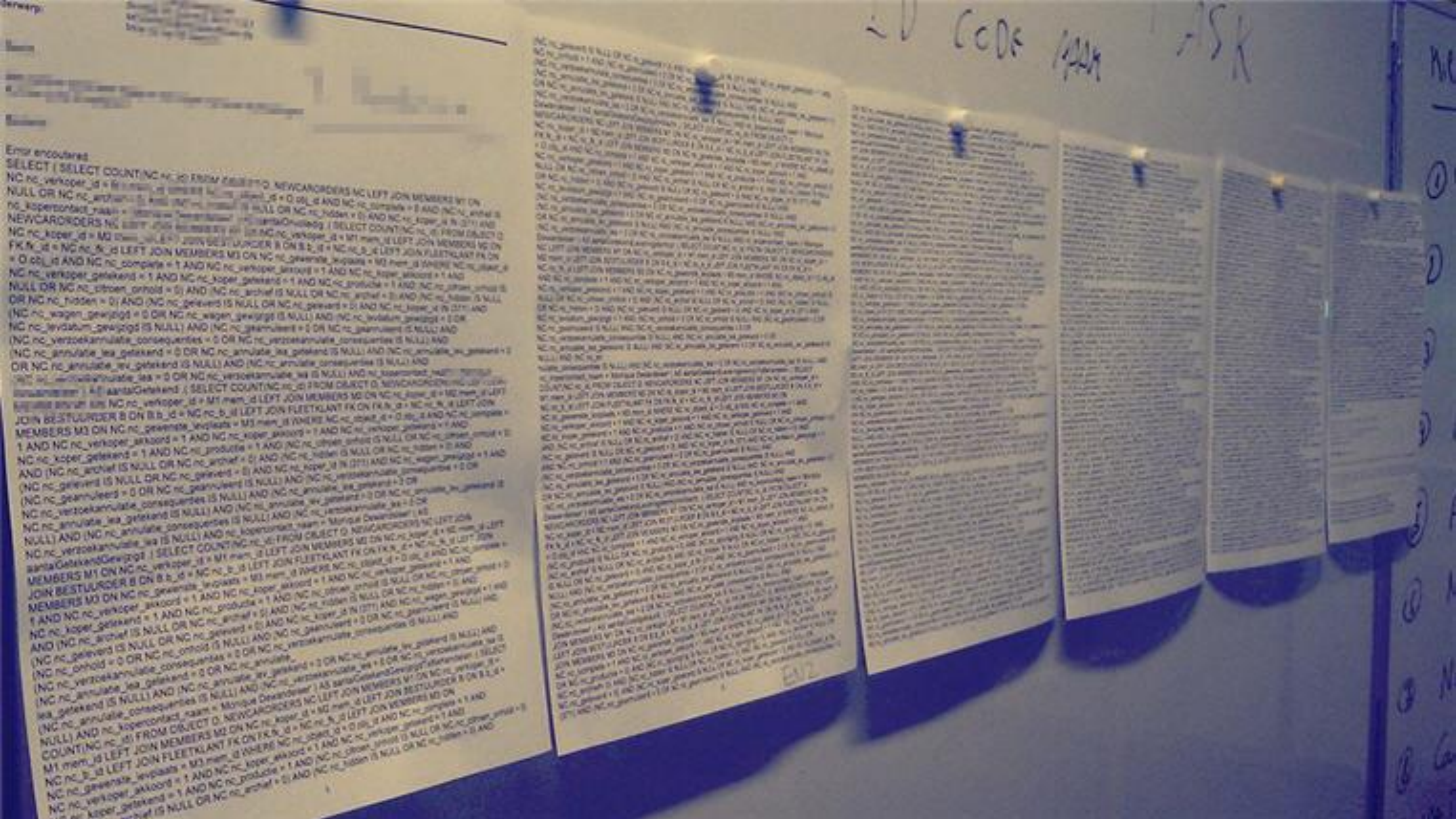
Alternatives

- Doctrine
- SQL
- Build-your-own-ORM

Doctrine

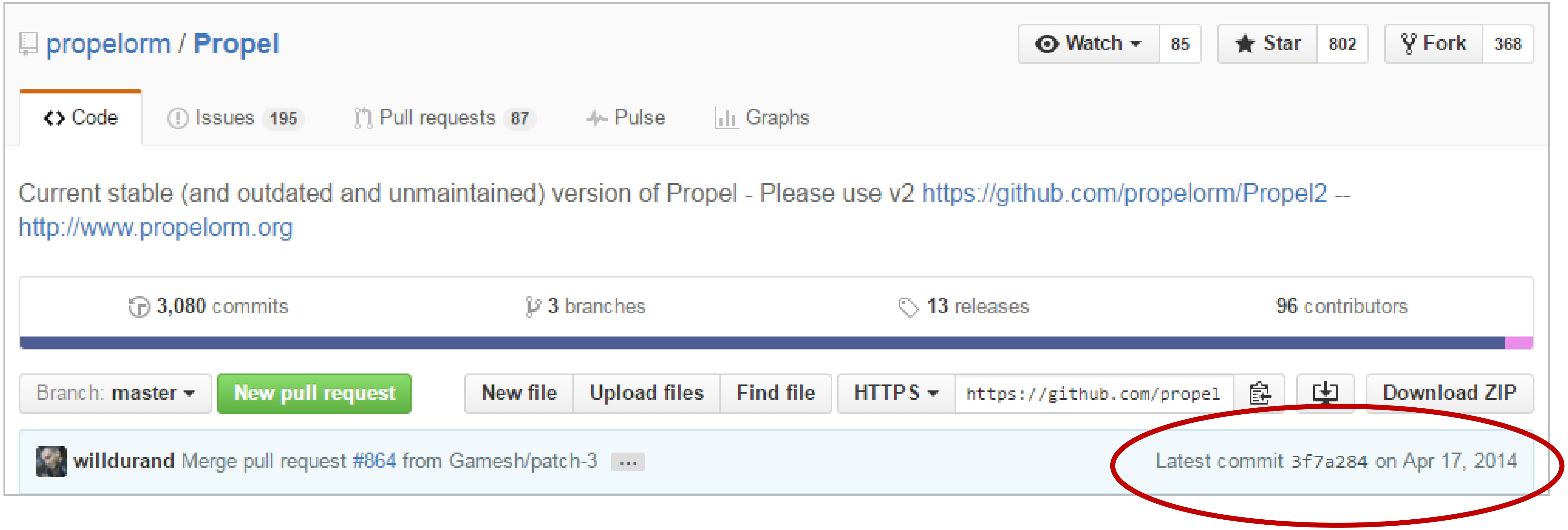
- More verbose
- Not as performant

  https://github.com/eventhorizonpl/forked-php-orm-benchmark
- Higher learning curve (DQL)
- No code generation


Onderwerp: [redacted]

[redacted]

Error encountered
```
SELECT ( SELECT COUNT(NC.nc_id) FROM [redacted] O, NEWCARORDERS NC LEFT JOIN MEMBERS M1 ON
NC.nc_verkoper_id = [redacted] nc_object_id = O.obj_id AND NC.nc_compleet = 1 AND (NC.nc_archief IS
NULL OR NC.nc_archief [redacted] IS NULL OR NC.nc_hidden = 0) AND NC.nc_koper_id IN (371) AND
nc_kopercontact_naam = [redacted] aantalOnvolleig, ( SELECT COUNT(NC.nc_id) FROM OBJECT O,
NEWCARORDERS NC [redacted] ON NC.nc_verkoper_id = M1.mem_id LEFT JOIN MEMBERS M2 ON
NC.nc_koper_id = M2 [redacted] JOIN BESTUURDER B ON B.b_id = NC.nc_b_id LEFT JOIN FLEETKLANT FK ON
FK.fk_id = NC.nc_fk_id LEFT JOIN MEMBERS M3 ON NC.nc_gewenste_levplaats = M3.mem_id WHERE NC.nc_object_id
= O.obj_id AND NC.nc_compleet = 1 AND NC.nc_verkoper_akkoord = 1 AND NC.nc_koper_akkoord = 1 AND
NC.nc_verkoper_getekend = 1 AND NC.nc_koper_getekend = 1 AND NC.nc_productie = 1 AND (NC.nc_citroen_onhold IS
NULL OR NC.nc_citroen_onhold = 0) AND (NC.nc_archief IS NULL OR NC.nc_archief = 0) AND (NC.nc_hidden IS NULL
OR NC.nc_hidden = 0) AND (NC.nc_geleverd IS NULL OR NC.nc_geleverd = 0) AND NC.nc_koper_id IN (371) AND
(NC.nc_wagen_gewijzigd = 0 OR NC.nc_wagen_gewijzigd IS NULL) AND (NC.nc_levdatum_gewijzigd = 0 OR
NC.nc_levdatum_gewijzigd IS NULL) AND (NC.nc_geannuleerd = 0 OR NC.nc_geannuleerd IS NULL) AND
(NC.nc_verzoekannulatie_consequenties = 0 OR NC.nc_verzoekannulatie_consequenties IS NULL) AND
(NC.nc_annulatie_lea_getekend = 0 OR NC.nc_annulatie_lea_getekend IS NULL) AND (NC.nc_annulatie_lev_getekend = 0
OR NC.nc_annulatie_lev_getekend IS NULL) AND (NC.nc_annulatie_consequenties IS NULL) AND
(NC.nc_verzoekannulatie_lea = 0 OR NC.nc_verzoekannulatie_lea IS NULL) AND nc_kopercontact_naam [redacted]
[redacted] ) AS aantalGetekend, ( SELECT COUNT(NC.nc_id) FROM OBJECT O, NEWCARORDERS NC LEFT JOIN
[redacted] NC.nc_verkoper_id = M1.mem_id LEFT JOIN MEMBERS M2 ON NC.nc_koper_id = M2.mem_id LEFT
JOIN FLEETKLANT FK ON FK.fk_id = NC.nc_fk_id LEFT JOIN
JOIN BESTUURDER B ON B.b_id = NC.nc_b_id LEFT JOIN ... WHERE NC.nc_object_id = O.obj_id AND NC.nc_compleet =
MEMBERS M3 ON NC.nc_gewenste_levplaats = M3.mem_id WHERE NC.nc_verkoper_getekend = 1 AND
1 AND NC.nc_verkoper_akkoord = 1 AND NC.nc_koper_akkoord = 1 AND NC.nc_citroen_onhold IS NULL OR NC.nc_citroen_onhold = 0
NC.nc_koper_getekend = 1 AND NC.nc_productie = 1 AND (NC.nc_hidden IS NULL OR NC.nc_hidden = 0) AND
AND (NC.nc_archief IS NULL OR NC.nc_archief = 0) AND NC.nc_koper_id IN (371) AND NC.nc_wagen_gewijzigd = 1 AND
(NC.nc_geleverd IS NULL OR NC.nc_geleverd = 0) AND (NC.nc_verzoekannulatie_consequenties = 0 OR
(NC.nc_geannuleerd = 0 OR NC.nc_geannuleerd IS NULL) AND (NC.nc_annulatie_lea_getekend = 0 OR
NC.nc_verzoekannulatie_consequenties IS NULL) AND (NC.nc_annulatie_lev_getekend = 0 OR NC.nc_annulatie_lev_getekend IS
NC.nc_annulatie_lea_getekend IS NULL) AND (NC.nc_annulatie_lev_getekend = 0 OR NC.nc_verzoekannulatie_lea = 0 OR
NC.nc_annulatie_consequenties IS NULL) AND (NC.nc_verzoekannulatie_lea IS NULL) AND nc_kopercontact_naam = 'Monique Dewandeleer' ) AS
NULL) AND (NC.nc_verzoekannulatie_lea IS NULL) AND nc_kopercontact_naam = 'Monique Dewandeleer' ) AS
NC.nc_verzoekannulatie_lea IS NULL) ( SELECT COUNT(NC.nc_id) FROM OBJECT O, NEWCARORDERS NC LEFT JOIN
aantalGetekendGewijzigd, ( SELECT COUNT(NC.nc_id) FROM OBJECT O, NEWCARORDERS NC LEFT JOIN MEMBERS M2 ON NC.nc_koper_id = M2.mem_id LEFT JOIN
MEMBERS M1 ON NC.nc_verkoper_id = M1.mem_id LEFT JOIN FLEETKLANT FK ON FK.fk_id = NC.nc_fk_id LEFT JOIN
JOIN BESTUURDER B ON B.b_id = NC.nc_b_id LEFT JOIN ... WHERE NC.nc_object_id = O.obj_id AND NC.nc_compleet =
MEMBERS M3 ON NC.nc_gewenste_levplaats = M3.mem_id WHERE NC.nc_verkoper_getekend = 1 AND
1 AND NC.nc_verkoper_akkoord = 1 AND NC.nc_koper_akkoord = 1 AND (NC.nc_citroen_onhold IS NULL OR NC.nc_citroen_onhold = 0
NC.nc_koper_getekend = 1 AND NC.nc_productie = 1 AND (NC.nc_hidden IS NULL OR NC.nc_hidden = 0) AND NC.nc_wagen_gewijzigd = 1 AND
AND (NC.nc_archief IS NULL OR NC.nc_archief = 0) AND NC.nc_koper_id IN (371) AND NC.nc_geannuleerd IS NULL AND
(NC.nc_geleverd IS NULL OR NC.nc_geleverd = 0) AND (NC.nc_geannuleerd = 0 OR NC.nc_geannuleerd IS NULL) AND
(NC.nc_onhold = 0 OR NC.nc_onhold IS NULL) AND (NC.nc_verzoekannulatie_consequenties IS NULL) AND
(NC.nc_verzoekannulatie_consequenties = 0 OR NC.nc_annulatie_lev_getekend = 0 OR NC.nc_annulatie_lev_getekend IS NULL) AND
(NC.nc_annulatie_lea_getekend = 0 OR NC.nc_annulatie_lev_getekend = 0 OR NC.nc_verzoekannulatie_lea = 0 OR NC.nc_verzoekannulatie_lea IS
(NC.nc_annulatie_lea_getekend IS NULL) AND (NC.nc_verzoekannulatie_lea = 0 OR NC.nc_verzoekannulatie_lea IS NULL AS aantalGetekendGewijzigdAfdanken ( SELECT
lea_getekend IS NULL) AND (NC.nc_annulatie_consequenties IS NULL) AND nc_kopercontact_naam = 'Monique Dewandeleer' ) AS aantalGetekendGewijzigdAfdanken, ( SELECT
(NC.nc_annulatie_consequenties IS NULL) AND nc_kopercontact_naam = 'Monique Dewandeleer' ) AS NC LEFT JOIN MEMBERS M1 ON NC.nc_verkoper_id =
NULL) AND nc_kopercontact_naam = NEWCARORDERS NC LEFT JOIN MEMBERS M2 ON NC.nc_koper_id = M2.mem_id LEFT JOIN BESTUURDER B ON B.b_id =
COUNT(NC.nc_id) FROM OBJECT O, NEWCARORDERS NC LEFT JOIN MEMBERS M2 ON NC.nc_koper_id = M2.mem_id LEFT JOIN MEMBERS M3 ON
M1.mem_id LEFT JOIN MEMBERS M2 ON NC.nc_koper_id = M2.mem_id LEFT JOIN FLEETKLANT FK ON FK.fk_id = NC.nc_fk_id AND NC.nc_compleet = 1 AND
NC.nc_b_id LEFT JOIN FLEETKLANT FK ON FK.fk_id = NC.nc_fk_id WHERE NC.nc_object_id = O.obj_id AND NC.nc_compleet = 1 AND
NC.nc_gewenste_levplaats = M3.mem_id WHERE NC.nc_verkoper_getekend = 1 AND
NC.nc_verkoper_akkoord = 1 AND NC.nc_koper_akkoord = 1 AND NC.nc_citroen_onhold IS NULL OR NC.nc_citroen_onhold = 0
NC.nc_koper_getekend = 1 AND NC.nc_productie = 1 AND (NC.nc_hidden IS NULL OR NC.nc_hidden = 0) AND
NC.nc_archief IS NULL OR NC.nc_archief = 0) AND
```



propelorm / Propel

Watch 85 | Star 802 | Fork 368

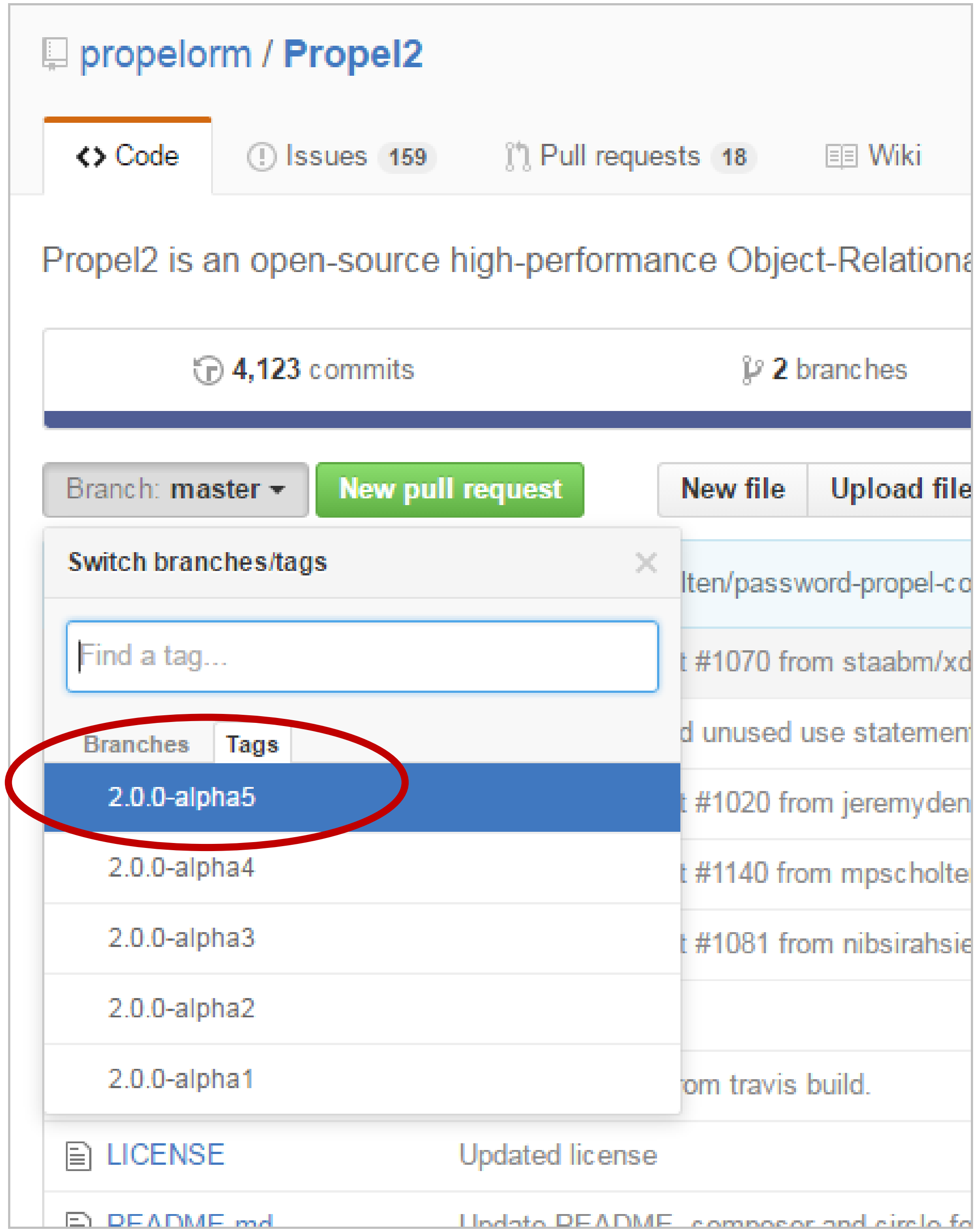
Code | Issues 195 | Pull requests 87 | Pulse | Graphs

Current stable (and outdated and unmaintained) version of Propel - Please use v2 https://github.com/propelorm/Propel2 -- http://www.propelorm.org

3,080 commits | 3 branches | 13 releases | 96 contributors

Branch: master | New pull request | New file | Upload files | Find file | HTTPS | https://github.com/propel | Download ZIP

willdurand Merge pull request #864 from Gamesh/patch-3 … Latest commit 3f7a284 on Apr 17, 2014


propelorm / Propel2

Propel2 is an open-source high-performance Object-Relationa

2.0.0-alpha5
2.0.0-alpha4
2.0.0-alpha3
2.0.0-alpha2
2.0.0-alpha1

lten/password-propel-co
t #1070 from staabm/xd
d unused use statemen
t #1020 from jeremyden
t #1140 from mpscholte
t #1081 from nibsirahsie
om travis build.

LICENSE	Updated license
README.md	Update README, composer and circle fo

Code Generation

schema.xml

XML build → **PHP**

Active Record
Models

Query Classes

Maps

Quickstart!

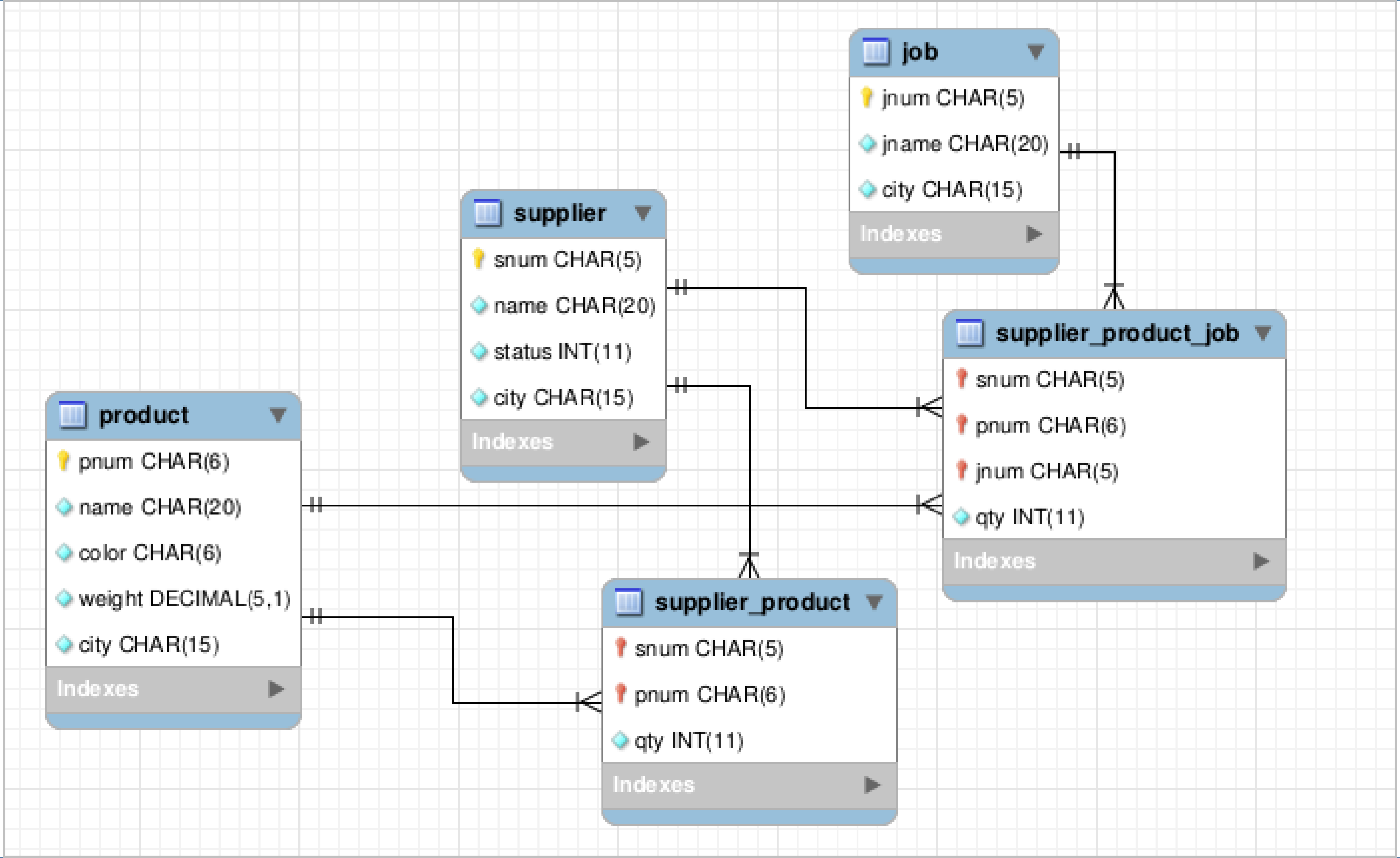
Quickstart – Scenario

- LAMP stack for example.com
- PHP 7.0
- MySQL 5.7
- Pre-existing data

https://github.com/benbankes/propel2-getting-started/blob/master/sql/01-supplier_product_job.sql

Quickstart – Scenario User

- Database: example_com
- User: example_user
- Password: H7{"Qj1n>P


job
jnum CHAR(5)
jname CHAR(20)
city CHAR(15)
Indexes
supplier
snum CHAR(5)
name CHAR(20)
status INT(11)
city CHAR(15)
Indexes
supplier_product_job
snum CHAR(5)
pnum CHAR(6)
jnum CHAR(5)
qty INT(11)
Indexes
product
pnum CHAR(6)
name CHAR(20)
color CHAR(6)
weight DECIMAL(5,1)
city CHAR(15)
Indexes
supplier_product
snum CHAR(5)
pnum CHAR(6)
qty INT(11)
Indexes

Quickstart – Overview

- Get Propel library
- Configure a new Propel project
- Build Propel models
- Use Propel

<u>Files</u>

🗀 public

Quickstart – Overview

- Get Propel library
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Files

🗀 public

Quickstart – Get Propel

Get composer

```
wget http://getcomposer.org/ ⤶
  ⤷ composer.phar --inet4-only
```

Files

- 🗀 public
- 🗎 **composer.phar**

Quickstart – Get Propel

Add composer.json

```
{
  "require": {
    "propel/propel": "~2.0@dev"
  },
  "autoload": {
    "psr-4": { "": ""}
  }
}
```

composer.json

Files

- public
- composer.phar
- **composer.json**
- …

Quickstart – Get Propel

Get propel from packagist

```
$ php composer.phar install
```

Files

- 🗀 public
- 🗎 composer.phar
- 🗎 composer.json
- 🗎 **composer.lock**
- 🗀 **vendor**

…

Quickstart – Get Propel

Add to ~/.bashrc

```
export PATH=$PATH:vendor/bin
```

Refresh path in current terminal

```
$ source ~/.bashrc
```

Files

📁 public

…

Quickstart – Overview

- Get Propel library
- Configure a new Propel project
- Build Propel models
- Use Propel

Files

🗀 public

…

Quickstart – Configure Propel

Initialize Propel configuration

```
$ propel init
```

Files

🗀 public

…

```
[sbn@localhost example.com]$ propel init
  Propel 2 Initializer
First we need to set up your database connection.
Please pick your favorite database management system:
  [mysql ] MySQL
  [sqlite] SQLite
  [pgsql ] PostgreSQL
  [oracle] Oracle
  [sqlsrv] MSSQL (via pdo-sqlsrv)
  [mssql ] MSSQL (via pdo-mssql)
 > mysql
```

```
Please enter your database host [localhost]:
Please enter your database port [3306]:
Please enter your database name: example_com
Please enter your database user [root]: example_user
Please enter your database password:
Which charset would you like to use? [utf8]:


  Connected to sql server successful!
```

The initial step in every Propel project is the "build". During build time, a developer describes the structure of the datamodel in a XML file called the "schema".

From this schema, Propel generates PHP classes, called "model classes", made of object-oriented PHP code optimized for a given RDMBS. The model classes are the primary interface to find and manipulate data in the database in Propel.

The XML schema can also be used to generate SQL code to setup your database. Alternatively, you can generate the schema from an existing database.

Do you have an existing database you want to use with propel? [no]: **yes**

```
Where do you want to store your schema.xml?
[/var/www/html/example.com]:
Where do you want propel to save the generated php models?
[/var/www/html/example.com]:
Which namespace should the generated php models use?:


Schema reverse engineering finished.
```

Propel asks you to define some data to work properly, for instance: connection parameters, working directories, flags to take decisions and so on. You can pass these data via a configuration file.

The name of the configuration file is propel, with one of the supported extensions (yml, xml, json, ini, php). E.g. propel.yml or propel.json.

```
Please enter the format to use for the generated configuration file (yml, xml, json,
ini, php) [yml]:
  [0] yml
  [1] xml
  [2] json
  [3] ini
  [4] php
 > yml
```

```
Propel 2 Initializer - Summary
The Propel 2 Initializer will set up your project with the following settings:

Path to schema.xml: /var/www/html/example.com/schema.xml
Path to config file: /var/www/html/example.com/propel.yml
Path to generated php models: /var/www/html/example.com
Namespace of generated php models:

Database management system: mysql
Charset: utf8
User: example_user

Is everything correct? [no]: yes
```

+ /var/www/html/example.com/schema.xml

+ /var/www/html/example.com/propel.yml

+ /var/www/html/example.com/propel.yml.dist

Propel 2 is ready to be used!

Files

public

...

schema.xml

propel.yml

propel.yml.dist

```
<?xml version="1.0" encoding="utf-8"?>
<database name="default" ... namespace="Uphpu\Propel2Quickstart">
  <table name="job" ... phpName="Job">
    <column name="jnum"
      phpName="Jnum"
      type="CHAR"
      size="5"
      primaryKey="true" />
    ...
    ~~<vendor type="mysql">~~
      ~~<parameter name="Engine" value="InnoDB"/>~~
    ~~</vendor>~~
  </table>
  ...
</database>
```

schema.xml

```
<?xml version="1.0" encoding="utf-8"?>
<database name="default" ... namespace="Uphpu\Propel2Quickstart">
  <table name="supplier_product_job" ...
    phpName="SupplierProductJob">
    ...
    <foreign-key foreignTable="job“
      name="FK_supplier_product_job_job">
      <reference local="jnum" foreign="jnum"/>
    </foreign-key>
    ...




</database>
```

schema.xml

Quickstart – Configuration Precedence

propel.yml.dist

- Common to all developers
- Committed to repository

propel.yml

- Overrides propel.yml.dist
- Database credentials
- Ignored in repository

```
propel:
    database:
        connections:
            default:
                adapter: mysql
                dsn: mysql:host=localhost;port=3306;dbname=example_com
                user: example_user
                password: H7{"Qj1n>P
                settings:
                    charset: utf8
```

propel.yml

```yaml
# ...

propel:
    paths:
        # ...
        schemaDir: /var/www/html/example.com

        # ...
        phpDir: /var/www/html/example.com

# ...
```

propel.yml.dist

Quickstart – Overview

- Get Propel library
- Configure a new Propel project
- **Build Propel models**
- Use Propel

Files

🗀 public

…

Quickstart – Build Propel Models

Build sql for future migrations

```
$ propel sql:build
```

Files

- 🗀 **generated-sql**
  - 🗎 **example_com.sql**
- 🗀 public

…

Quickstart – Build Propel Models

Build sql for future migrations

```
$ propel sql:build
```

Build model classes in php

```
$ propel model:build
```

Files

- generated-sql
- **Uphpu**
  - **Propel2Quickstart**
    - **Base**
    - **Om**
    - **Job.php**
    - **JobQuery.php**
    - **…**

Quickstart – Build Propel Models

Build sql for future migrations

```
$ propel sql:build
```

Build model classes in php

```
$ propel model:build
```

Convert yml config to php

```
$ propel config:convert
```

<u>Files</u>

- generated-sql
- Uphpu
- **generated-conf**
  - **config.php**

Quickstart – Overview

- Get Propel library
- Configure a new Propel project
- Build Propel models
- Use Propel

<u>Files</u>

🗀 public

…

```php
<?php
require_once '../vendor/autoload.php';
require_once '../generated-conf/config.php';

use \Uphpu\Propel2Quickstart\JobQuery;
$colJobs = JobQuery::create()->find();
$arrJobs = $colJobs->toArray();
$text = print_r($arrJobs, true);
?>
<pre><?=$text?></pre>
```

public

index.php

Success!

```
Array
(
    [0] => Array
        (
            [Jnum] => J1
            [Jname] => Sorter
            [City] => Paris
        )
    [1] => Array
    …
)
```

Use Propel

Main Features

- ORM Code generation
- IDE Friendly
- Database versioning & migrations
- Highly customizeable

What can we do?

```
new Job();      // Job
new JobQuery();     // JobQuery
JobQuery::create();     // JobQuery
JobQuery::create()->findOne();     // Job

JobQuery::create()->find();
// PropelObjectCollection of Jobs
```

IDE Friendly

CREATE **READ** **UPDATE** **DELETE**

C R U D

IDE Friendly - Create

```
$job = new Job();
$job->setJnum('J8');
$job->setJname('Weld');
$job->setCity('Austin');
$job->save();
```

```
$job = new Job();
$job->setJnum('J8')
    ->setJname('Weld')
    ->setCity('Austin')
    ->save();
```

```
INSERT INTO job (jnum, jname, city)
VALUES ('J8', 'Weld', 'Austin');
```

IDE Friendly – Read

```
echo $job->getJnum();
// 'J8'

echo $job->toJSON();
```

```
->toArray()
->toXML()
->toYAML()
->toJSON()
->toCSV()
->__toString()
```

IDE Friendly - Updating

```
$job = JobQuery::create()->findOne();
$job->setCity('New York');
$job->save();
```

IDE Friendly - Deleting

```
JobQuery::create()->findOne()->delete();
```

Aside - Log Queries

```
use \Propel\Runtime\Propel;

JobQuery::create()->find();
```

Aside - Log Queries

```
use \Propel\Runtime\Propel;
Propel::getConnection()->useDebug(true);
JobQuery::create()->find();
echo Propel::getConnection()
    ->getLastExecutedQuery();


SELECT job.jnum, job.jname, job.city FROM job;
```

IDE Friendly – Relations

```
$colJobs = JobQuery::create()->find();

foreach ($colJobs as $aJob) {
    $aJob->getSupplierProductJobs();
}
```

IDE Friendly – Relations

```
$colJobs = JobQuery::create()->find();



foreach ($colJobs as $aJob) {
    $aJob->getSupplierProductJobs();
}
```

N+1

IDE Friendly – Relations

```
$colJobs = JobQuery::create()->find();

$colJobs->populateRelation('SupplierProductJobs');

foreach ($colJobs as $aJob) {
    $aJob->getSupplierProductJobs();
}
```

1+1

IDE Friendly – Relations

```
$colJobs = JobQuery::create()
    ->joinWithSupplierProductJob()
    ->find();

foreach ($colJobs as $aJob) {
    $aJob->getSupplierProductJobs();
}
```

ONLY 1

IDE Friendly - Querying

```
JobQuery::create()
    ->filterByJnum(‘J2’)
    ->useSupplierProductJobQuery()
        ->filterByPnum(‘P2’)
        ->filterBySupplier($supplier)
    ->endUse()
    ->orderByCity()
    ->find();
```

Aside – Instance Pooling

```
JobQuery::create()->find();
JobQuery::create()->find();
// Only one query is issued
```

Aside – On-demand Hydration

```
$authors = AuthorQuery::create()
  ->limit(50000)

  ->find();
foreach ($authors as $author) {
  echo $author->getFirstName();
}
```

RAM HEAVY

Aside – On-demand Hydration

```
$authors = AuthorQuery::create()
  ->limit(50000)
  ->setFormatter(ModelCriteria::FORMAT_ON_DEMAND)
  ->find();
foreach ($authors as $author) {
  echo $author->getFirstName();
}
```

RAM
LIGHT

Main Features

- ORM Code generation
- IDE Friendly
- Database versioning & migrations
- Highly customizeable

Database Versioning Principles

- Schema & reference data under source control
- Script all schema & reference data changes
- Store schema version number in the database

http://enterprisecraftsmanship.com/2015/08/10/database-versioning-best-practices/

Database Versioning Principles

- Schema & reference data under source control
- Script all schema & reference data changes
- Store schema version number in the database

http://enterprisecraftsmanship.com/2015/08/10/database-versioning-best-practices/

Alter Database - Procedure

1) Update schema.xml
2) Rebuild models
3) Build migration script
4) Run migration

Update schema.xml

```
<?xml version="1.0" encoding="utf-8"?>
<database name="default" ... >
  ...
  <table name=“category">
    <column name="id" type="integer" primaryKey="true“
        autoIncrement="true" />
    <column name="title" type="varchar" required="true" />
  </table>
</database>
```

schema.xml

Rebuild Models

```
$ propel model:build
```

+ Category.php
+ CategoryQuery.php
+ Base/BaseCategory.php
+ Base/BaseCategoryQuery.php
+ Map/CategoryTableMap.php

Build Migration Script

```
$ propel diff
```

```
5 tables found in all databases.
Comparing models...
Structure of database was modified in datasource "default": 1 added tables
"/var/www/html/example.com/generated-migrations/PropelMigration_1458180736.php" file successfully created.
Please review the generated SQL statements, and add data migration code if necessary.
Once the migration class is valid, call the "migrate" task to execute it.
```

Run Migration

```
$ propel migrate
```

```
Executing migration PropelMigration_1458180736 up
3 of 3 SQL statements executed successfully on datasource "default"
Migration complete. No further migration to execute.
```

Database Versioning Principles

- Schema & reference data under source control
- Script all schema & reference data changes
- Store schema version number in the database

http://enterprisecraftsmanship.com/2015/08/10/database-versioning-best-practices/

Get Schema Version Number

```
SELECT * FROM example_com.propel_migration;
```

version
1458180736

Main Features

- ORM Code generation
- IDE Friendly
- Database versioning & migrations
- Highly customizeable

Behaviors - Traits for Tables

- Extract common patterns (eg. created_at, updated_at)
- Add columns to database
- Add methods to Model & Query classes
- Add pre/post hooks for save() & delete()
- 13 built-in behaviors / write your own

Behaviors – Nested Set Example

```xml
<?xml version="1.0" encoding="utf-8"?>
<database name="default" ... >
  ...
  <table name="category">
    <column name="id" type="integer" primaryKey="true"
        autoIncrement="true" />
    <column name="title" type="varchar" required="true" />
    <behavior name="nested_set" />
  </table>
</database>
```

schema.xml

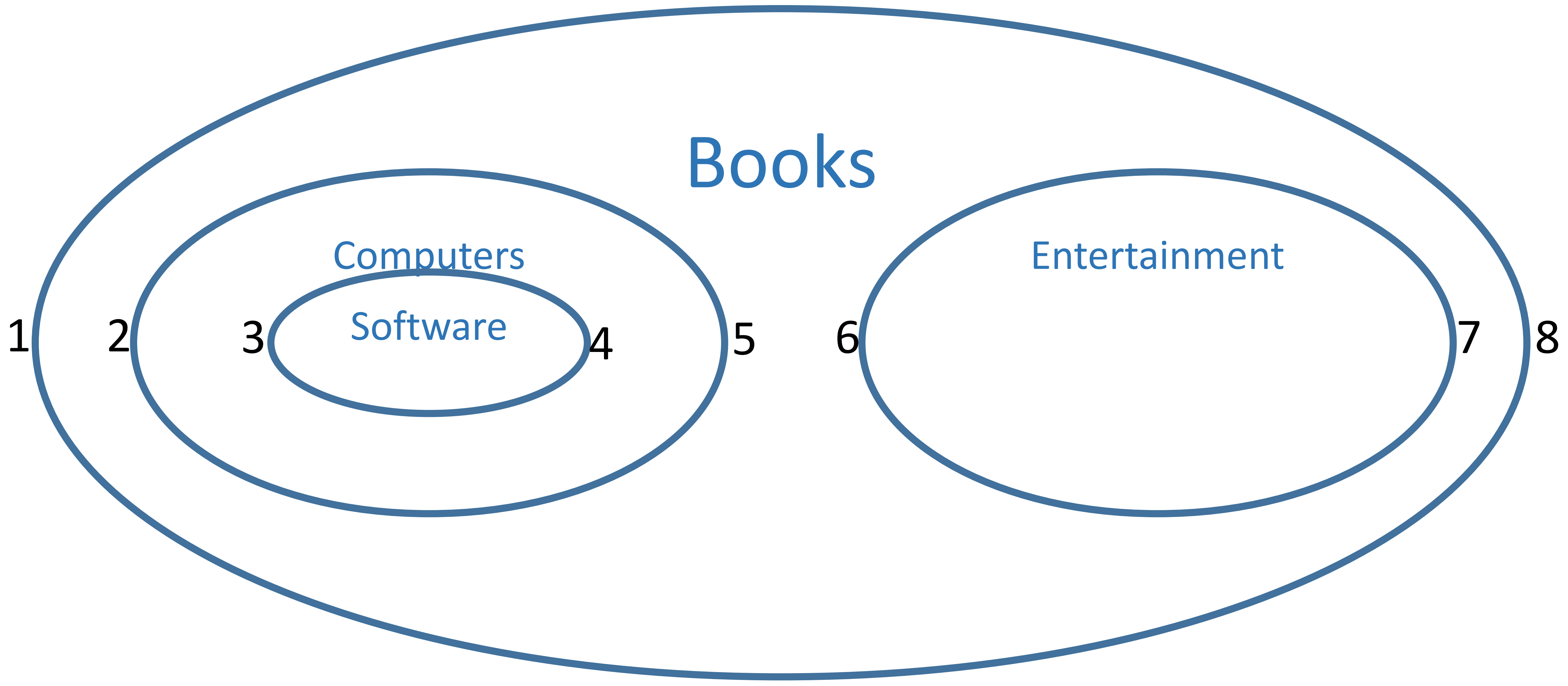
Behaviors – Nested Set Example

```
$ propel model:build
$ propel diff
$ propel migrate
```

Behaviors – Nested Set Example

- Added 3 columns
- Added 18 methods to CategoryQuery class
- Added 39 methods to Category Model

Behaviors – Nested Set Example



Demo

http://sandbox.propelorm.org/db117c8

Build Your Own Behaviors

https://github.com/gharlan/propel-default-order-behavior

What can’t Propel do?

- LEFT JOIN with foreign resource using LIMIT
- Custom join conditions

Questions

- ORM Code generation
- IDE Friendly
- Database versioning & migrations
- Highly customizeable

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