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



Up & Running with Propel 2

for MySQL

Ben Bankes OpenWest

Follow along:

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!

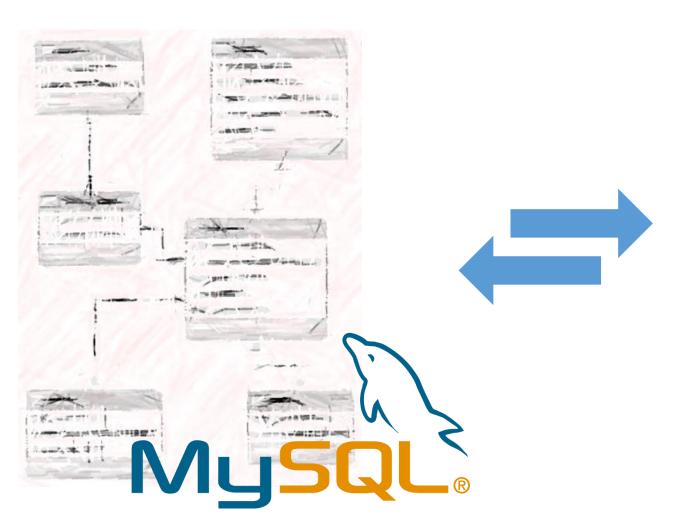


What is Propel?

"A highly customizeable and blazing fast ORM library for PHP 5.5+"

- propelorm.org

Object Relational Mapping



```
mamespace Models Base:
/ " Base class that represents a row from the abstract class User implements active Seconds
      / TableMap class name . . . //
const Table MAP = "\\Map\\Map\\Map\\Map\\Map\\
      /** gittsinume to defermine if this object profested Sees a true:
      /* uttribute to determine whether this professed selected a false:
      /** The columns that have been modified
protected smodifiedColumns = array();
      /** The (wistnat) splanes that
protected sylvination
       han little, Aut no.
      protected $4d
       /** The valu
       protecked to
```

Why Propel?

Main Features

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

Alternatives

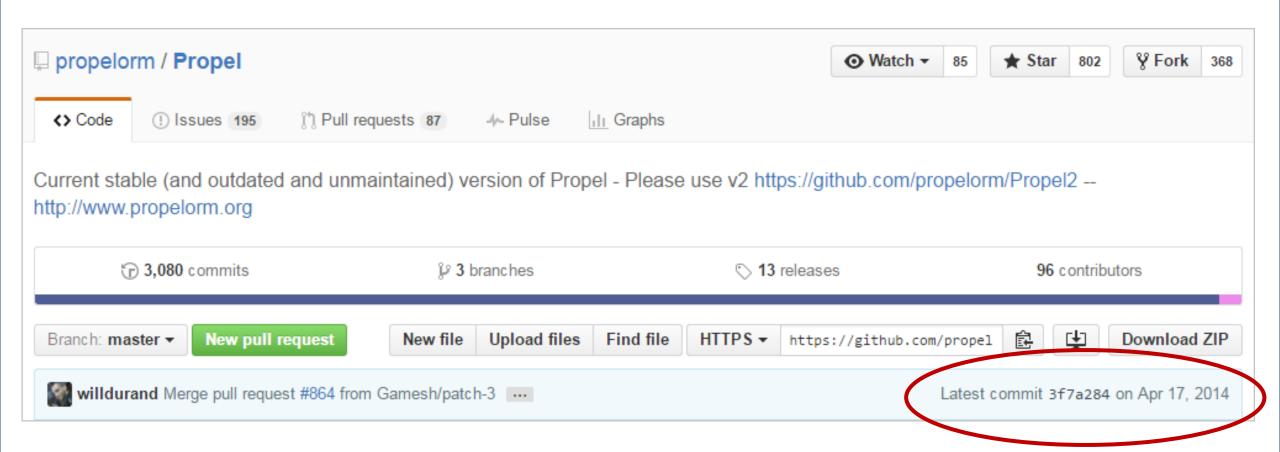
- Doctrine
- SQL
- Build-your-own-ORM

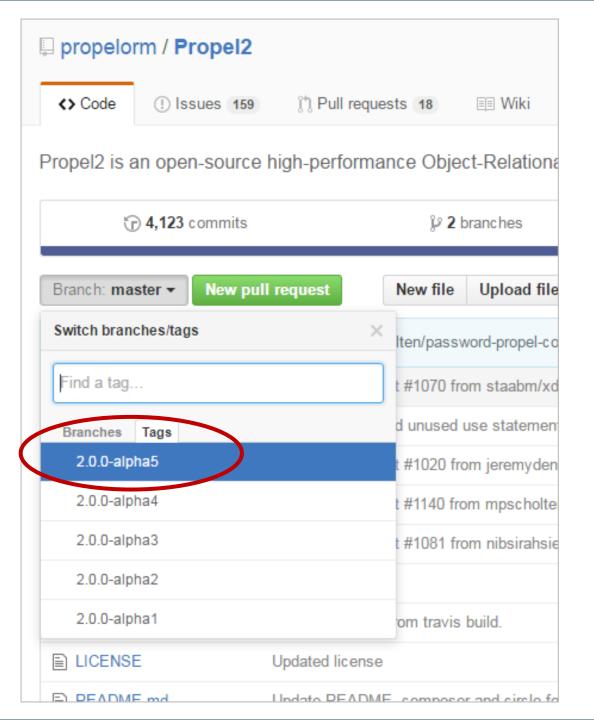
Doctrine

- More verbose
- Not as performant
 https://github.com/eventhorizonpl/forked-php-orm-benchmark
- Higher learning curve (DQL)
- No code generation

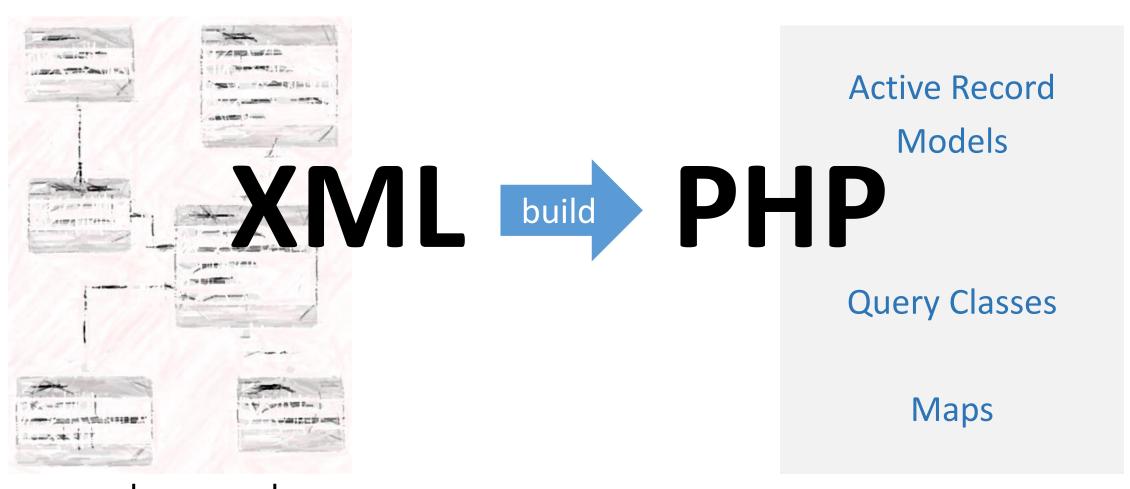
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Code Generation



schema.xml

Quickstart!

Quickstart – Scenario

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

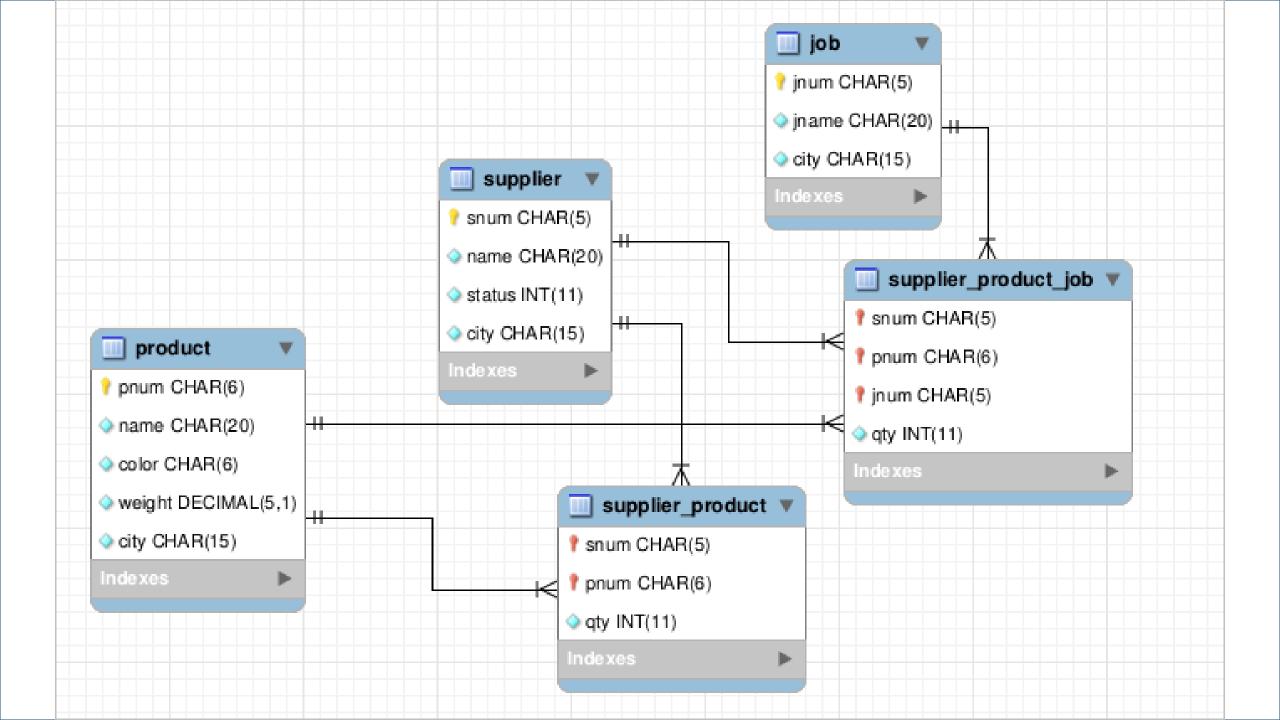
https://github.com/benbankes/propel2-gettingstarted/blob/master/sql/01-supplier product job.sql

Quickstart – Scenario User

Database: example_com

• User: example_user

• Password: H7{"Qj1n>P



Quickstart – Overview

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

Files

public

Quickstart – Overview

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Files

public

Get composer

```
wget http://getcomposer.org/
```

composer.phar --inet4-only

<u>Files</u>

- **public**
- **composer.phar**

Add composer.json

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

Files

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

•••

Get propel from packagist

\$ php composer.phar install

<u>Files</u>

- **public**
- composer.phar
- **i** composer.json
- **composer.lock**
- **vendor**

•••

Add to ~/.bashrc

export PATH=\$PATH:vendor/bin

Refresh path in current terminal

\$ source ~/.bashrc

<u>Files</u>

b public

...

Quickstart – Overview

- Get Propel library
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Files

public

. . .

Quickstart – Configure Propel

Initialize Propel configuration

\$ propel init

<u>Files</u>

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!

<u>Files</u>

public

. . .

- schema.xml
- propel.yml
- propel.yml.dist

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

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

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:
   paths:
        schemaDir: /var/www/html/example.com
        phpDir: /var/www/html/example.com
```

propel.yml.dist

Quickstart – Overview

- Get Propel library
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<u>Files</u>

public

. . .

Quickstart – Build Propel Models

Build sql for future migrations

```
$ propel sql:build
```

<u>Files</u>

b 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

<u>Files</u>

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

b generated-conf

config.php

Quickstart – Overview

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

<u>Files</u>

public

. . .

```
<?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);
?>
                                  public
<?=$text?>
                                   index.php
```

Success!

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

Use Propel

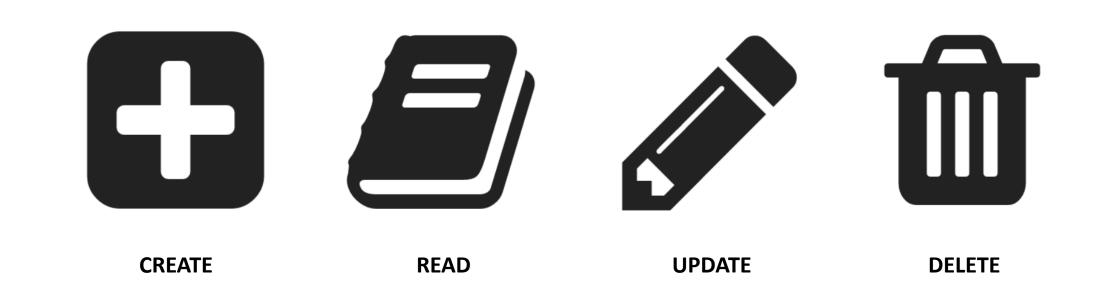
Main Features

- 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



C R U

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();

->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;
```

```
$colJobs = JobQuery::create()->find();
foreach ($colJobs as $aJob) {
    $aJob->getSupplierProductJobs();
}
```

```
$colJobs = JobQuery::create()->find();
foreach ($colJobs as $aJob) {
    $aJob->getSupplierProductJobs();
```

```
$colJobs = JobQuery::create()->find();
$colJobs->populateRelation('SupplierProductJobs');
foreach ($colJobs as $aJob) {
    $aJob->getSupplierProductJobs();
```

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

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

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();
}
```

Aside – On-demand Hydration

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

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
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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" ... >
 <column name="id" type="integer" primaryKey="true"</pre>
       autoIncrement="true" />
   <column name="title" type="varchar" required="true" />
 </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

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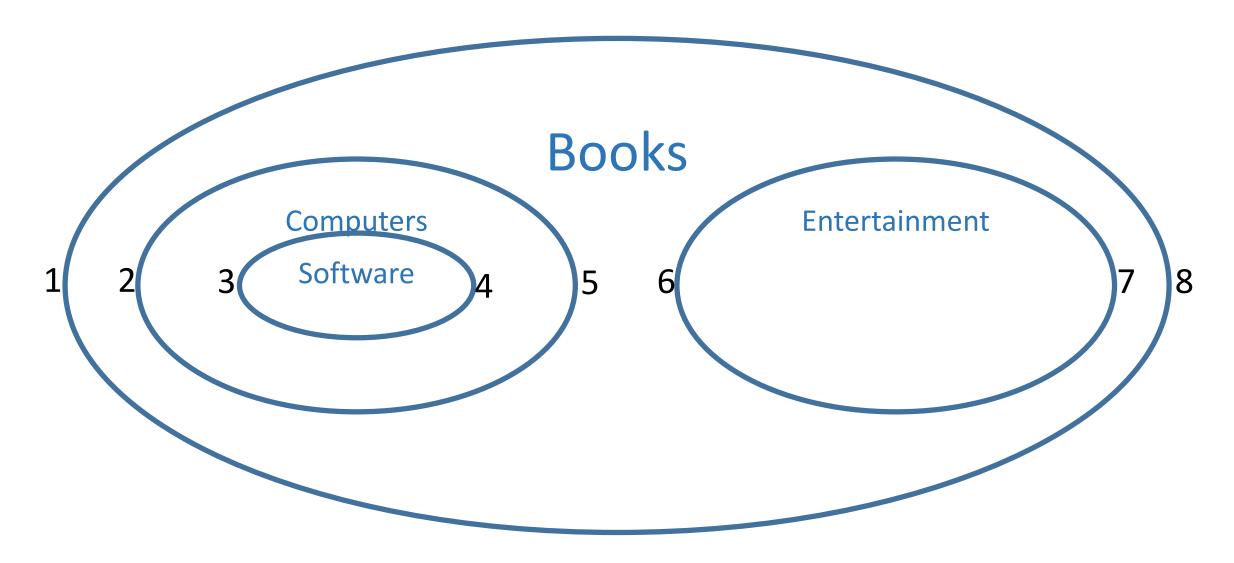
Behaviors - Traits for Tables

- 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

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

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

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



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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