Xataface Definitive Guide

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Preface

Pre-history of Xataface

Xataface was first released in 2005. I had just been hired as a web services developer in the Faculty of Applied Sciences at Simon Fraser University, and I was inheriting resposibility for the maintenance and development of a relatively large content management system that had been built in-house, originally in PERL, and later ported to PHP.

This system, named "Group Content Management System", or GCMS for short, was used to manage information about all of the research groups in the faculty. It included profiles for faculty members, grad students, labs, research groups, publications and projects. It included administrative back-ends for administrators to update all of these profiles, and it served as a platform to publish web sites for faculty members and research groups.

The MySQL database, on which it was built, included dozens of tables, and a fairly complex set of relationships. The PHP code for the application suffered from too many hands in the kitchen, with no central API to manage business rules. Each form included custom PHP code and SQL commands to handle layout and validation. It was not "a pleasure" to work on.

At my previous job, in the Faculty of Education, I had built many similar systems, so I had reached the point where I was a little bored of the tedium involved in creating CRUD applications, as they were known.

NOTE	CRUD stands for "Create Read Update Delete", and it refers to a class of applications where the primary functions involve creating, reading, updating, and deleting records in a database.

In the Faculty of Education we had used FileMaker extensively for our in-house databases. It made the creation and maintenance of complex databases remarkably simple, and it provided an instant administrative user interface that was friendly for the clerical staff to maintain the database content themselves. I always felt limited by FileMaker though.

As long as you're playing inside FileMaker's box, it was great. But if we wanted to integrate these databases into our web site, things got tricky. At the time, you needed FileMaker server, and the web connector, which both carried expensive licenses. We did have these products in the Faculty, and we did use the web connector to publish a few databases on the web, but it wasn't performant and you couldn't just use SQL to query the database.

We used FX.php for interacting with the FileMaker database, which provided quite a nice abstraction layer, but we couldn't benefit from FileMaker's UI creation tools at all. We were building our UIs from scratch, essentially, writing our own UI, validation, and queries. In fact, I created a predecessor to Xataface that was built on FX.php, which generated the UI automatically using some config files, much the way that we do in Xataface. This worked, pretty well, but, the reliance on Filemaker made our solutions less portable and slower than I would have liked. At this point, we weren't benefiting from FileMaker's UI development strengths at all since I was building the UI entirely in PHP, so I figured, why not try to do the same thing with a free, fast, ubiquitous database like MySQL.

And so, Xataface was born

NOTE	Originally Xataface was called "Dataface", but a Texas computer company named "Dataface" took exception to our name, and sent me a cease and desist letter. So I changed the name to Xataface

The Vision

Most applications that I was building for the faculty had two parts:

1. **The "public" front-end**, which was usually integrated into a public website. This might be the faculty profiles section of the website where faculty members' publications are displayed. These pages would be generated using PHP, and pulling data directly from the database.
2. **The administrative back-end**. This is the interface that allows the clerical staff to update the faculty profiles in the database. Some applications will have a single user managing all of the content in the database, while others will allow multiple users to update different content.

The public front-end would usually be created using HTML, CSS, and standard PHP, to fetch data from the database and display it. Quite often, the website would already have a template, so it would just be a matter of fetching data from the database and rendering it inside the site's template. For this portion of the application development, I was happy with the state of existing tools - i.e. vanilla PHP and MySQL to get the job done. Each project was sufficiently different as to not benefit from a standardized framework.

For the administrative back-end, however, the work was tedious. You needed to write forms to add new, edit, view, and delete records from each table. The user interface needed to be friendly for non-technical users, since it would be used by regular folks - secretaries, faculty members, receptionists, etc.. You couldn't just set up a database administration app like PHPMyAdmin.

It seemed to me that, for this type of application, the database schema already included all of the information needed to generate the user interface. You could look at a table and see exactly what the form would need to look like for editing records on it. VARCHAR fields should use a text field, TEXT fields should use a textarea, DATE fields should use a date or calendar widget etc... If we needed to provide additional configuration, such as explicitly choosing a different widget, or adding validation rules, the developer could create config files using a logical naming convention.

The first goal with Xataface was to see how much of the administrative back-end requirements could be achieved using only the database schema. No configuration files, or custom PHP.

Of course, the first goal cannot be achieved 100%, so, the second goal of Xataface was, to the extent that the first goal cannot be achieved, how much of the administrative back-end requirements could be achieved using only the database schema, and some simple, human-friendly configuration settings.

Unfortunately, the second goal cannot usually be achieved 100%, so, the third goal of Xataface was, to the extent that the second goal cannot be achieved, make sure that the administrative back-end requirements can be fulfilled using as little custom PHP as possible.

The third goal can, in general, always be achieved.

After each application I develop using Xataface, I do a post-mortem to identify:

1. Features that were implemented PHP which can be achieved using configuration directives. I.e. moving features from the 3rd goal, into the 2nd goal. For example, initially, validation had to be handled using a PHP function, but eventually I added configuration directives for validation such as `validators:required` and `validators:lettersonly`.
2. Features that were implemented using configuration directives which can be achieved using heuristics using only the database schema. I.e. moving features from the 2nd goal, into the 1st goal. For example, initially fields marked `NON NULL` in the database can default to use the `validators:required` option, so that the user is forced to provide input.
3. Features that were implemented in PHP which could possibly be packaged as a reusable module. I.e. reducing the complexity of PHP required to achieve the third goal.

The ultimate goal is to move **everything** into the first goal, but this will likely never fully occur as there will always be some features that can't be automatically derived from the database schema - though with the advent of machine learning, I suppose anything is possible.

NOTE

NO CODE GENERATION

I decided early on, that I didn't want to use code generation. Most other CRUD frameworks I had experienced used code generation to generate a basic app which would then be customized by the developer. Code-generation sounds great at first, but it quickly becomes unmaintainable. The first app requirements are almost never the final requirements. If you generate PHP code for an app based on the database schema, and then you need to add a column or two, you'll need to regenerate the code - which will cause you to lose any modifications you made in the mean time.

Xataface, instead uses conventions and configuration. If you add a field to the database, you don't need to regenerate anything. Xataface will automatically include that field in the app from then on.

The Evolution of Xataface

The first project that Xataface was applied to was the Group content management system (GCMS) of the Faculty of Applied Sciences. This was the system that was used to manage the websites for faculty members, research groups, and publications. The database was already built, and there was an existing administrative back-end that was, in my opinion, hard to work with. I replaced this administrative back-end entirely using Xataface. The application itself (not counting the code inside Xataface), contained almost no PHP code, and handful of configuration files. The underlying database was left untouched. The result was an application that was orders of magnitude easier to maintain, and, at the same time yielded a better user experience.

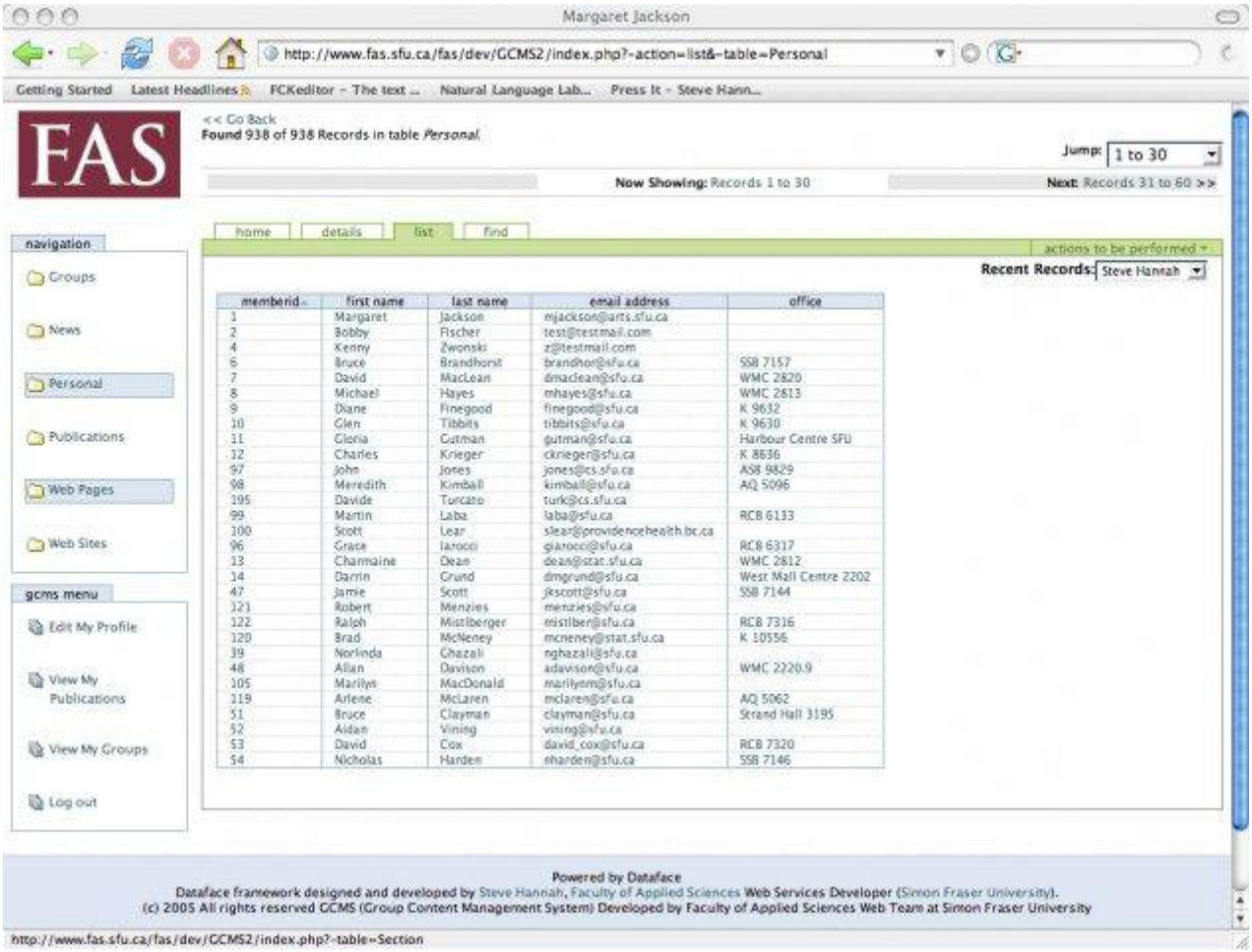


Figure 1. The original Dataface "List" view. This view showed the results of a query in a table.

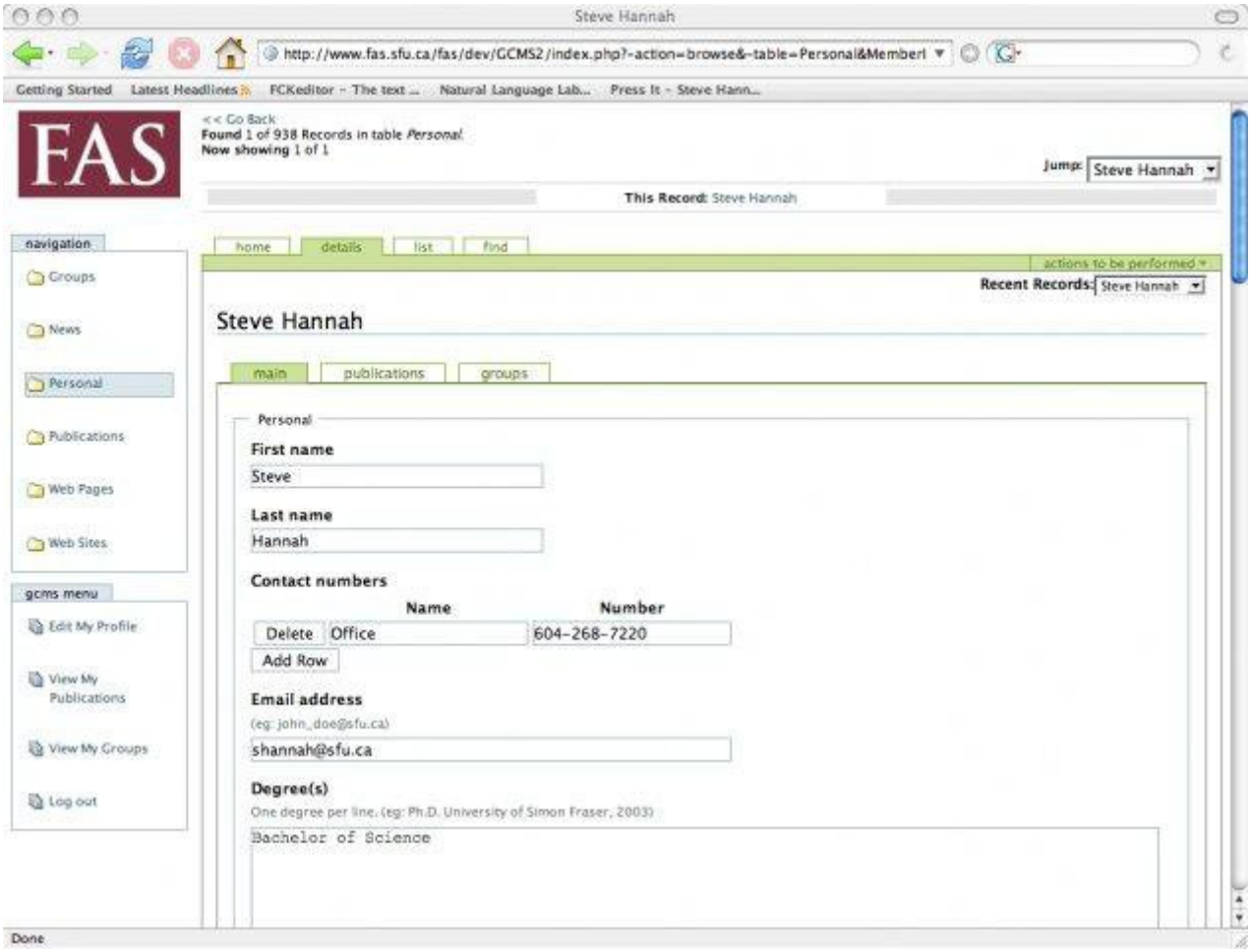


Figure 2. The "Details" view in the GCMS application. This view allowed the user to edit a single record. Originally there was no "view" tab (read only details view), only a "main" tab that allowed editing a record. Later on, I would add a "View" and "Edit" tab in the "Details" view.

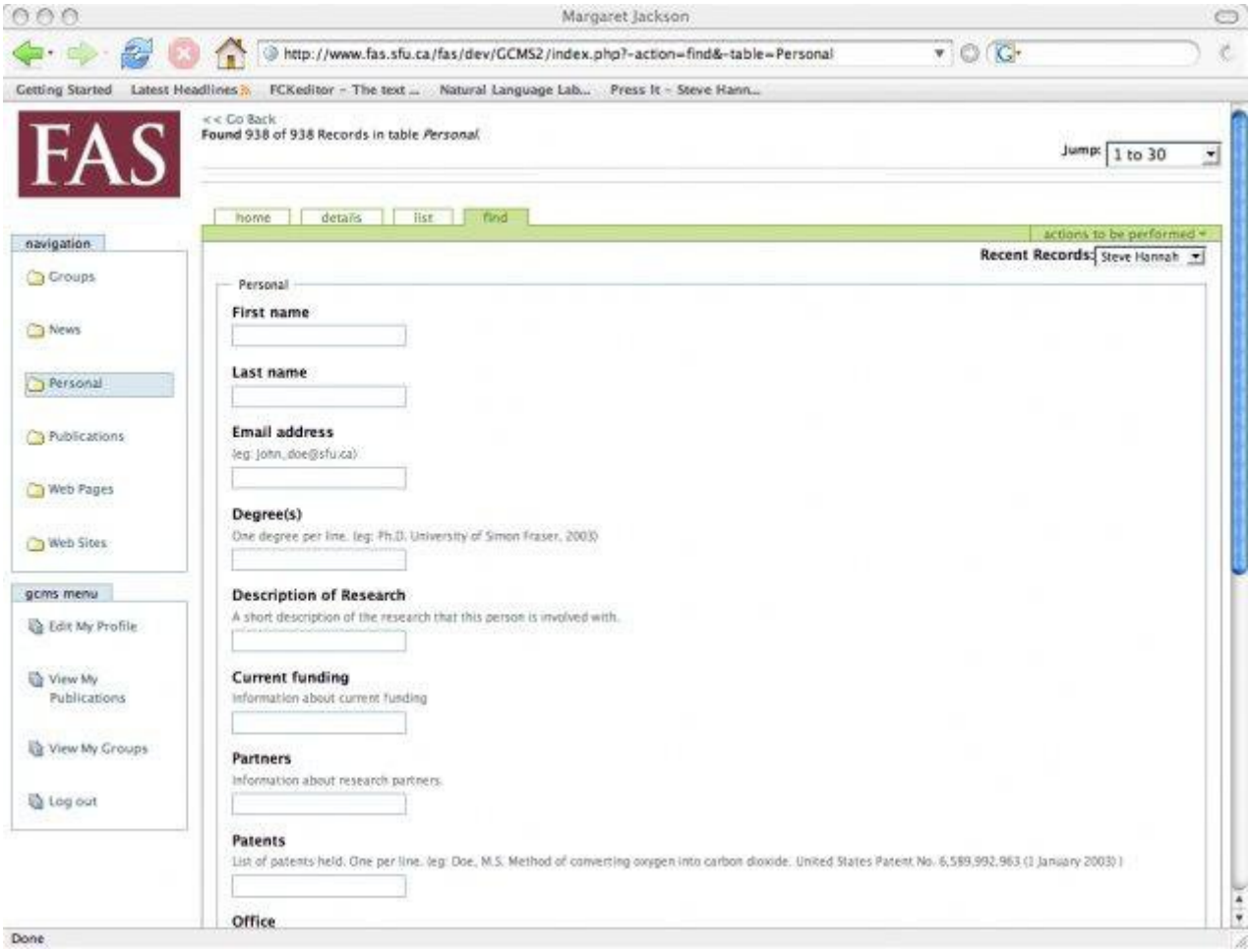


Figure 3. The "Find" tab in the GCMS application. The find tab allowed searching on all fields in the table.

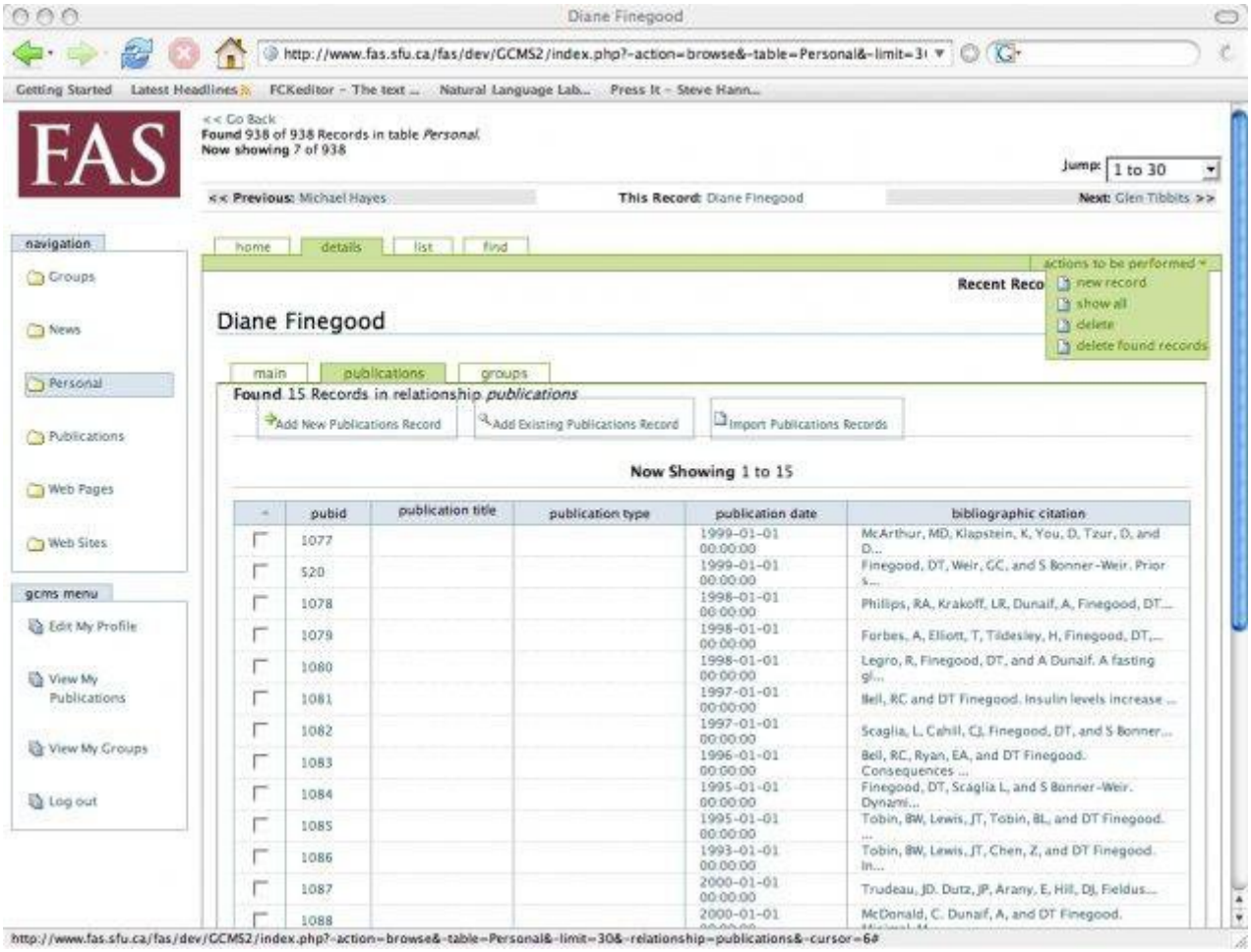


Figure 4. The "Publications" tab in the GCMS application. This is a "relationship" tab, as it shows only the publications related to a particular profile. One of the key innovations of Xataface was its ability to define relationships, and have the application UI take advantage of these by providing **add**, **remove**, **view**, *and* **search** *capabilities on those relationships.*

After unrolling this "rewrite" of GCMS, I decided to release Xataface (then Dataface) to the world as an open source project. I created a project on SourceForge, set up a website for it, wrote a "Getting Started" tutorial, and then returned to my day job, developing web applications or the faculty.

Influence of Plone on Xataface

At the time that I was developing the first version of Dataface, we were using the Plone content management system for the faculty's website. If you're familiar with Plone (circa 2005) you'll recognize the tabs, lists, and navigation menus from the GCMS screenshots. That's because I used the plone stylesheet as a basis for Xataface's styles. I really liked the way Plone looked, and the stylesheet had many of the UI elements that I needed for Xataface. I needed tabs - Plone had nice looking tabs. I needed tabular lists. Plone has nice looking sortable lists. I needed navigation menus. Etc... Some of these elements have persisted to present day. Xataface 2.0 included a new default theme, "g2", that introduced a totally new stylesheet, but developers could still "opt out" of the "g2" theme and use the original plone theme. Xataface 3.0 finally eliminates the original theme (nearly) entirely, but if you dig you can likely still find some elements of that original Plone theme.

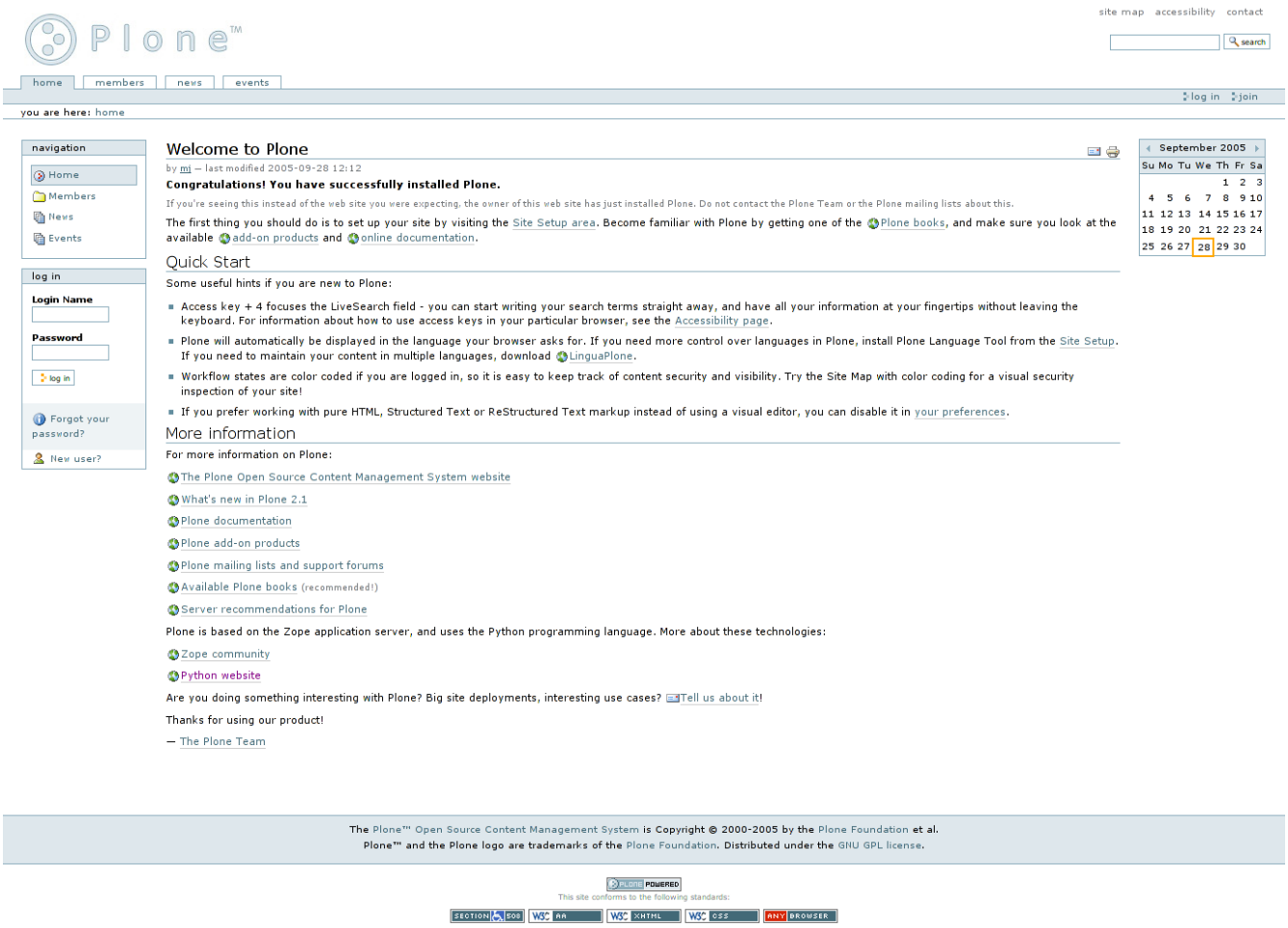


Figure 5. Plone content management system circa 2005. The initial release of Xataface used the Plone stylesheet, and many aspects of the design can still be found in the Xataface of today, if you look closely.

NOTE

From Wikipedia:

Plone is a free and open source content management system built on top of the Zope application server. Plone is positioned as an "Enterprise CMS" and is commonly used for intranets and as part of the web presence of large organizations. High-profile public sector users include the U.S. Federal Bureau of Investigation, Brazilian Government, United Nations, City of Bern (Switzerland), New South Wales Government (Australia), and European Environment Agency.[2] Plone's proponents cite its security track record[3] and its accessibility[4] as reasons to choose Plone.

Aside from the stylesheet, Plone also inspired some other aspects of Xataface's design. In particular, Xataface's use of actions (e.g. the actions.ini file) to inject menus, buttons, and functionality into the UI are directly pulled from Plone.

Influence of FileMaker on Xataface

I've already discussed the fact that FileMaker was a key inspiration for Xataface. I liked the way that FileMaker allowed mere mortals to both create and manage relatively complex databases. It was impressive that an office assistant, with no programming skills whatsoever, could build a fully-functional database application with a nice user interface in a few hours. To do the same thing with

PHP and MySQL would take a software developer weeks, and it likely still would have been missing features that the FileMaker app provides out of the box.

The Xataface "Details", "Find", and "List" tabs were an answer to FileMaker's "Details", "List" and "Find" modes.

The one mode that Xataface didn't provide an answer for is the "Layout" mode, which is the mode of FileMaker that allows users to design their own forms using a drag and drop palette of widgets and a canvas. Xataface, instead, just used HTML for its views.

One day, I'd like to add such a tool to Xataface, but, frankly, it's difficult to do well, and time is almost always better spent extending Xataface's other features.

Outgrowing the Mould

At the beginning, Xataface was just intended to be an open source alternative to FileMaker. It didn't take long, however to start growing in its own direction. Today it has become a full-featured platform on which arbitrary data-driven web applications can be built.

Early on, I added support for modules, custom actions, and pluggable authentication. These foundational elements enabled grown into application types not originally envisioned.

Xataface was being downloaded thousands of times per week from SourceForge, and developers were contacting about a diverse range of applications that they were building. Over the next few years, I used Xataface as the foundation for many side projects including:

1. An auction application, WebAuction, which has hosted hundreds of online auctions for non-profit organizations ranging from the United Way, to the SFU Plant Sale.

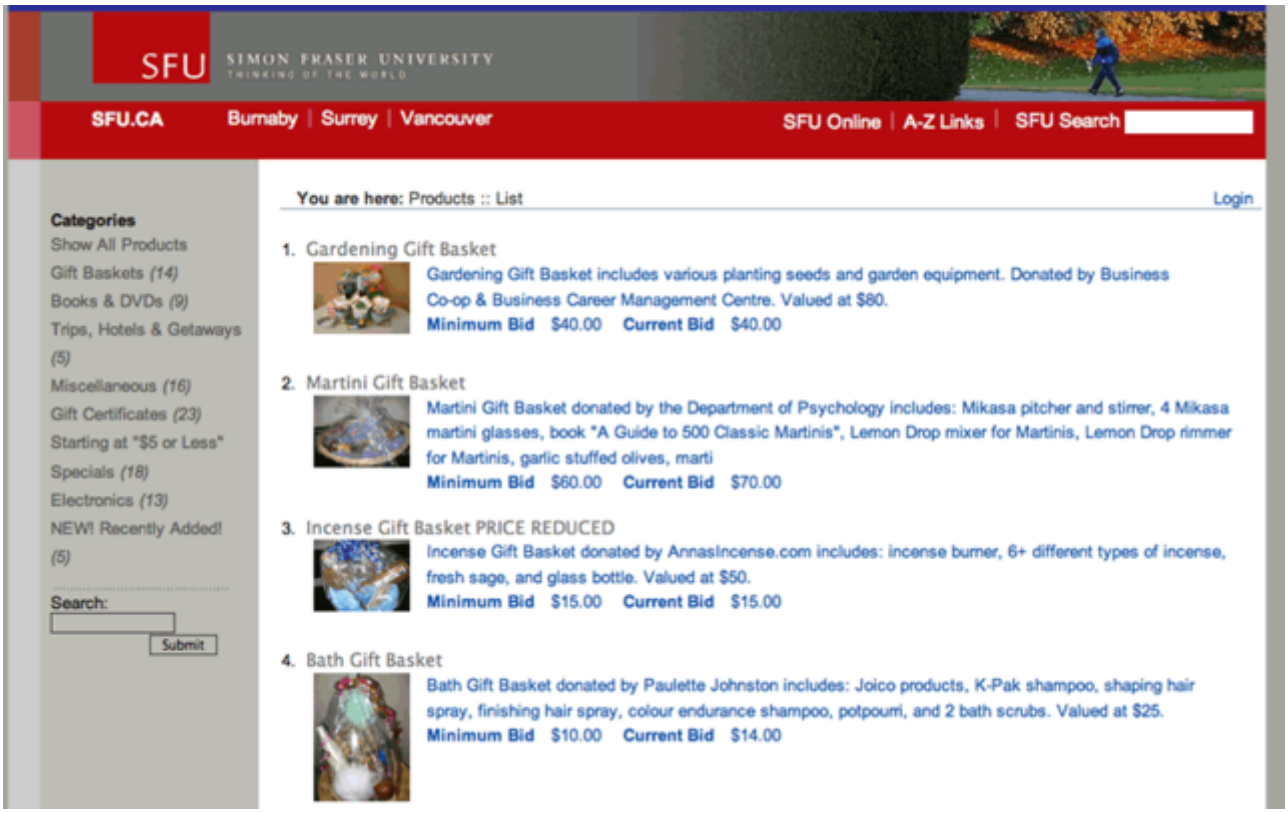


Figure 6. WebAuction used to host the annual SFU platsale was written with Xataface.

2. A church library application, LibrarianDB, for managing the books in a church library.

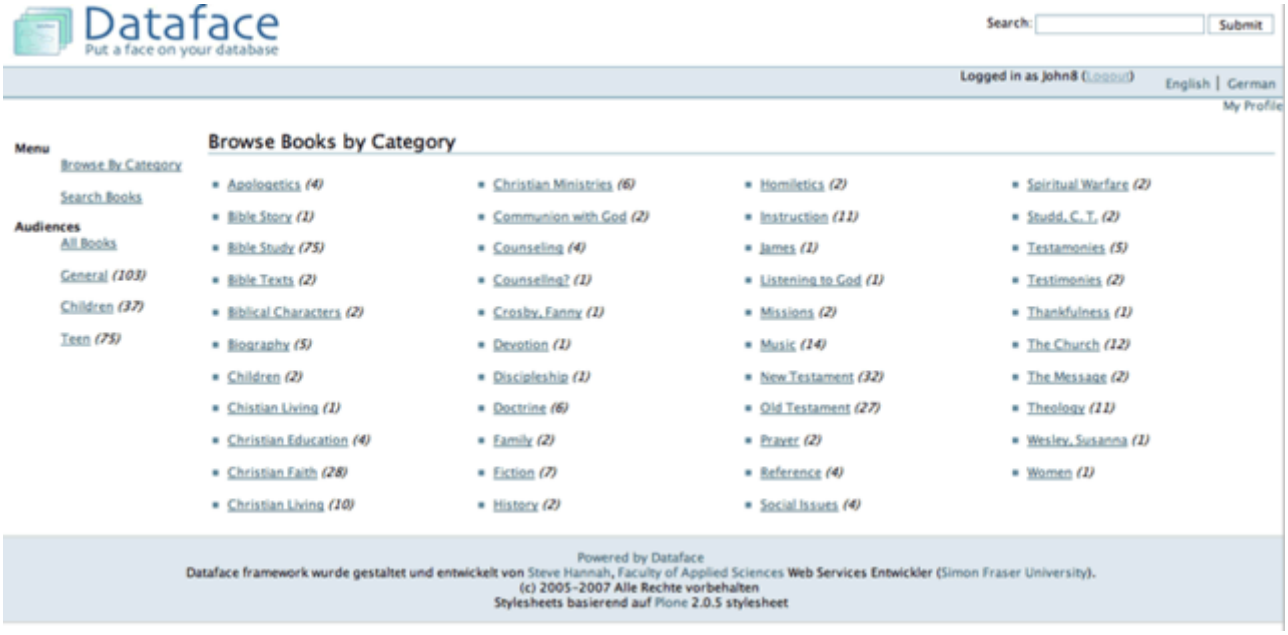


Figure 7. LibrarianDB, developed with Xataface, was developed to help manage books in a church library

3. A general content management system for a website ("Little Content Management System" or LCMS).
4. A registration system for people to apply for sessional instructor, and TA positions in the faculty.
5. Survey Builder, an application for creating and hosting surveys online.

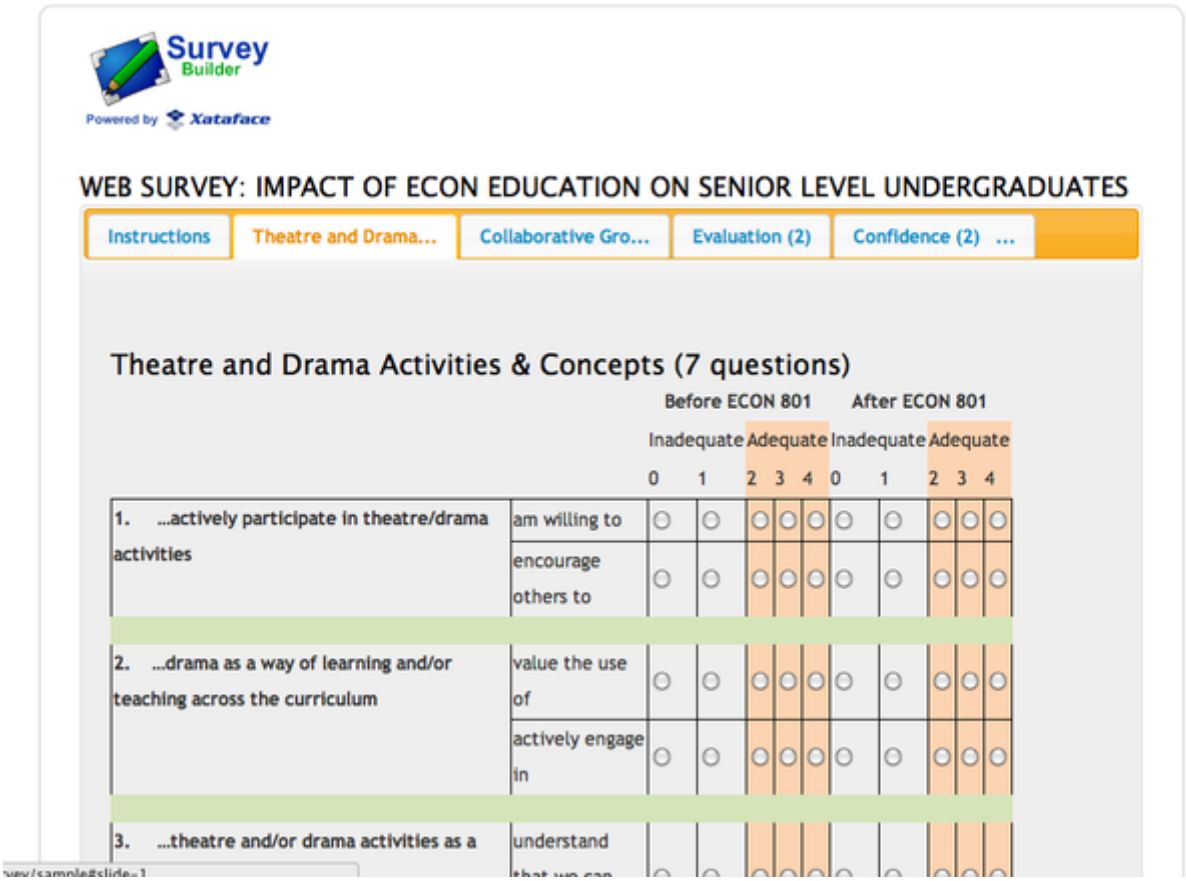


Figure 8. A survey built and hosted by SurveyBuilder.

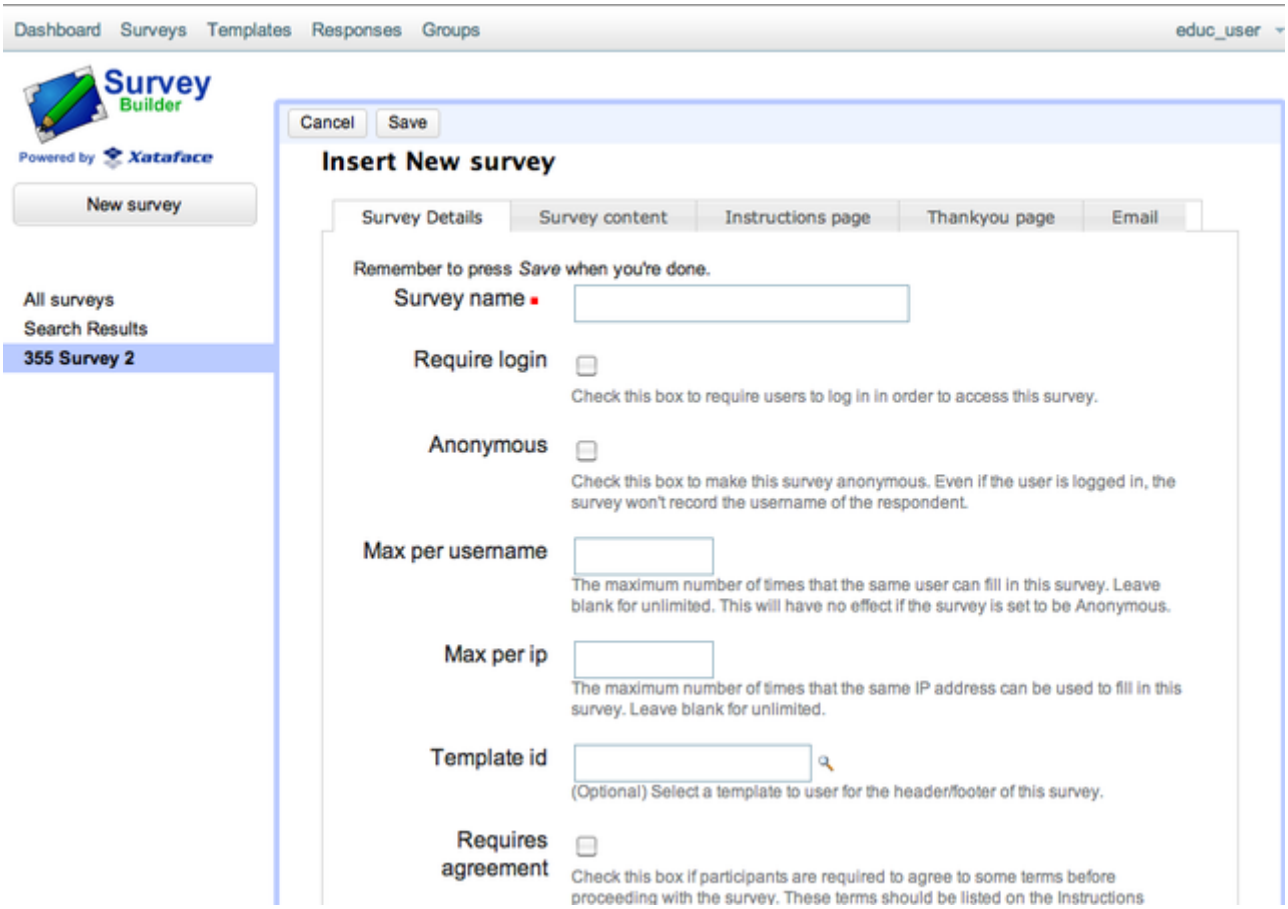


Figure 9. Administrative back-end for SurveyBuilder. This uses the g2 theme.

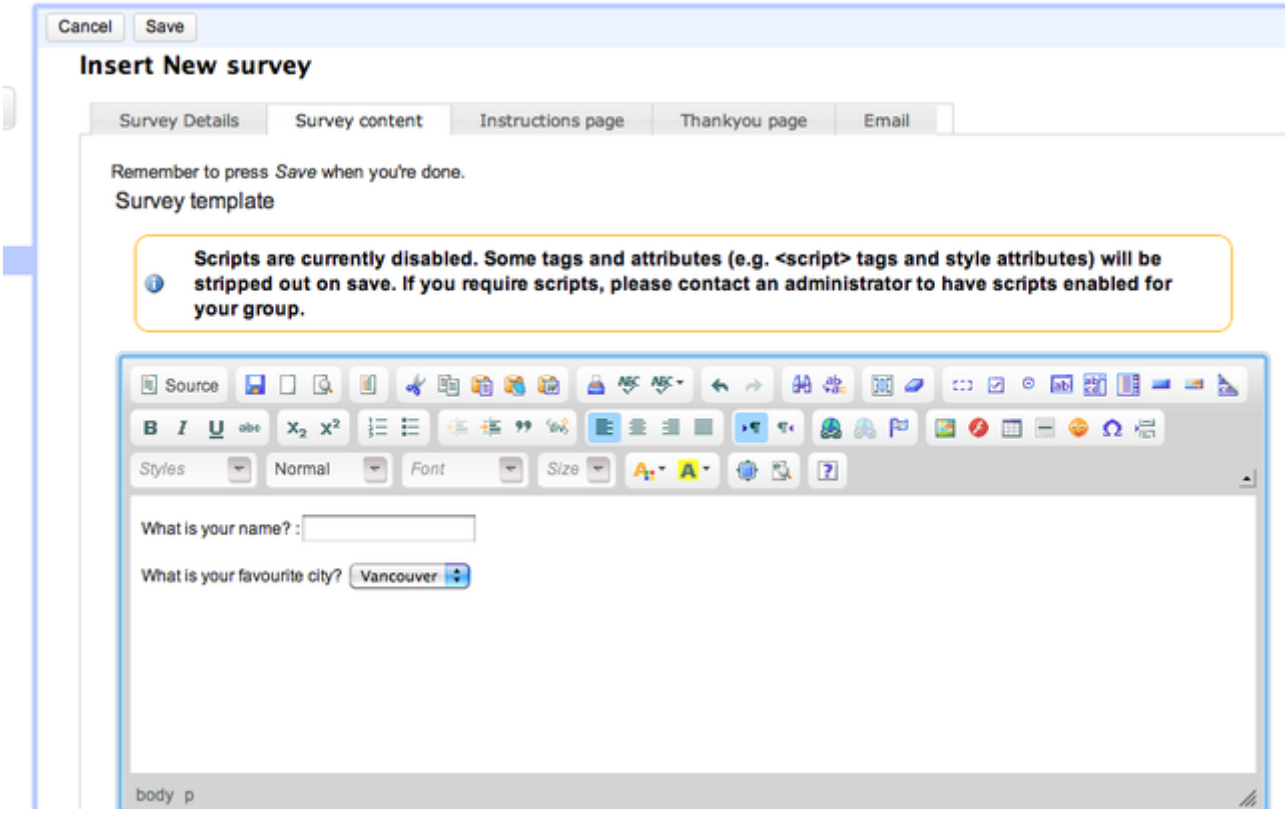


Figure 10. Editing the survey content for SurveyBuilder in the Xataface back-end. This used the CKeditor module for WYSIWYG HTML editing.

Over the years, Xataface has added countless features that improve the developer and user

experience alike. I have enjoyed building it, and I sincerely hope that you enjoy using it to build your own creations.

Getting Started

This section provides the tools to get you bootstrapped in Xataface. In general, you can read the sections of this book in any order, but I recommend you at least start with this section as it will give you the vocabulary and experience to understand the content in all other sections.

Introduction

Xataface is a simple framework for building data-driven web applications in PHP and MySQL. This section introduces some of the concepts and applications of Dataface. To fully understand what Xataface is, we must first define a few key terms:

Framework - A set of software routines that provide a foundation structure for an application. Frameworks take the tedium out of writing an application from scratch. (From Answers.com)

Data-driven design - Designing an application around the data that it will store.

Xataface is a Framework in the sense that it is a set of classes and libraries that take the tedium out of writing web applications. It provides a simple web interface to a MySQL database enabling users to update, delete, and find data in the underlying database. The interface is targeted at secretaries and end-users as opposed to database administrators.

Xataface enables data-driven design because it allows developers to develop web sites by first designing the database that will be used to store the data on the website, and then design the pages used to display the data. The developer can focus on the data because he or she does not have to worry about having to build forms to update the data. If the requirements of the application change, the developer can simply add a field to the database table and all associated web forms will be updated automatically (because they are all dynamically generated using the database schema).

Requirements

1. PHP >= 4.3 (for Xataface 1.1.x and lower); PHP >= 5 for Xataface 1.2 and higher
2. MySQL >= 3.2.3 (Some features require 4.1 or higher).

License

1. GPLv2

Development Procedures

Identify the data that will need to be stored for a web site.

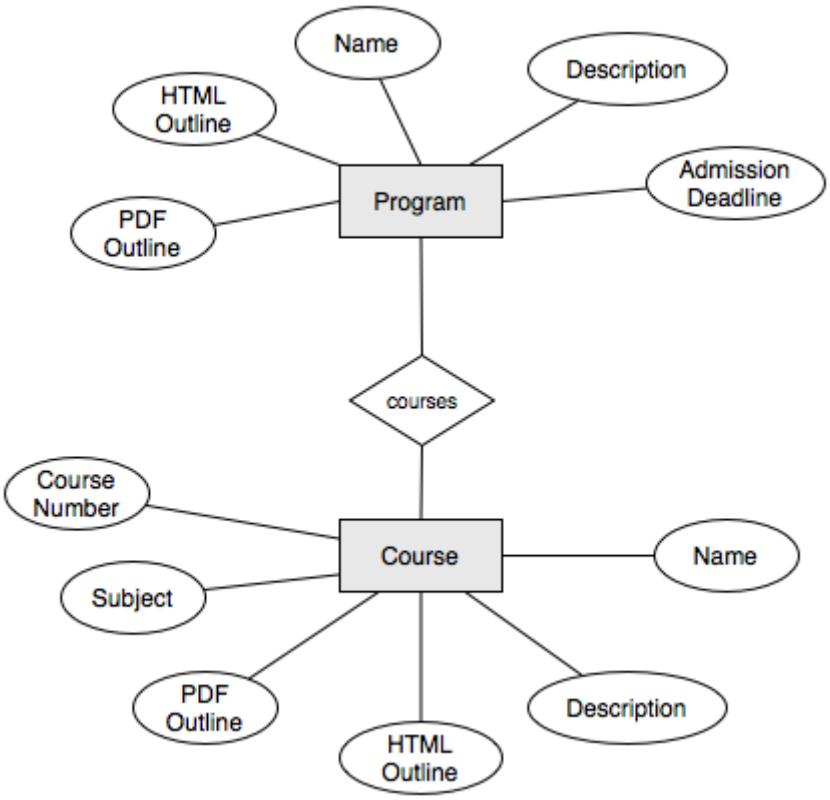


Figure 11. ERD diagram describing a simple database with two tables, "Program" and "Courses", with a relationship between them.

Design the database using your favorite database administration program (e.g., PHPMyAdmin)

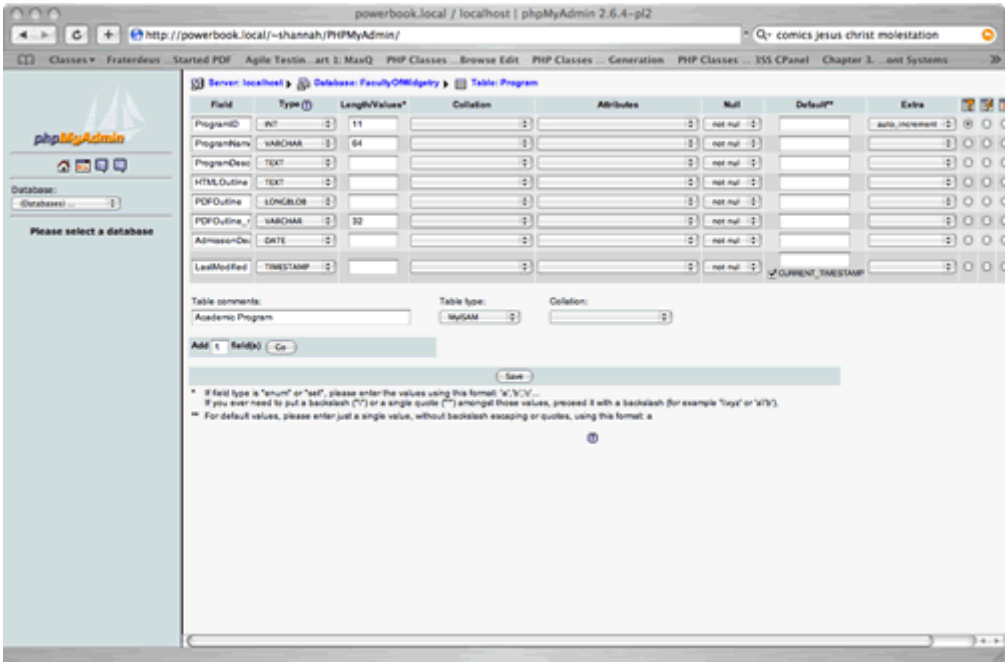


Figure 12. PHPMyAdmin is a popular tool for creating databases on MySQL/MariaDB. You can use any tool you like for creating your database, or no tool at all (i.e. raw SQL).

Tell Xataface some DB connection info, and voila! You have an application:

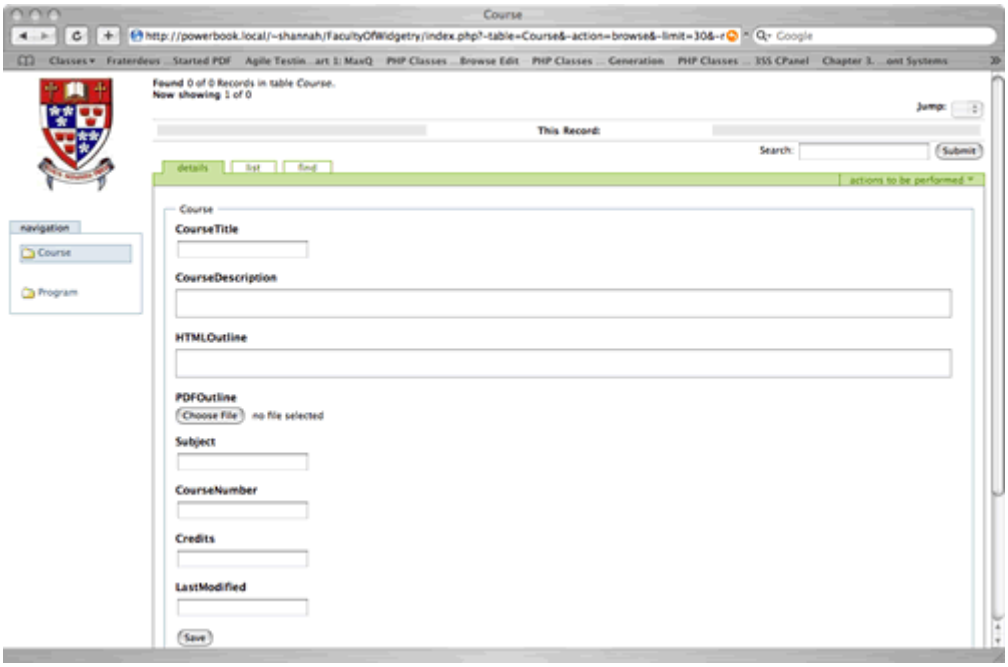


Figure 13. Bare-bones Xataface application out of the box with no customizations.

Why Use Xataface?

Some simple examples similar to those that are frequently encountered by web developers, and how dataface can be used to acheive a solution.

As a web services developer would frequently getting requests to build websites that were manageable by the site owner. Most of these requests also specify certain types of content that must be stored on the website, and much of this content needs to be n-ary (i.e., there will be multiple instances of each type of content). Let me give you an example.

Example 1: Website for Faculty of Widgetry

The Faculty of Widgetry needs a website to publish information about its undergraduate programs. It is important for them to be able to publish admission requirements, and program overviews for each program. It is also important to have course outlines and timetables for each course. The Faculty of Widgetry has 12 undergraduate programs and over 100 courses offered.

Solution 1: Static HTML

To build this web site using only static HTML pages using Dreamweaver or some other HTML editor would require at least 112 pages to be created (one for each course and program). However, once we recognize that there are only 2 types of pages required (one for courses and one for programs), we can reduce the task down to creating 2 templates and filling in the main content for each program and course individually. Most HTML editors have some templating ability so you can make changes to the template and have the changes propogated to all pages that use that template with the click of a button.

This works great, but courses are added frequently, and outlines are changed. Do you really want to receive requests to update all of these pages every time there are changes to make? (If your answer is 'yes', then you probably won't be interested in reading the rest of this tutorial). Whether the Dean

of the faculty knows it or not, it is very important for the program assistants to be able to update these web pages on their own. To acheive these goals you can:

1. Install Dreamweaver on the Program Assistants' computers, teach them how to use it, and allow them to perform updates.
2. Install Contribute, which is a scaled down version of Dreamweaver to make it easier for the Program Assistants to edit the content.
3. Use another solution that is equivalent to one of the above 2 solutions.

Installing Dreamweaver for each Program Assistant is a little overkill, and since it has the ability to do much more than just update content. In addition, Dreamweaver is really a developer's tool - not a secretary's tool, so it can be difficult to learn at first. The best reason NOT to install Dreamweaver on the Program Assistant's computer, however, is that it enables him/her to muck things up by accident (believe me, I has happened to me more times than I care to count).

Admittedly, Contribute is a viable option as it controls access to only certain portions of web pages to be edited, and it is targetted at secretaries (not developers) so it is easier to use. In fact, given the requirements for this web site (as stated above), this is a perfectly good solution. However you better hope that none of the following requirements are added:

1. Each program web page should contain an up-to-date list of all of the courses required for the program, along with a link to the course outline for that course.
2. Course outlines should be available in PDF format as well as HTML format.
3. An index page showing all of the courses available should be added. This page must allow courses to be organized by program, course subject, or course number.
4. Any other requirement that would have information formatted in more than one way.

If any of these requirements are likely to be added (EVER) then you would be well-advised to look into solutions that use a database back-end.

Solution 2: Use a Content Management System (CMS)

There are hundreds of content management systems available that will allow you to store and update content through the web (TTW). Some of them even have an assortment of add-ons that will allow you to store more specific types of information. Some good CMS's include Plone, Drupal, and Xoops. Suppose we want to develop the Faculty of Widgetry website using one of these CMS's. Any good CMS will allow you to create and edit HTML documents easily (without having to write any custom products). However, it is often the case that our documents require the content to be structured. For example, each program has some common data associated with it: Program Name, Admission Deadline, Program Description, Outline, Courses, etc... If we want to properly separate data from presentation, we would need to build a special content-type to store our programs. Most CMS's allow you to develop custom content-types using the underlying programming language and an API (Application Programming Interface). Some API's are easier to use than others and some are documented better than others. The common element is that each has its own proprietary interface for writing these add-ons.

If you are using a CMS and you are proficient in the creation of add-on content-types, then you will

be able to build the Faculty of Widgetry website without great difficulty. However there are a number of reasons why you may choose NOT to use a CMS:

1. Steep learning curve: Depending on the CMS it can be very time consuming and difficult to learn how to use and modify the CMS to suit you purposes.
2. It is over-kill: Most CMS's are filled with features and modules that you will never need. In fact it can even be a pain to turn them off if you don't want them.
3. You can get tied into the CMS: When you are using a CMS, you will start developing for the CMS. With all of your content in the CMS it may be difficult to migrate to a different solution later on. (The truth of this statement will vary for different CMS's). Choose your CMS carefully.

Solution 3: Use an existing Application

OK, OK, let's not get too carried away with trying to develop the website until we have checked the market to see if someone else has already done it better. Maybe there is already a PHP application that makes websites for Faculties easy. I mean, I can't be the first person that needed to build a website for a Faculty. In fact if you do a search or go to Hotscripts.com, you will probably find a handful of applications or scripts that almost do what you need. If you're lucky, maybe you can find an application that does exactly what you need (but frankly, I've never been that lucky). If you find one, maybe it's worth taking it for a test drive. But beware. Using a system that almost does what you need but is difficult to modify to your needs can be worse than building it by scratch. Make sure that you are able to modify the application to suit your needs exactly.

Solution 4: Use PHP and MySQL

If all we want to do is separate the data from the presentation and allow the Program Assistants to update data on the website, why not just design a MySQL database with the appropriate tables and fields to store the required data. In our case we will need 2 tables:

```
Programs
    Fields:
        ProgramID : int
        ProgramName : varchar
        ProgramDescription: text
        AdmissionDeadline: date
        Outline_HTML : text
        Outline_PDF : blob
Courses
    Fields:
        CourseID : int
        CourseSubject : varchar
        CourseTitle : varchar
        CourseNumber : int
        ProgramID : int
        CourseDescription : text
        Outline_HTML : text
        Outline_PDF : blob
```

Now it's easy to create a few web pages that extract data from the database and displays it as HTML. In fact if there is an existing page template that you can use for the header and footer, you can develop the entire Faculty website in under an hour (you just have to create 3 pages).

Question: How will the Program Assistants update the information in the database?

Answer: OK, let's assume that you're not going to teach them SQL and that a DB Admin tool will also be too difficult to learn. Then you have to create HTML forms to update records in the database.

Ouch! What was easy just became hard. Making HTML forms is a real pain, because you have to validate the input, deal with file uploads, and also make sure that everything is stored to the database OK without losing any information. Such a basic task, but it can be very difficult. This is when it is time to use Xataface.

Solution 5: Use Xataface

OK, this isn't really its own solution. It is more like "Solution 4 Part II", because Xataface is intended to complement your custom application you built with solution 4, by providing an easy-to-use, configurable user interface that is targeted at secretaries and normal users (as opposed to database administrators). A Xataface application takes only seconds to set up and it will provide you with a full user interface for your users to edit information in the database.

Xataface Installation

Over the years I have developed several different installation mechanisms for Xataface. At the end of the day, installation only requires that you copy the **xataface** directory onto your web server. To update it, you simply replace that directory with the new version.

Creating an application with Xataface, however, involves more than just **installing** Xataface. You need to, at minimum create a config file with your database connection settings, and a 2-line PHP script (usually named "index.php") to serve as an entry point for your application.

And this all assumes that you already have a web server set up with PHP and MySQL, and that you've created a database for your application to use.

With version 3.0, Xataface now includes a command line (CLI) utilty to automate common tasks like creating new apps, generating delegate classes, enabling authentication, etc... This tutorial describes the installation and usage of this CLI script for creating and maintaining Xataface applications. If you would prefer to do things manually, you can skip to the "Manual Installation" section.

Prerequisites

Before you install Xataface, you should have a PHP and MySQL installed. I recommend XAMPP

Installation using the Xataface CLI

Paste the following into macOS Terminal or Linux shell prompt

```
/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/shannah/install-
xataface/master/install.sh)"
```

NOTE	This command will install Xataface at `~/xataface` (i.e. inside your home directory).

The output of this script will look like:

```
$ /bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/shannah/install-
xataface/master/install.sh)"
Cloning into 'xataface'...
remote: Enumerating objects: 180, done.
remote: Counting objects: 100% (180/180), done.
remote: Compressing objects: 100% (125/125), done.
remote: Total 12947 (delta 105), reused 110 (delta 50), pack-reused 12767
Receiving objects: 100% (12947/12947), 19.50 MiB | 11.95 MiB/s, done.
Resolving deltas: 100% (7814/7814), done.
Adding /Users/shannah/xataface/bin to your path in /Users/shannah/.bash_profile
```

This installs the `xataface` CLI script at `~/xataface/bin/xataface`.

Creating your first Xataface app

Now that you have xataface installed, we can proceed to create our first app.

IMPORTANT

Please ensure that you have both `mysql` and `apachectl` in your PATH. If you are using XAMPP for your server, this can be accomplished with the following command:

```
export PATH=/Applications/XAMPP/xamppfiles/bin:$PATH
```

Open a command prompt and enter:

```
xataface create hello-world
```

The output will be as follows:

```
$ xataface create hello-world
Create project at hello-world
Setting up scaffold at hello-world ...Done
Checking for PHPMyAdmin installation...Found.
Linking /Users/shannah/.xataface/phpmyadmin to hello-world/lib/phpmyadmin ...Done.
Copying xataface to hello-world/www/xataface ...Done.
Removing hello-world/www/xataface/site_skeleton ...Done.
Initializing database ...
Starting mysql server...Started Successfully
Bootstrapping database...Done
Stopping mysql server...Stopped
Done
```

At this point, you should have a new directory named "hello-world", which contains our application's directory structure.

We can launch our app by "cd"ing into our new "hello-world" directory and running:

```
xataface start
```

This will fire up MySQL and Apache with document root at "www" and the database stored in "data"

The console output will be something like:

```
Starting apache on port 9090
No services added.
Starting MariaDB
PID FILE /Users/shannah/Vagrant/hello-world/bin/../data/Steves-MacBook-Pro-2.local.pid

Waiting for ready
kill -0 says wait some more...
.Waiting for ready
We are ready
 SUCCESS!
About to touch lock file /Users/shannah/Vagrant/hello-world/bin/../tmp/mysql
Exiting with return value 0
Did start mysql server
No services added.
Did start apache server
```

Now, point your web browser to "http://localhost:9090"

You should see something like:

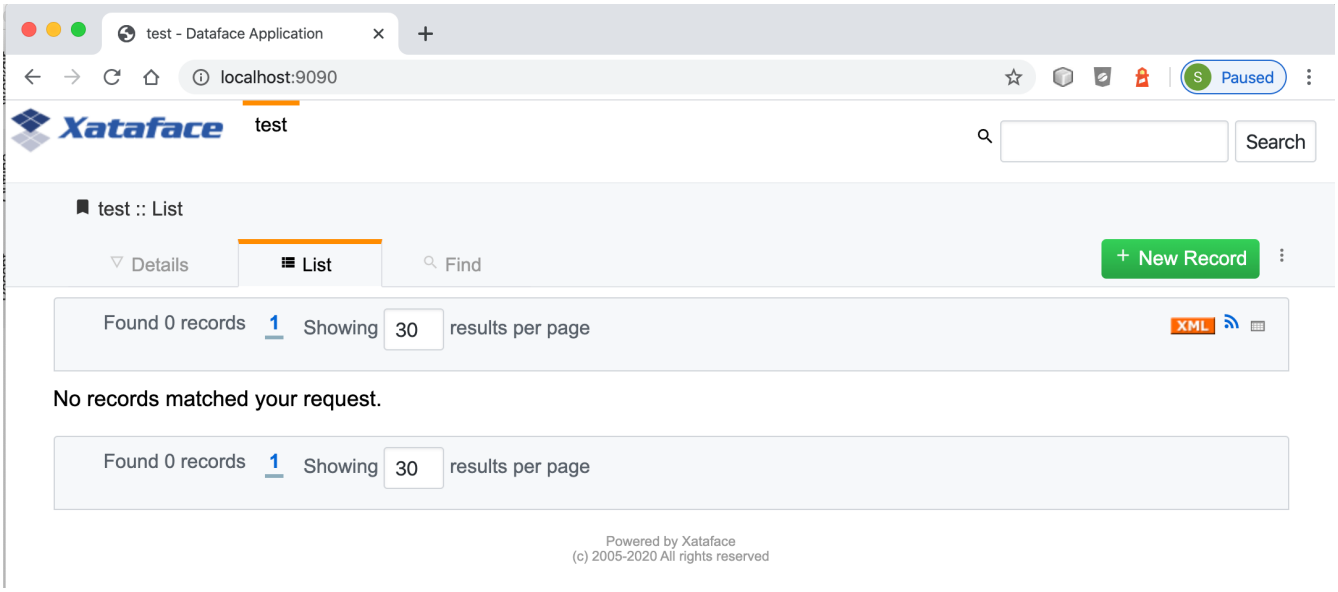


Figure 14. A vanilla Xataface application created with the "xataface create" command.

This database has only a single table named "test", which contains a single column named "test_field". You can add new record by clicking "New Record".

You'll see a "new record" form:

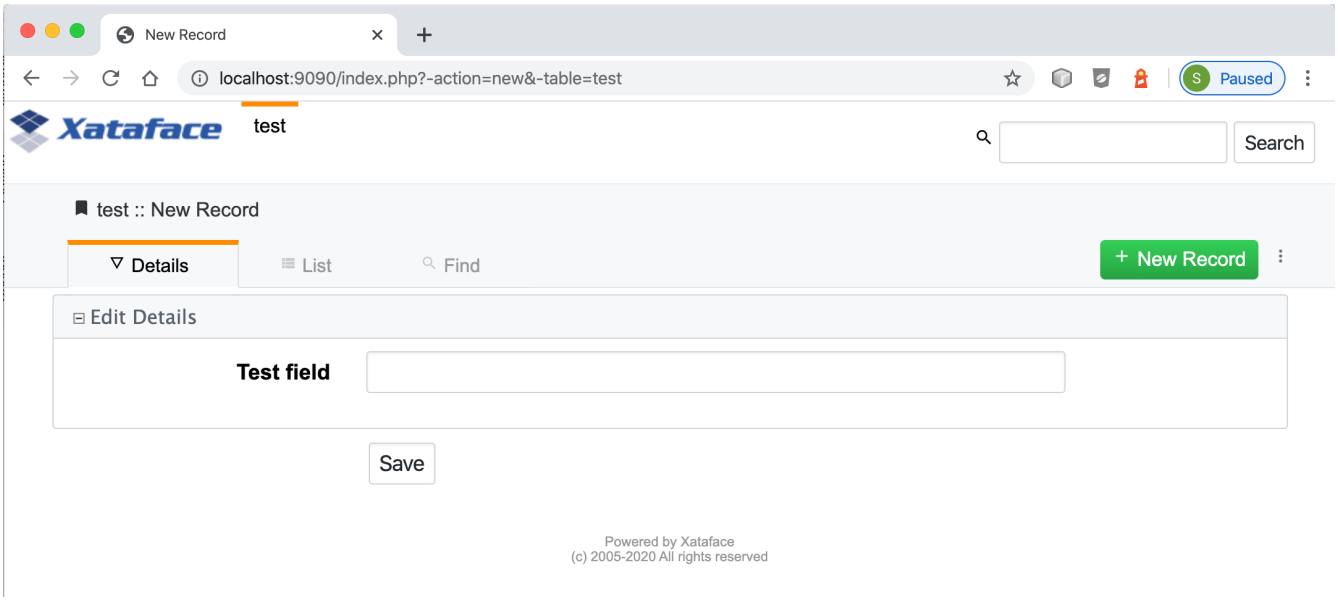
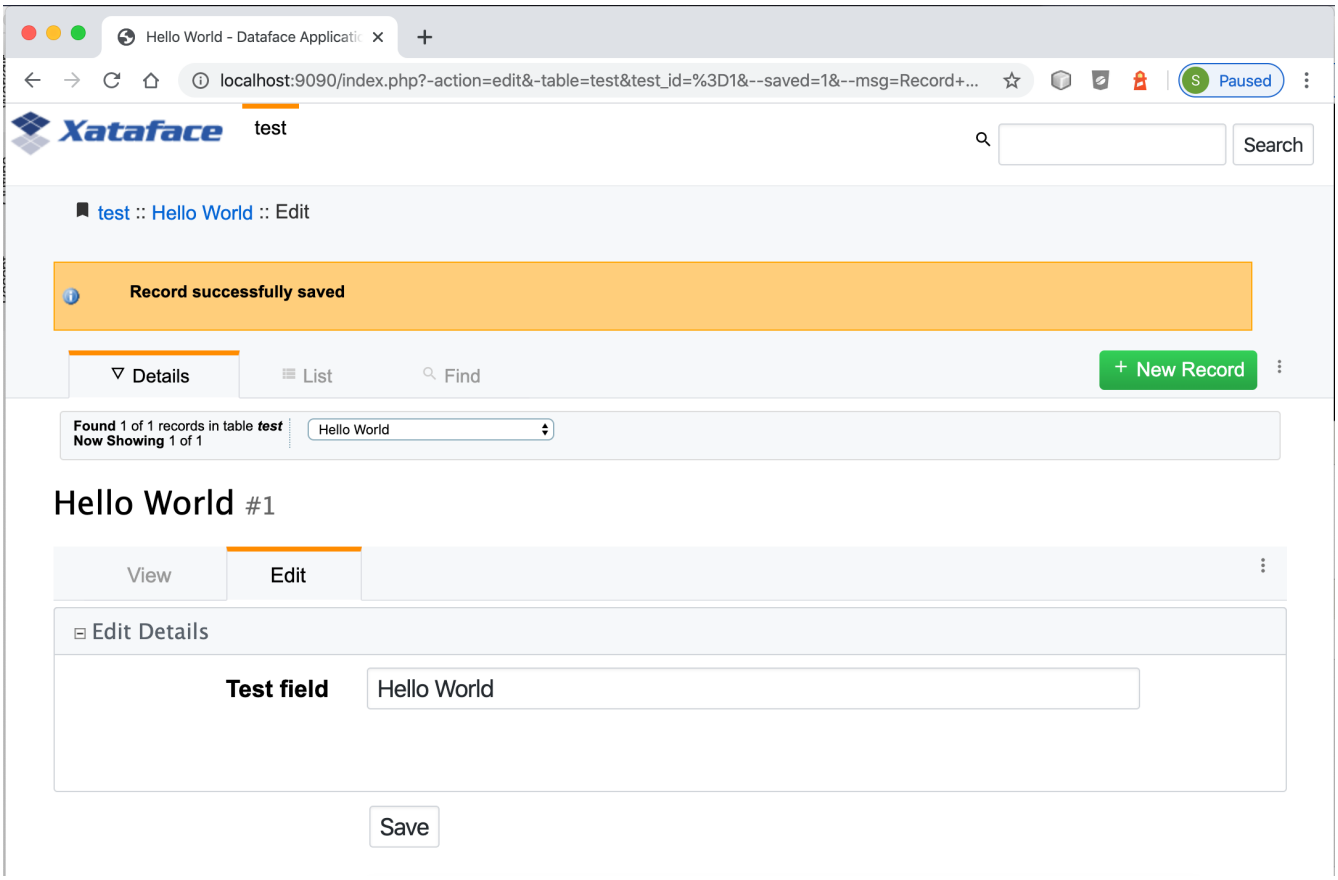


Figure 15. Xataface new record form for the default "test" table.

Enter "Hello World" into the test field and press "Save".

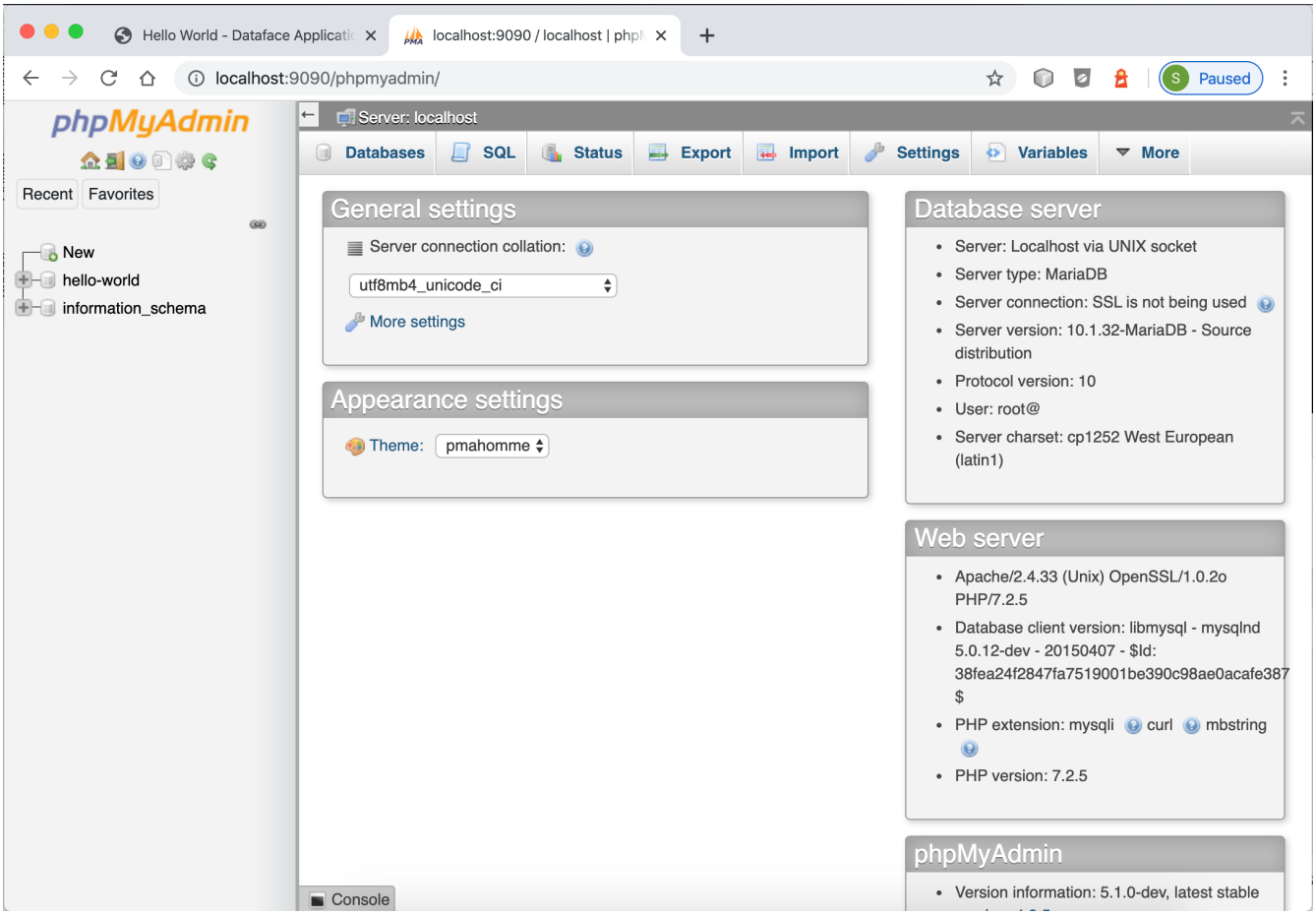
You should see a message saying "Record successfully saved".



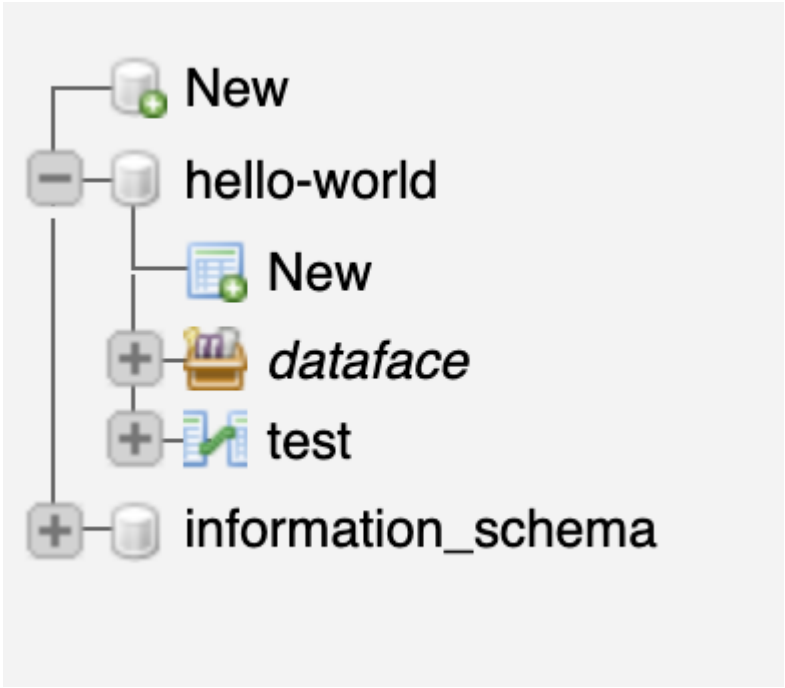
Creating A New Table

Xataface provides an installation of PHPMyAdmin to assist you in building a database for your application. You can access PHPMyAdmin at the URL: `http://localhost:9090/phpmyadmin`

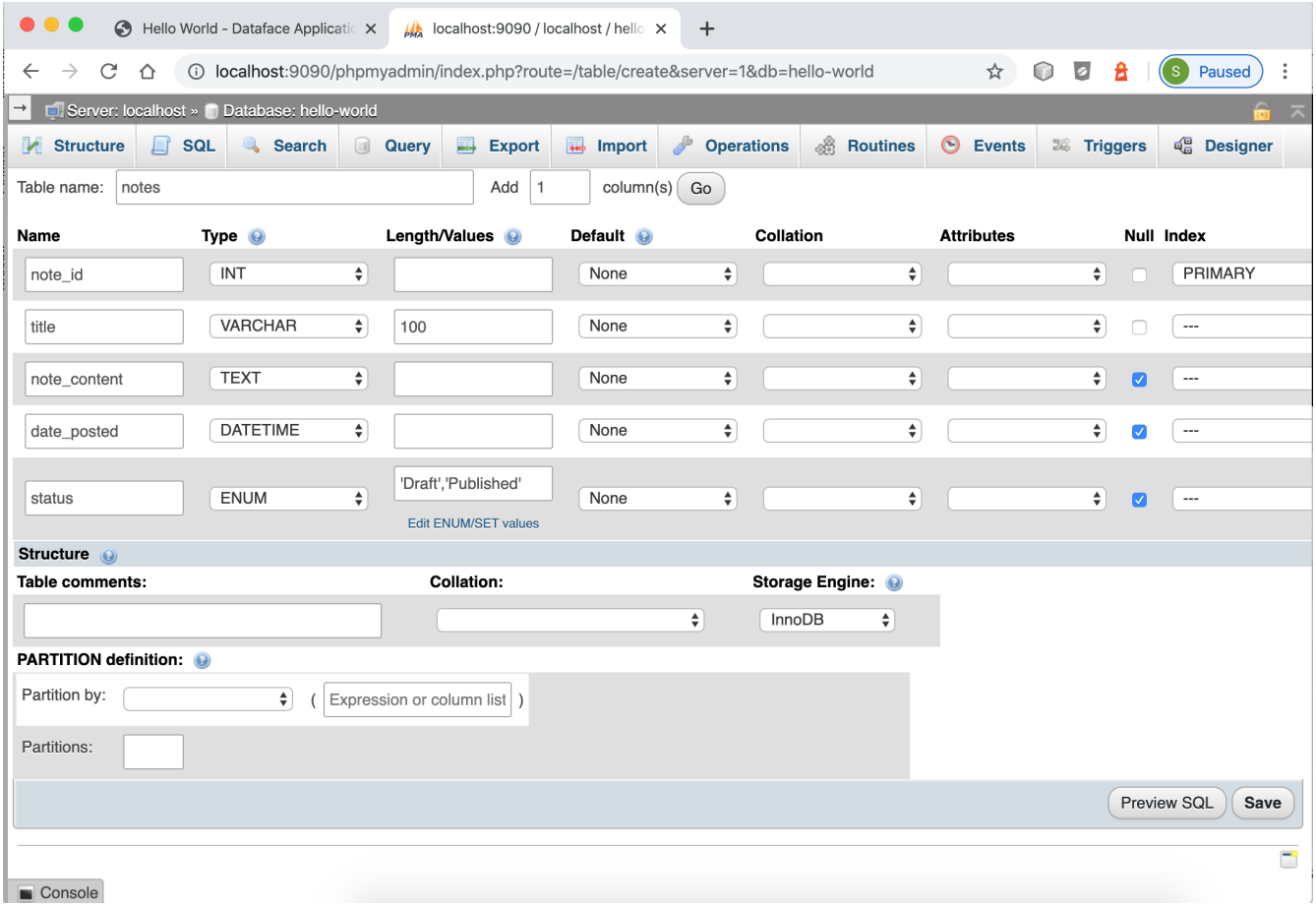
Open a new browser tab with this URL, and you should see something like:



The database for this app is named "hello-world", and it is listed in the left-hand menu for PHPMyAdmin. Click on that node to expand, it, then select "New":



Let’s add a table called notes, by filling in the new table form as follows:



IMPORTANT Be sure to check the "A/I" box for the "note_id" field so that it will be an auto increment field.

Press "Save" when done.

Now we want to tell Xataface to use this table in our application. Open the `www/conf.ini.php` file in our app. The contents will look like:

```
;<?php exit;
__include__=conf.db.ini.php

[_tables]
    test=test
```

The `[_tables]` section is used by Xataface to generate the top menu in your application. Let's tell it to use our new "notes" table by adding the following:

The conf.ini.php file after adding the "notes" table to the list of tables for our app to use.

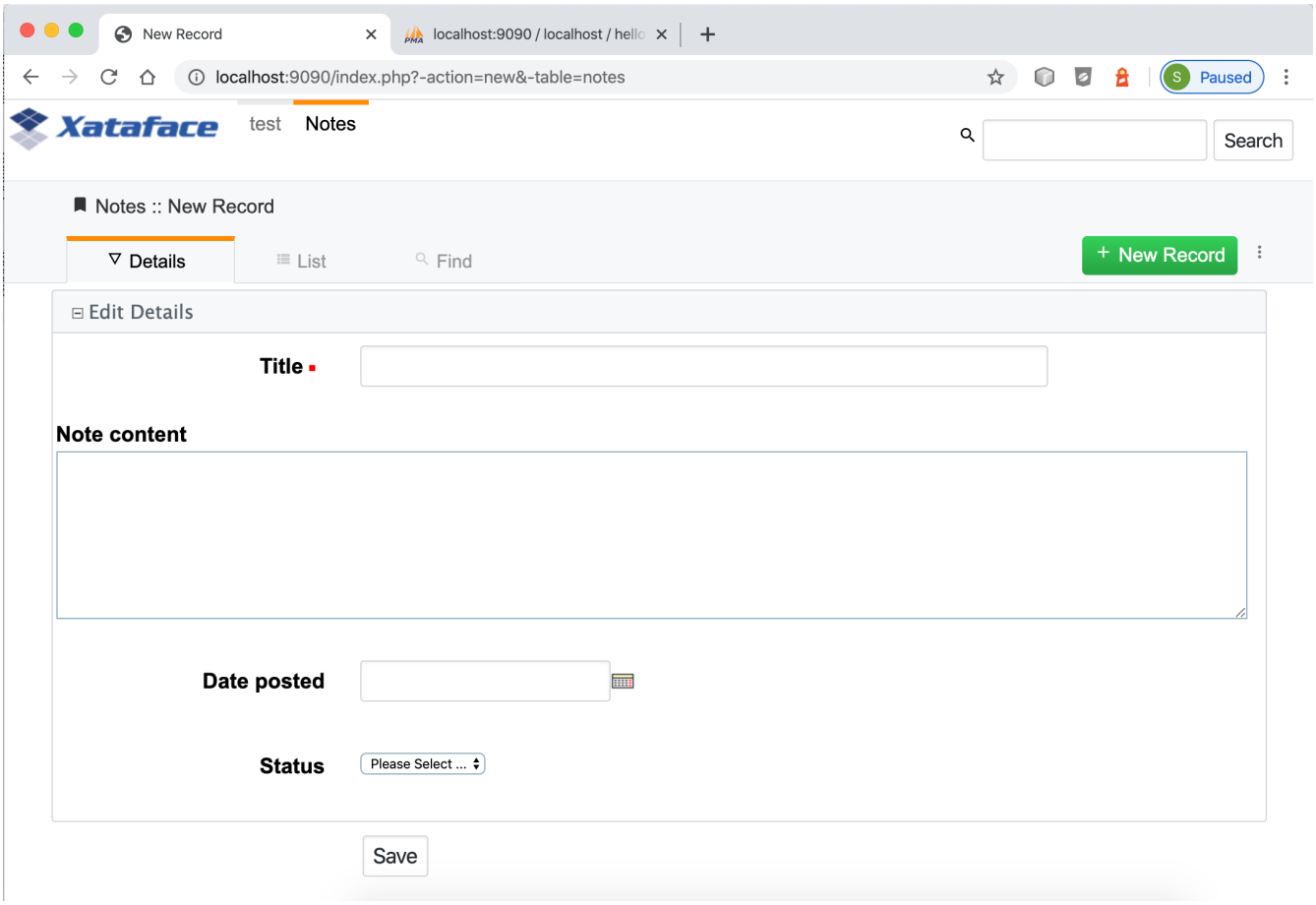
```
;<?php exit;
__include__=conf.db.ini.php

[_tables]
    test=test
    notes=Notes ①
```

① The left "notes" indicates the table name. The right "Notes" indicates the label that should be used in our tables menu.

Save this file and reload the application in the web browser.

You should now see a "Notes" tab on the top.

Click on this tab, then press "New Record" to see our form for adding records. You should see something like:



This form includes inputs for all of the columns in our table, except the "note_id" column. This is

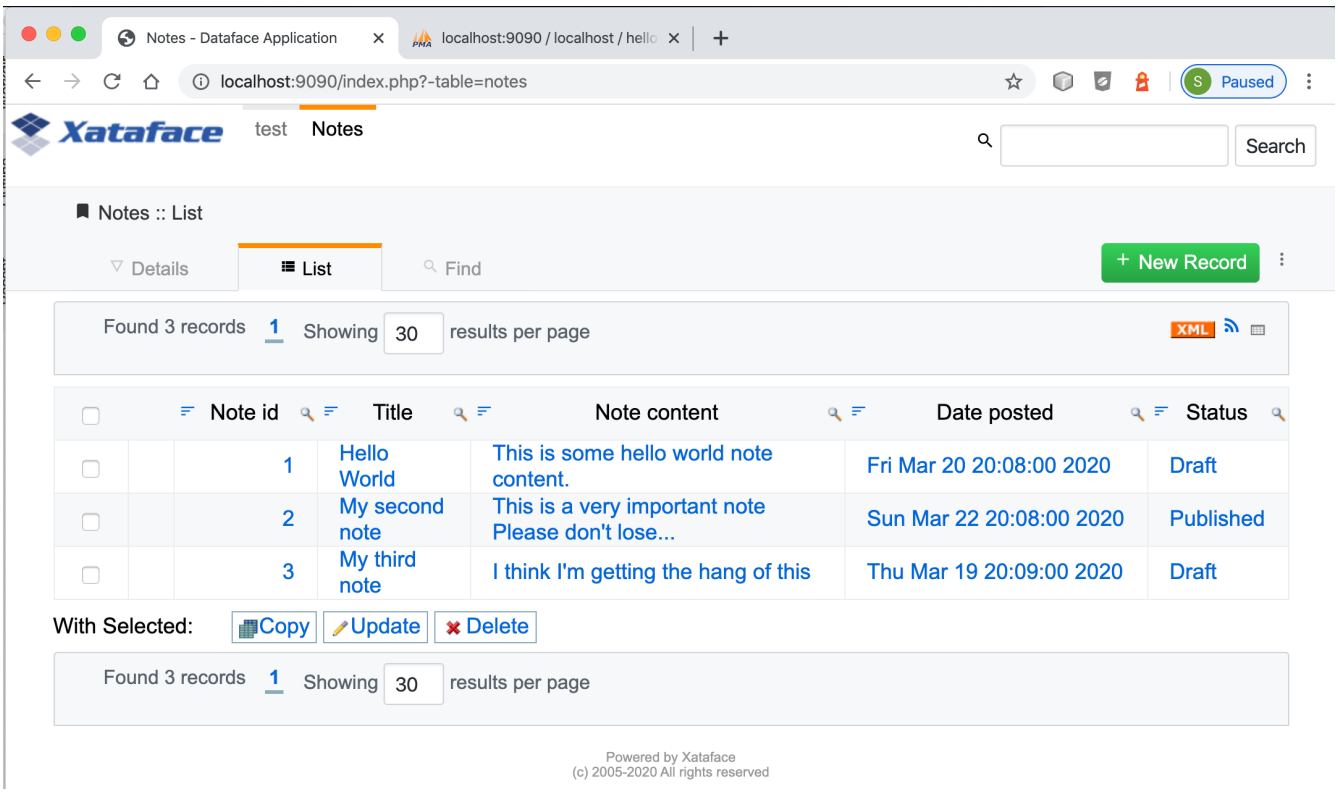
because "note_id" is an auto-increment field and doesn't require user input.

Each field uses a different type of widget according to the type of the underlying database column. E.g. the "Title" field is a text field because it is a VARCHAR column. The "note_content" field is a text area because it is a TEXT column, etc... You can override the widget that is used to edit any field very easily by editing the "fields.ini" file for the "notes" table, which we'll do in the new section.

For now we will use this application as is while we explore the application interface.

Enter some dummy data into this form and press "Save". Then press "New Record", and enter another new record. Create 3 or 4 notes with different content so that we have something to play with.

Once you've entered a few notes, click on the "Notes" tab to return to the "List" view of the "notes" table. My app looks like the following screenshot, as I've entered 3 notes:



Filtering the List

Xataface provides a few different ways to filter the list view. We can:

1. Click on a column header to search by column content.
2. Enter a keyword search into the top right search box, which will look for matches in **any** column of the table.
3. We can do an advanced "Find" by clicking on the "Find" tab.

Later we'll also learn how to add "filter" drop-down lists.

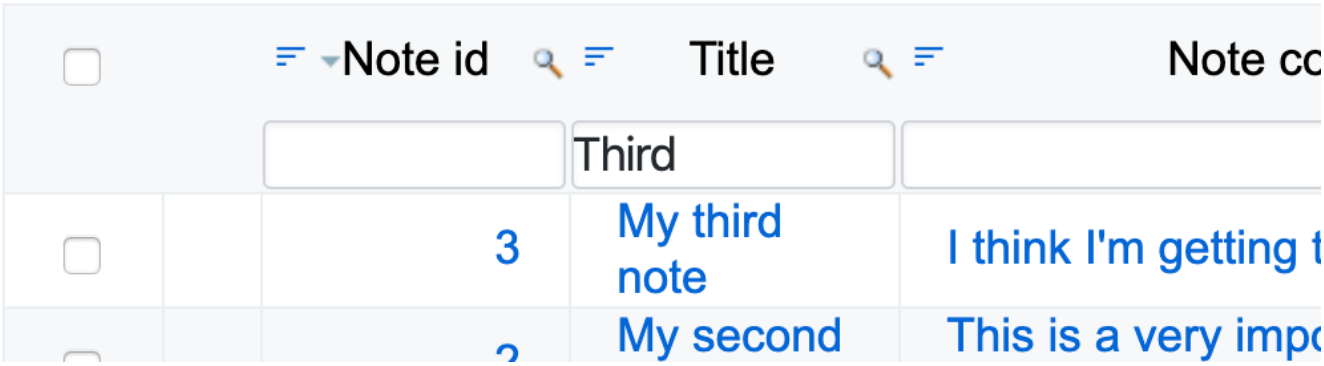


Figure 16. Clicking on the column heading in list view will reveal search boxes to search on one or more columns.

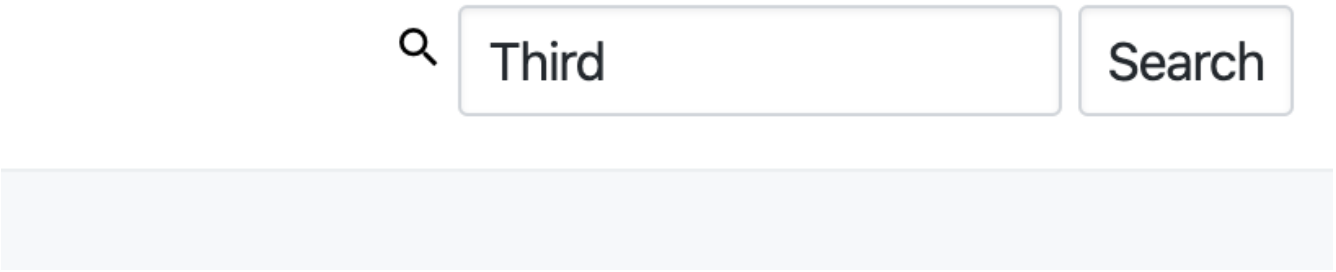


Figure 17. Entering keywords into the top-right search box will allow you to look for matches in any column of the table.

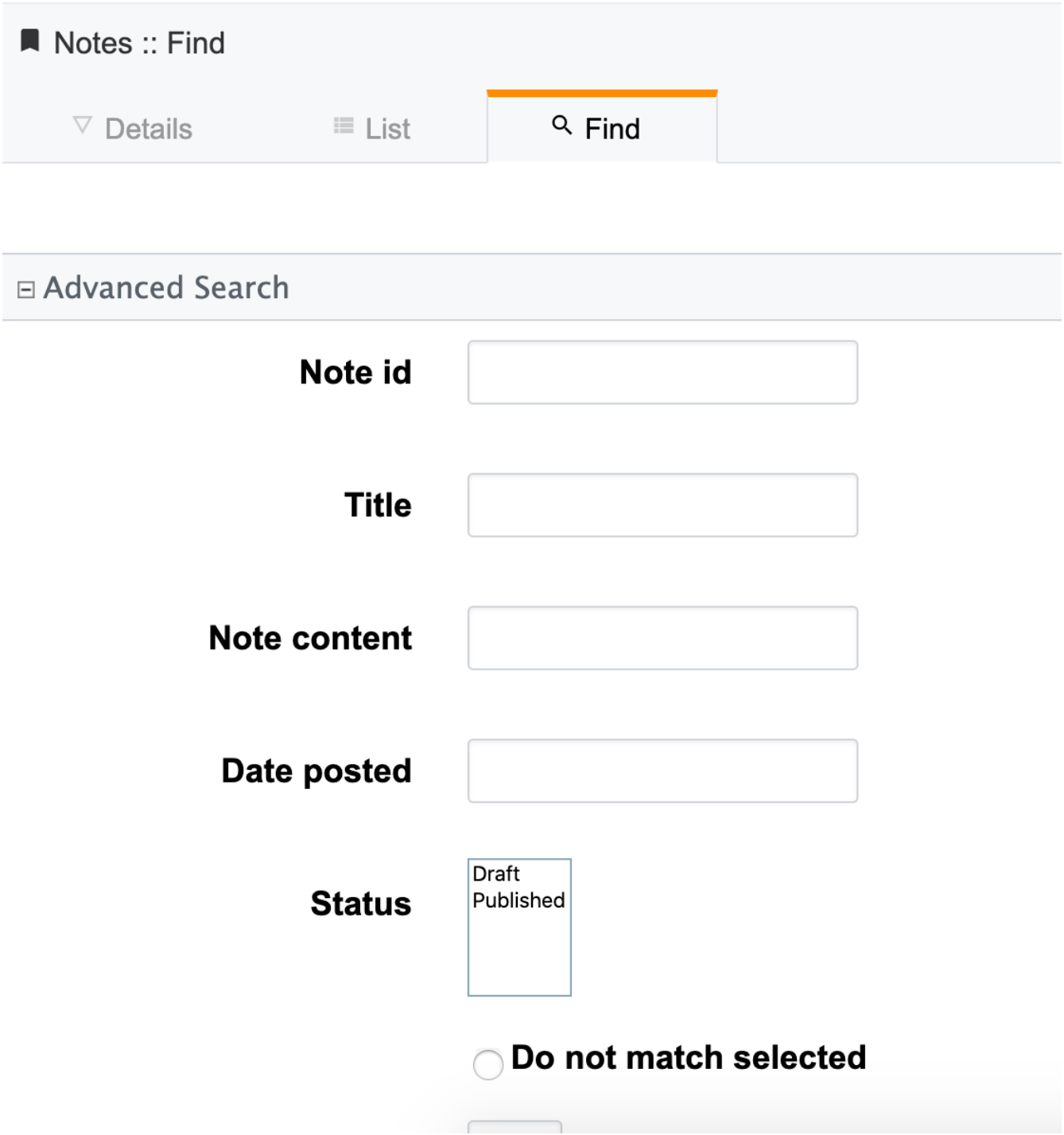


Figure 18. The "Find" tab includes an advanced search form which includes a field for each column in the table.

Development Environment

At this point we have a fully-functional database application, and you didn't have to write a single line of code. Let's pull the curtain back a little and see what's going on in our application under the hood.

The "hello-world" directory that was created by xataface when we ran "xataface create hello-world" contains the following folders:

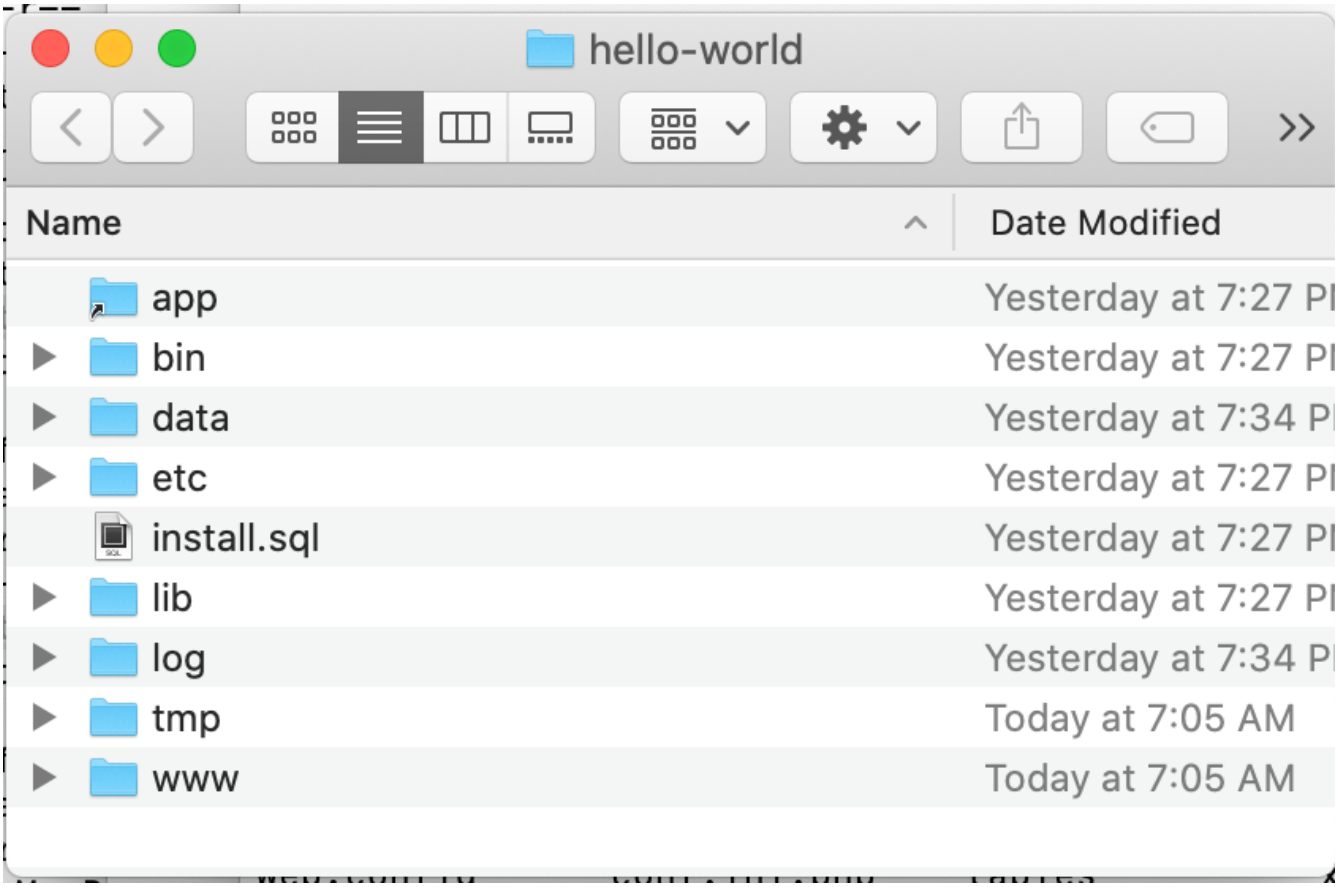


Figure 19. The root application directory generated by `xataface create hello-world`

This root directory comprises a mini development environment for our application. The application itself is entirely contained inside the "www" directory, and when it comes time to deploy the app to production, we will likely **only** be uploading this directory to the web server.

The subdirectories in this folder include:

1. **app** - This is a symlink to the www directory, however, in cases where the Xataface app is actually contained in a subfolder of "www", this symlink will point to that subdirectory. The Xataface maintenance scripts always use "app" as the app's document root (i.e. the directory containing conf.ini).
2. **bin** - This directory contains a set of maintenance scripts that can be used to automate certain maintenance tasks. This is for the development environment only, and does not need to be copied to the production web server.
3. **data** - This directory stores the development mysql database files. This is for the development environment only. On the production server, there will likely be a single central MySQL/MariaDB server where your database will reside.
4. **etc** - This directory stores apache and mysql config files used for the development environment only.
5. **install.sql** - This stores the SQL to recreate the database.
6. **lib** - This directory stores some additional libraries that may be useful for the development environment, such as PhpMyAdmin. This is for the development environment only, and should not be copied to the production web server.
7. **log** - Apache and MySQL log files for the development environment.

8. **tmp** - The temp directory for the development environment.
9. **www** - This is the actual directory containing our application. When we deploy to a production, this is the only folder that needs to be copied to the web server.

Application Structure

As mentioned above, the "www" directory contains the meat of our application. Let's take a look at its contents now.

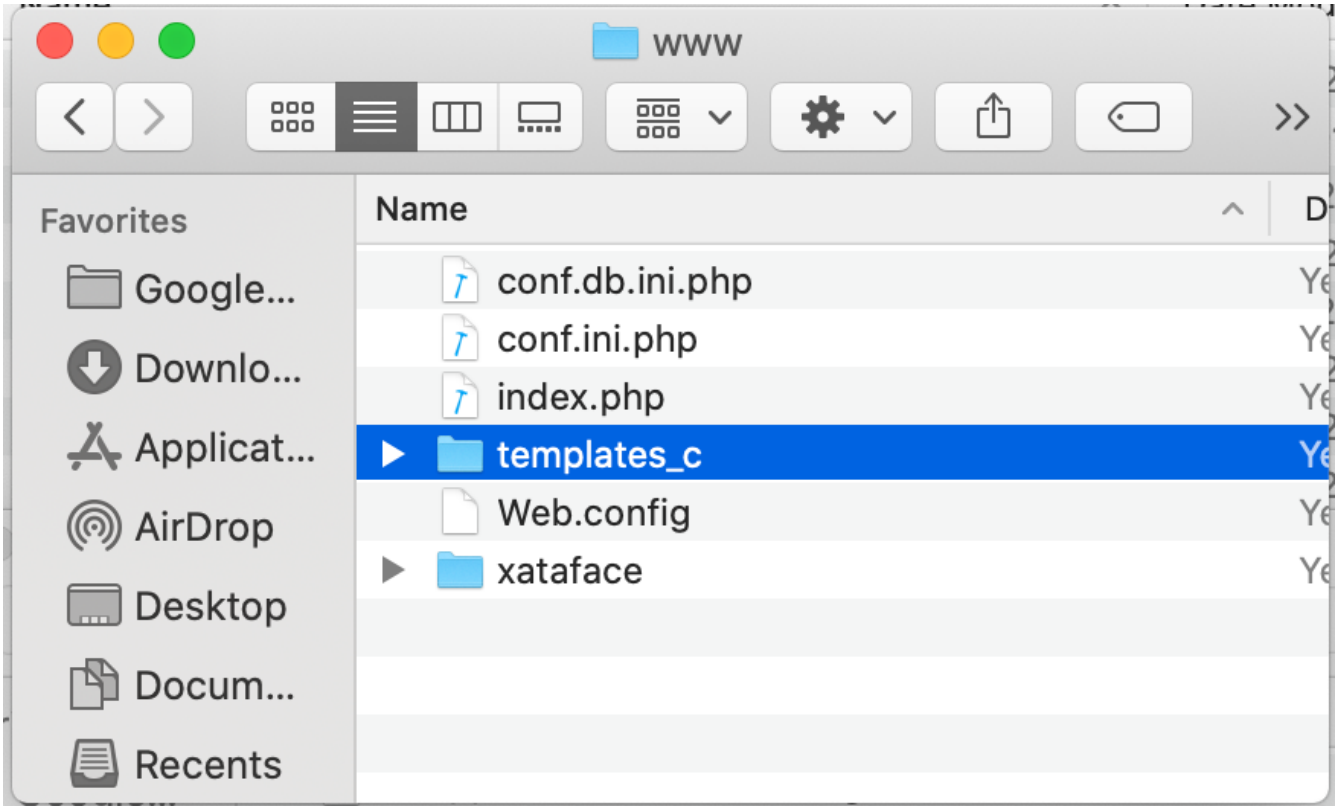


Figure 20. The www directory contains the document root of our application.

Let's take a look at the files that were generated and placed in this directory.

1. **conf.db.ini.php** - Config file containing **only** the database connection information.
2. **conf.ini.php** - Config file containing application-wide configuration.
3. **index.php** - The entry point to your application.
4. **templates_c** - This directory containes compiled Smarty templates. This needs to be writable by the web server.
5. **Web.config** - A security file for IIS to prevent it from serving ".ini" files. This is really only necessary when using Xataface on IIS. The .htaccess file provides the equivalent functionality for Apache.
6. **xataface** - The actual xataface library used by the app. Updating your application to a newer version of Xataface later will be as simple as replacing this directory with the latest version.
7. **.htaccess** - This file is omitted by the screenshot, but the app also contains an .htaccess file which prevents Apache from serving ".ini" files.

NOTE

In this tutorial you'll notice that all .ini files have a .php extension. E.g. we have "conf.ini.php" rather than "conf.ini". Xataface supports both notations, but you should choose one and stick to it. The benefit of using the ".php" extension, is that you can block any PHP-enabled web server from serving the file by adding `;<?php exit;` on the first line of the file. We also include an .htaccess file and Web.config file for blocking .ini files, but these only apply to IIS and Apache web servers respectively. If you're using a different web server, such as NginX or the PHP development server, then these .htaccess will be ignored and your .ini files may get served to the public - which you don't want.

Changing Field Labels

Out of the box, Xataface will assign appropriate labels to its form fields based on the underlying columns. However, you can override these labels very easily.

To customize labels for the "notes" table we need to create a file at `www/tables/notes/fields.ini.php`

The `xataface` CLI script will generate this file for us via the command:

```
$ xataface create-fieldsini notes
Created tables/notes/fields.ini.php
```

As the output indicates, this created a file at tables/notes/fields.ini.php. Let's open it up to take a look at the contents.

The fields.ini file generated for the "notes" table.

```
;<?php exit; ①
[note_id]

[title]

[note_content]

[date_posted]

[status]
```

① First line for security. It will block any php-enabled web server from serving this file.

It has generated empty sections for each field in the "notes" table. All configuration options for a field should go in its section.

Now let's customize some field labels and descriptions. We can set a field's label using the "widget:label" property, and we can add some "help" text using the "widget:description" property. Let's customize the labels and descriptions for this form by adding these properties.

After making a few changes, my fields.ini file now looks like:

```
;<?php exit;
[note_id]

[title]
  widget:label=Note title
  widget:description=Enter a descriptive title for this note

[note_content]
  widget:label=Contents
  widget:description=Enter the full content of the note here

[date_posted]

[status]
```

Now, open your browser again and try to add a new note. You'll notice that the form has changed:

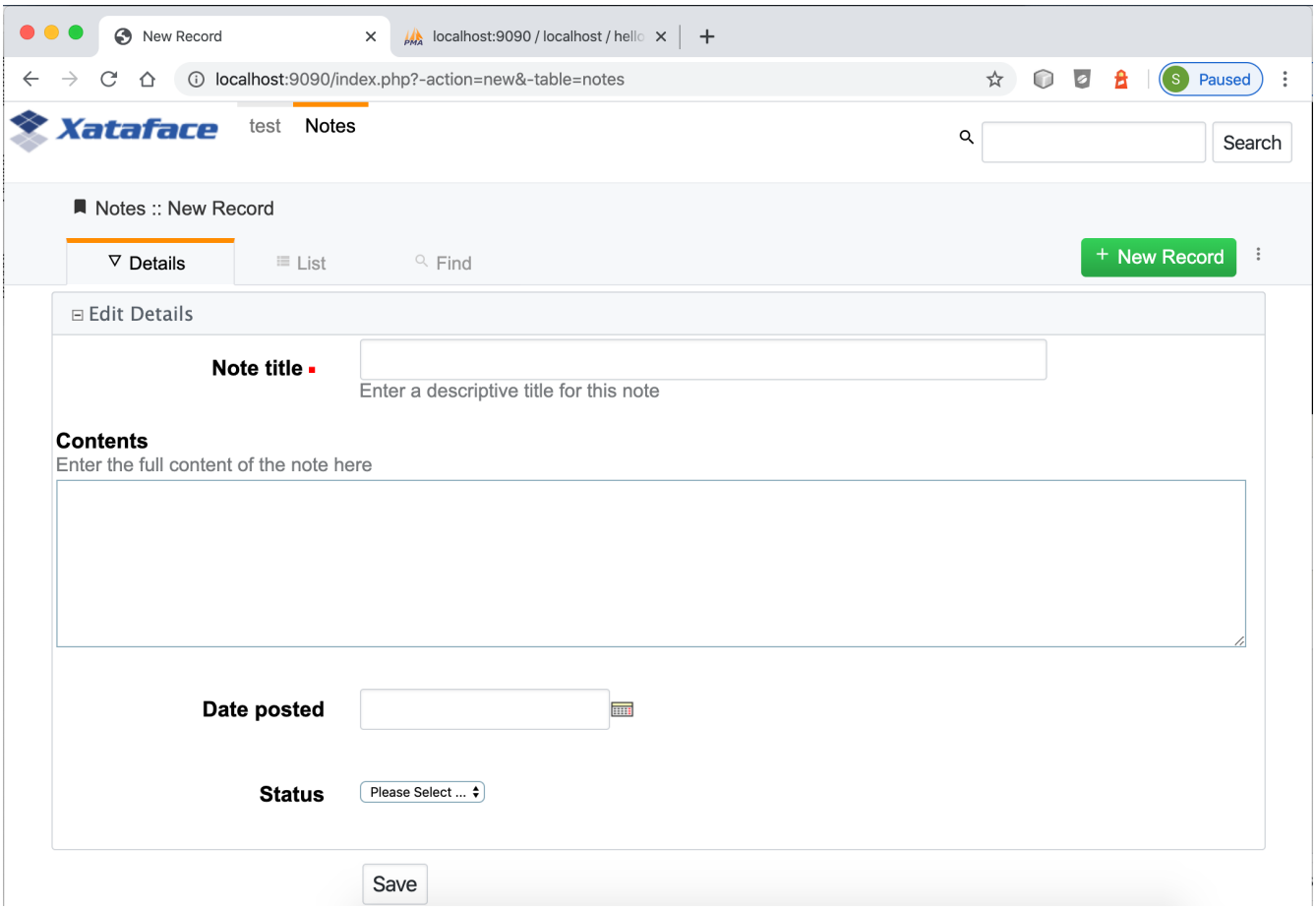


Figure 21. New record form includes custom labels and descriptions based on the `widget:label` and `widget:description` properties I added to the fields.ini file.

A More Complex Example: Faculty of Widgetry App

sf

Sorting and Filtering

One of the core features of any database application is the ability to sort and filter results. Xataface applications come with powerful sorting and filtering features out of the box. All HTTP requests define a result set in your database. By following some simple URL Conventions you can easily craft an HTTP request targetting the exact result set you want. At a higher level, Xataface also provides a rich user experience for sorting and filtering result sets inside the application.

This chapter describes the UI components involved in filtering and sorting, how to use them, and how to configure them to suit your needs.

Sorting Results

To sort a result set, you can simply click on the "Sort" button in the upper left of the list view as shown below:

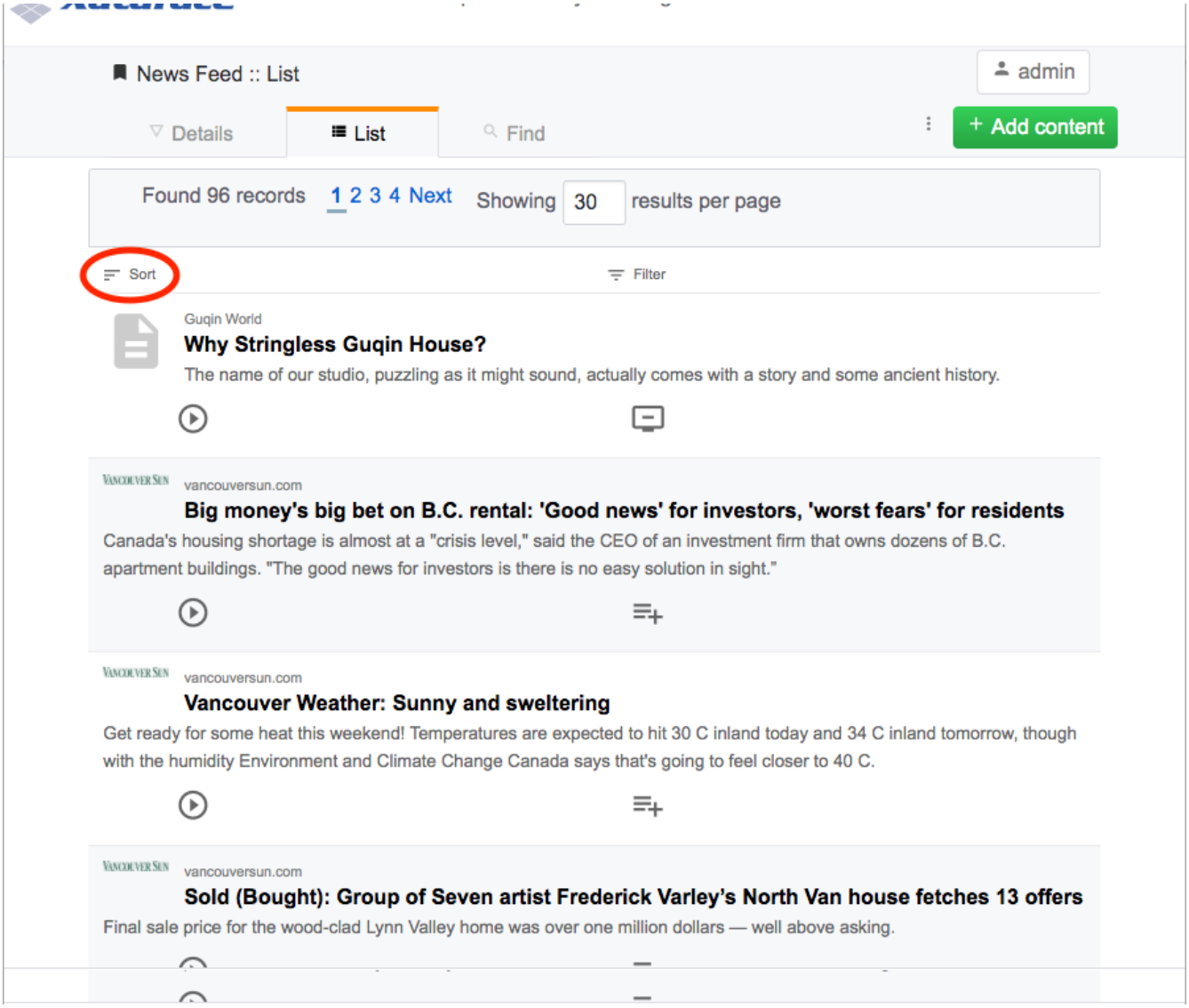


Figure 22. List View on desktop. Click the "Sort" button in the upper left to reveal sorting options. Note that the list view depicted here is using the "listStyle=mobile" directive so the results are displayed as a list of titles/descriptions rather than a table.

This will reveal the sort options.

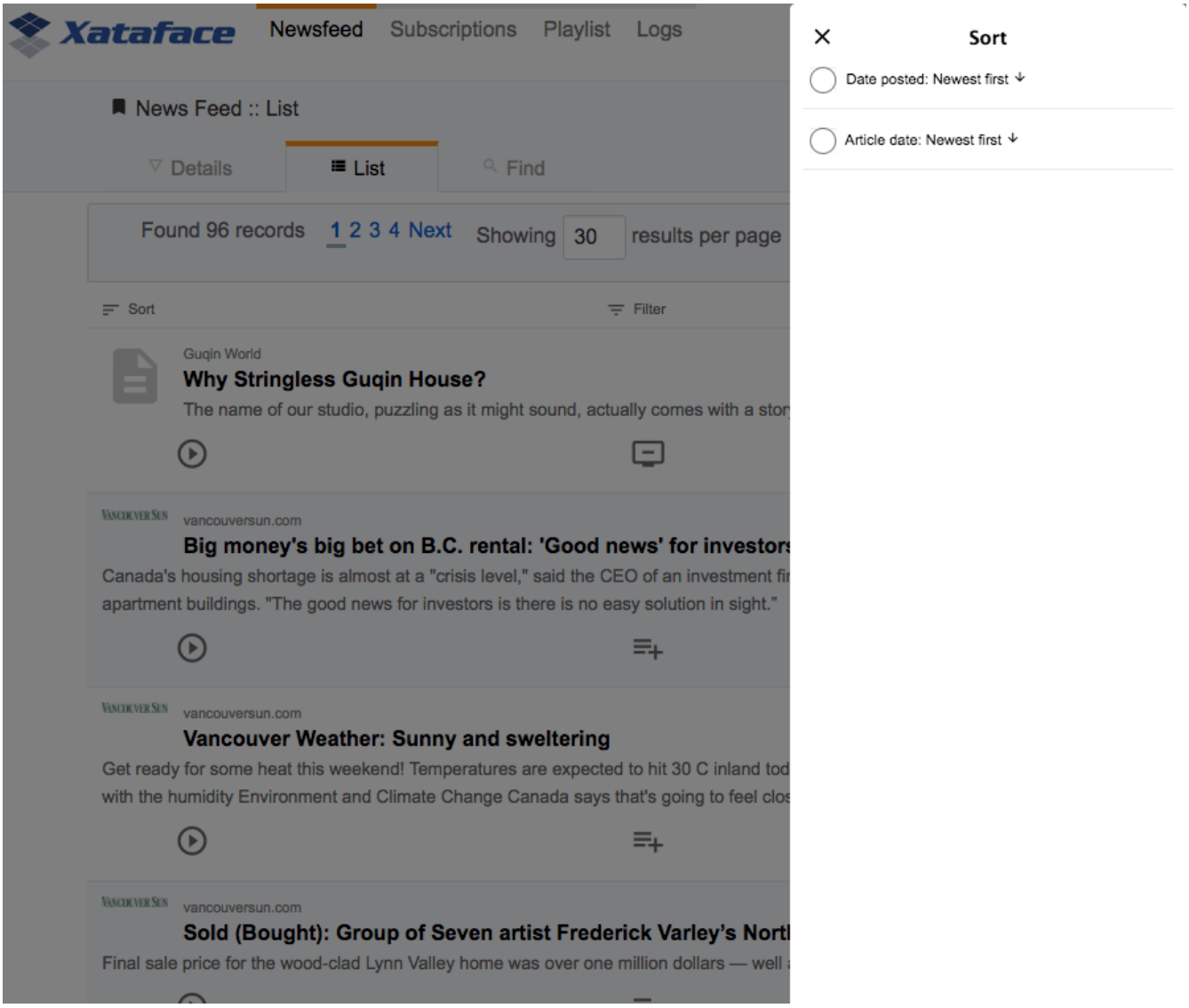


Figure 23. The sort dialog on desktop allows the user to specify an alternate sort order for the list.

TIP

Out of the box, Xataface will provide options to sort on every appropriate field in the table. The table in the above screenshot only includes two sort options:

1. "Date posted: Newest first"
2. "Article date: Newest first"

This is because the application includes the following definitions in its fields.ini file:

```
[date_posted]
    sortable-=1

[article_date]
    sortable-=1
```

You can "sort" the results by clicking on the appropriate sort option in this dialog.

Mobile UI

On desktop, the "sort" dialog slides open from the right of the window. On mobile, it slides up from the bottom as shown below:

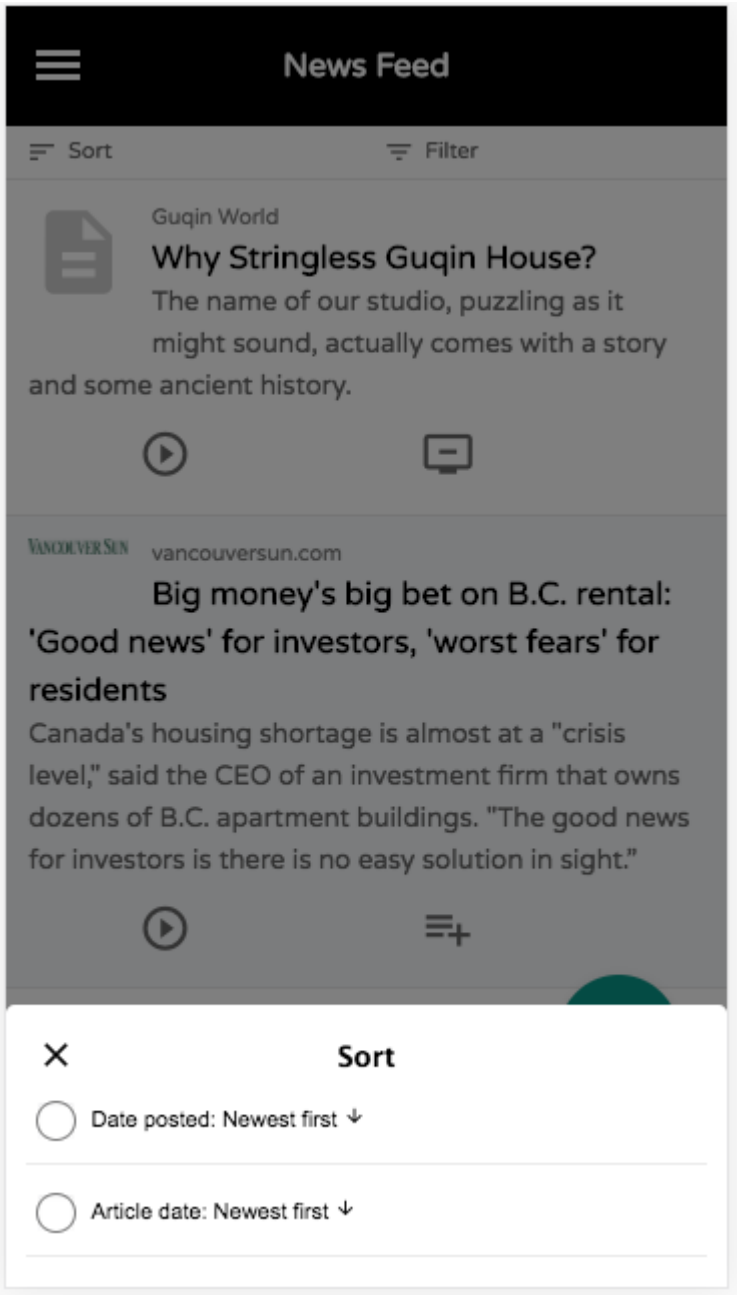


Figure 24. Sort dialog on mobile device.

One other nice feature of the mobile UI, is that when you scroll down the page, the "Sort" and "Filter" buttons are changed into floating buttons as shown below:

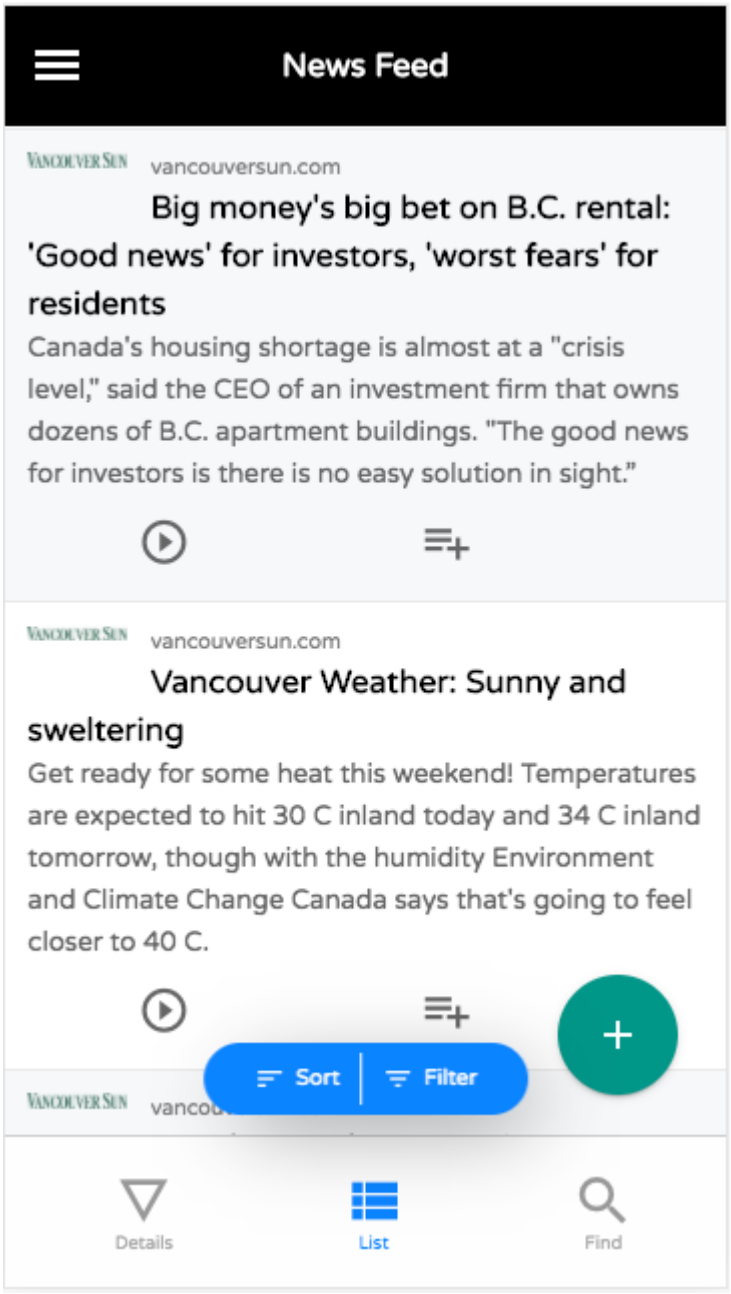


Figure 25. Sort and Filter become floating buttons when you scroll down the page.

Sort option Labels

The screenshots above demonstrate only sorting on date fields. The labels "newest first", and "oldest" first are used by default on date and time fields. Text and numeric fields use different labels by default.

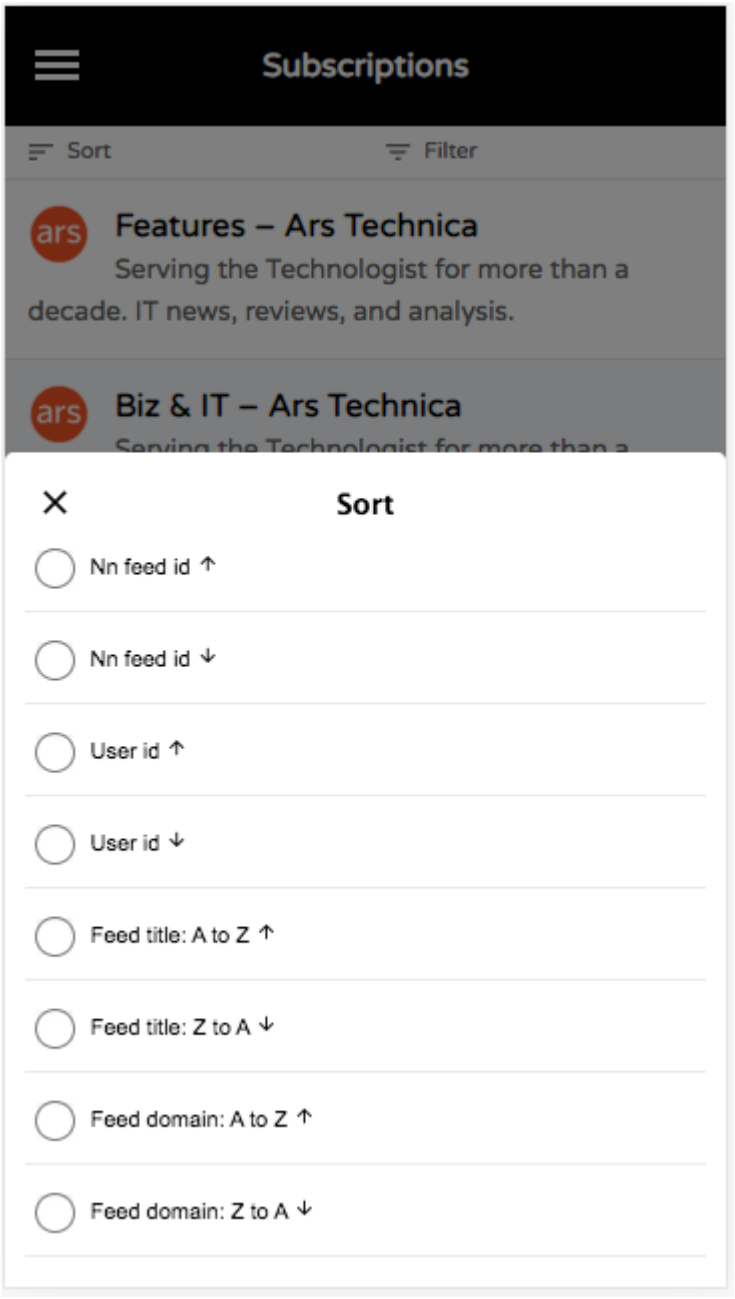


Figure 26. A sort dialog for sorting numeric and text fields.

Sort Configuration

Xataface provides sorting out of the box without the need for any configuration, but it is recommended that you configure the sorting behaviour explicitly for each table of your app. In many cases you may only want to provide sorting on a few key columns. You can use the "sortable", "sortable-", and "sortable+" fields.ini directives to explicitly mark a field as "sortable". If no fields in your table are explicitly marked as sortable, then Xataface will make a best guess. If it finds at least one field that is marked as sortable, then it will simply hand the reigns over to you (i.e. it won't make any fields sortable that you haven't explicitly marked as sortable, in this case).

fields.ini Configuration options

sortable

Set this value to "1" to mark this field as sortable in both ascending and descending order.

sortable-

Set this value to "1" to mark this field as sortable in descending order only.

sortable+

Set this value to "1" to mark this field as sortable in ascending order only.

sort.label

Specifies the label that should be used for this field in the sort dialog. If this is omitted, it will use a sensible label like "Field Name: A-Z".

sort+.label

Specifies the label that should be used for this field in the sort dialog for sorting in ascending order only.

sort-.label

Specifies the label that should be used for this field in the sort dialog for sorting in descending order only.

Example:

```
[date_posted]
    sortable-=1

[article_date]
    sortable-=1
```

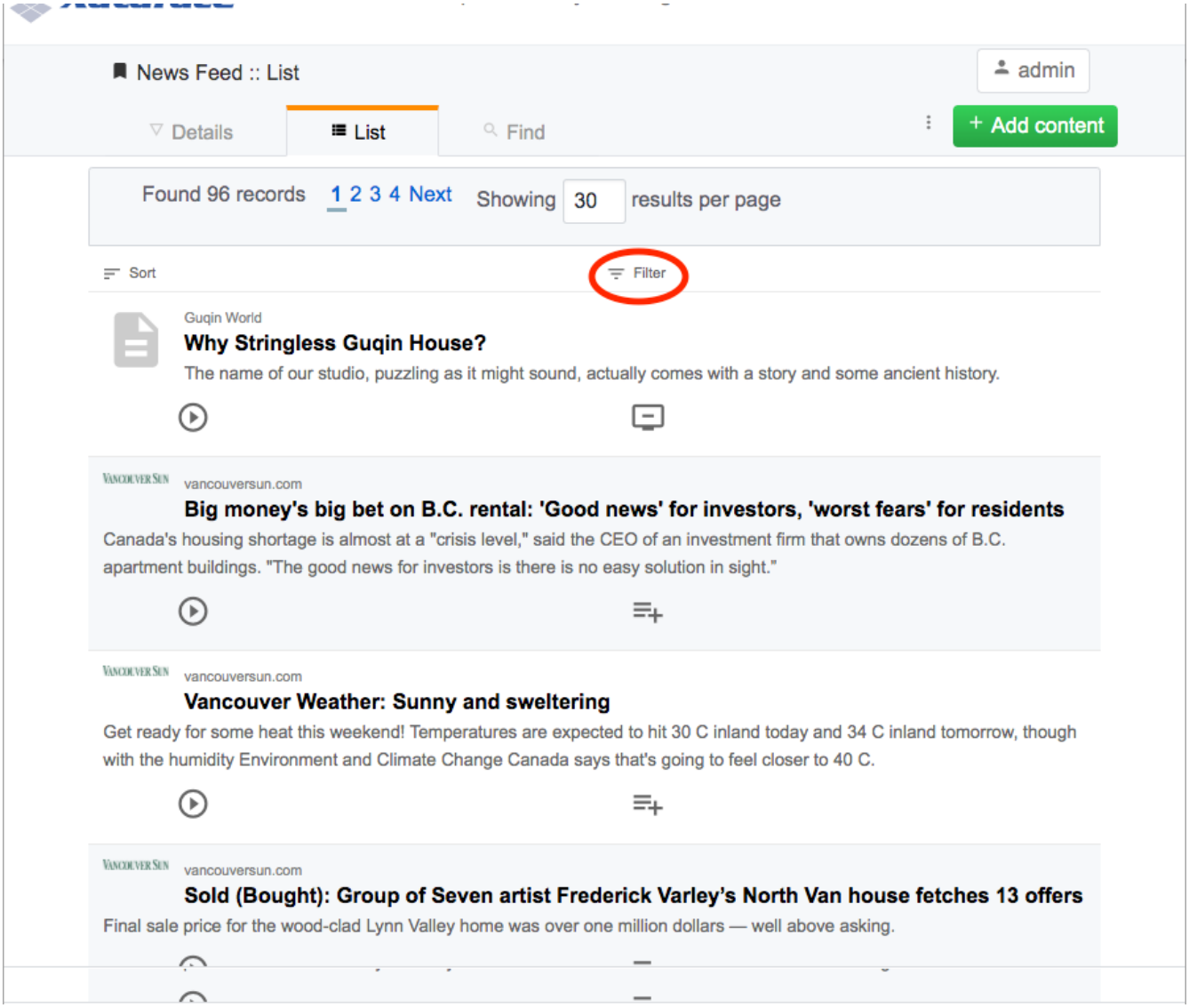
Sort Actions

If sorting on individual fields doesn’t provide you with enough flexibility, then you can also define actions in your actions.ini file using the "sort_actions" category.

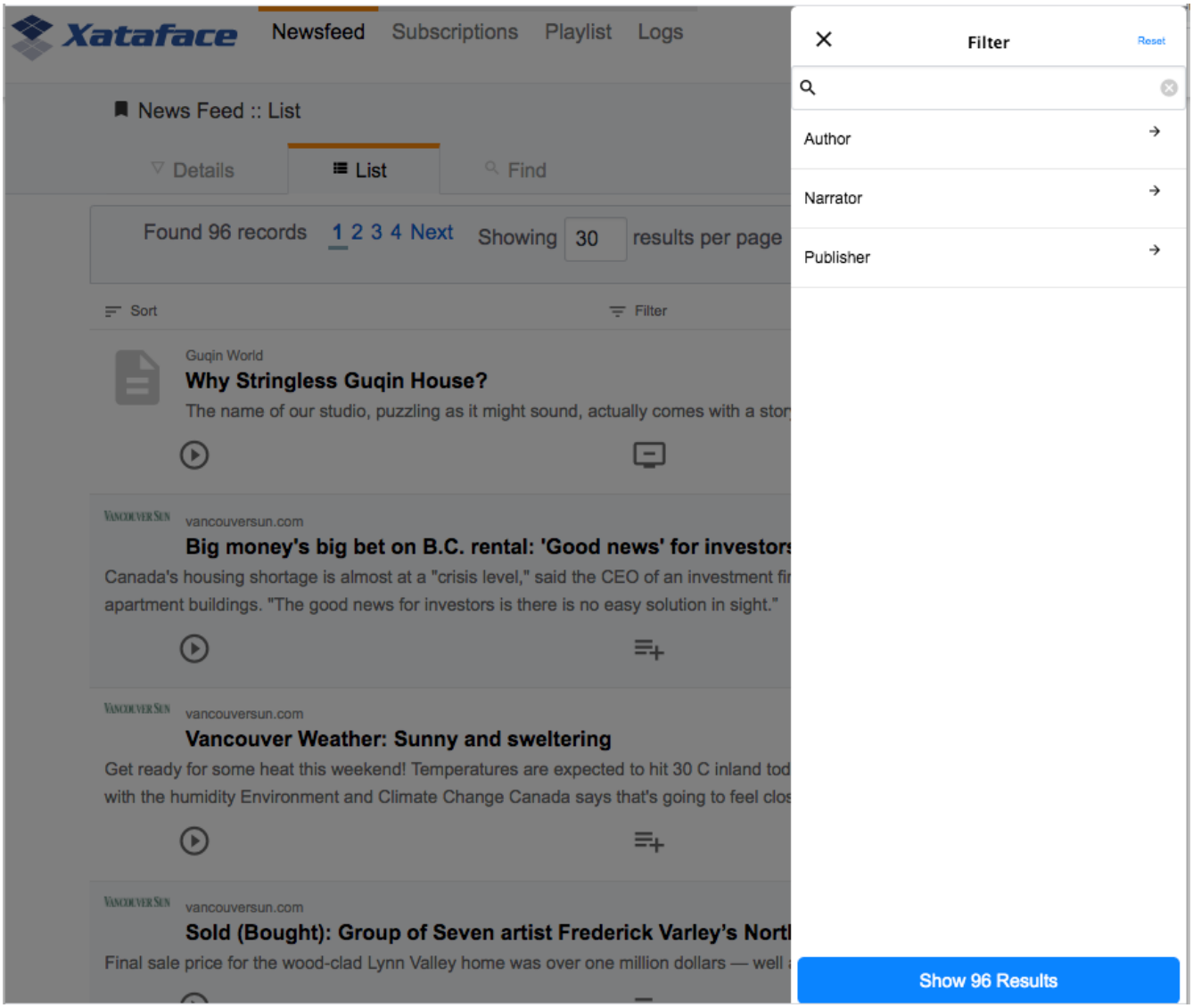
TODO: Add documentation on using "sort_actions" category for sorting.

Filtering Results

To filter a result set, you can simply click on the "Filter" button in the upper left of the list view as shown below:

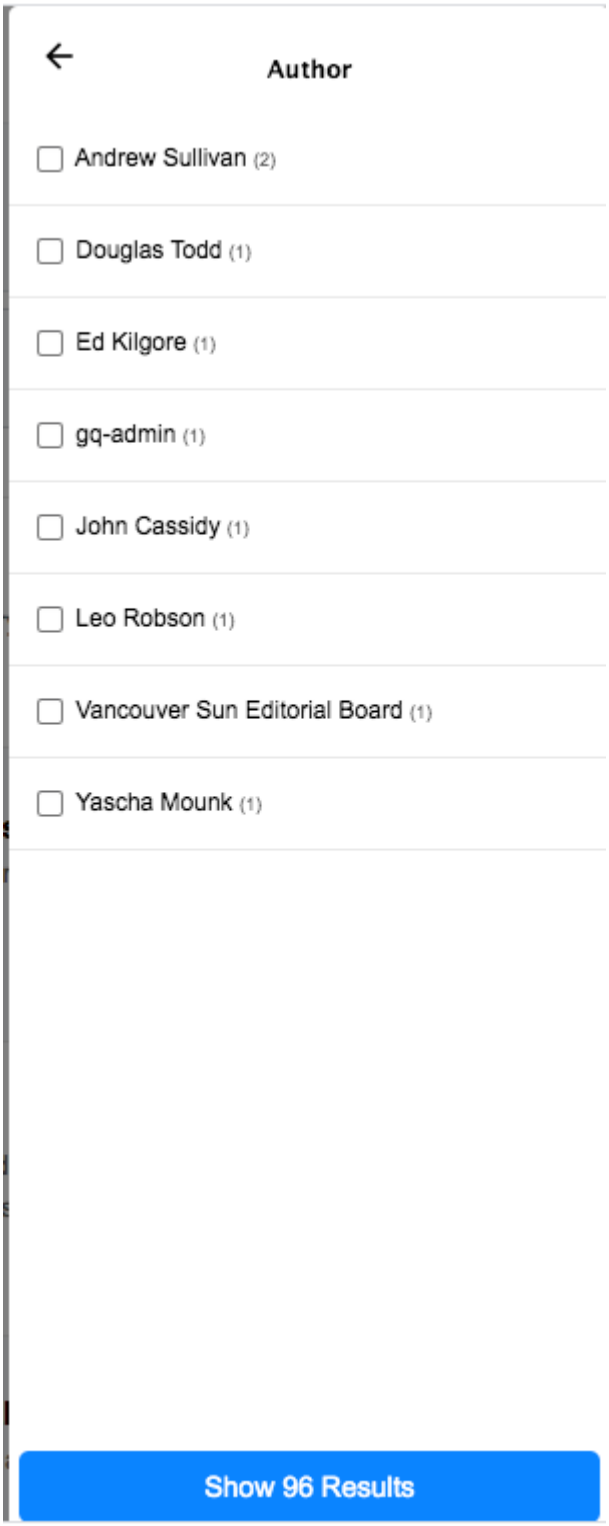


This will reveal the filtering dialog as shown below:



The filter dialog includes a keyword search field, which will perform a search on all eligible columns of the table, followed by options to filter on a selection of fields in the table. The available fields are determined in a similar fashion to the way that sortable fields are determined. If you define "filter=1" on **any** field of your application, it will include only those fields that are marked with "filter=1". If you don't mark **any** fields as filterable, then Xataface will make a best guess at which fields should be filterable - defaulting to all fields except certain obvious ones such as password columns which should not be filterable.

If we follow the flow of the application depicted above, clickin on the "Author" option reveals filter options for the "Author" field.



You can select one or more authors to filter the results on these authors. The little parenthesized numbers to the right of the options indicates the number of rows in the current result set that match that author.

TIP The "Show X Results" button at the bottom is automatically updated as you adjust your filter preferences to show you how many results match your filter. This is helpful when you're trying to narrow down the results to a managable size, but also not to zero.

Mobile UI

As with the "sort" dialog, the "filter" dialog will slide up from the bottom of the window instead of the side when viewed on a mobile device.

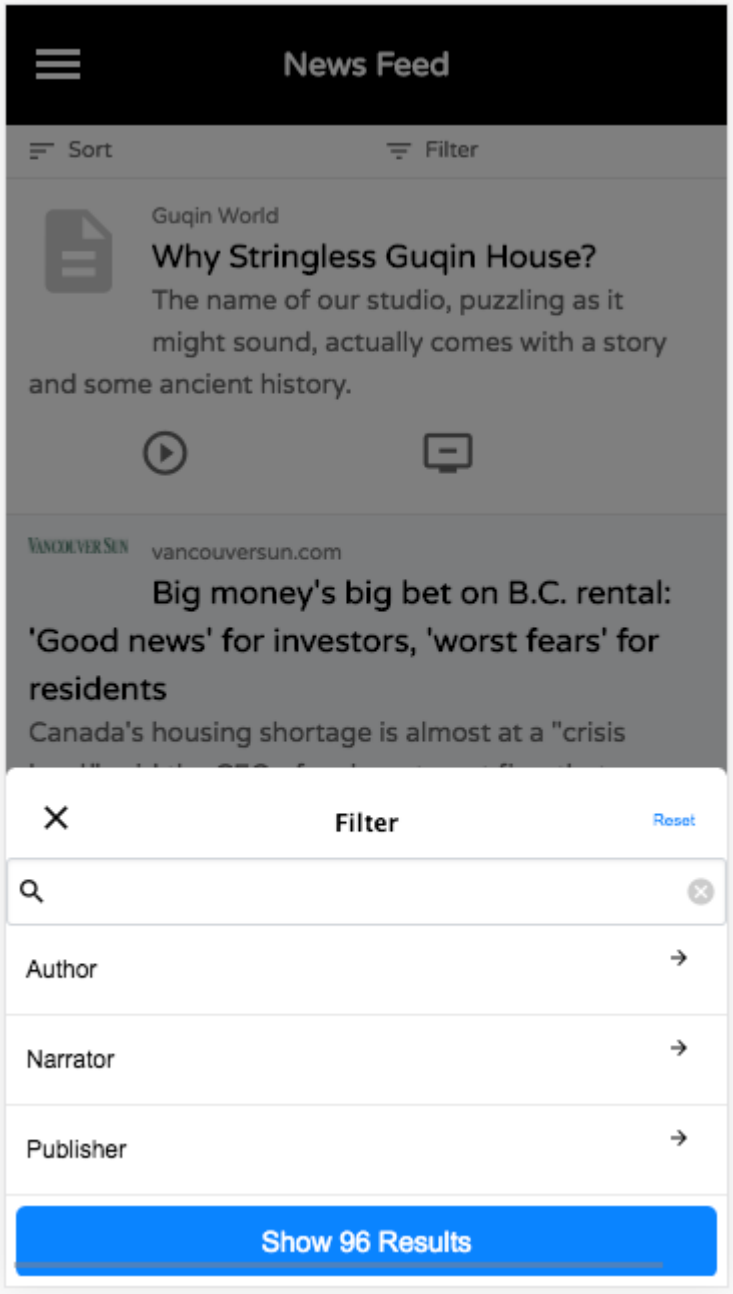


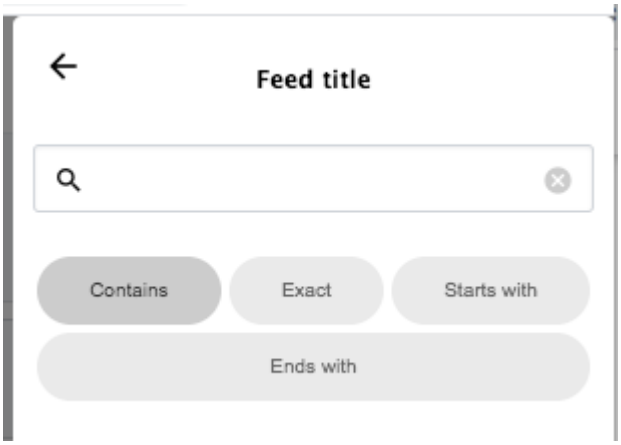
Figure 27. Filter dialog on mobile loads from bottom of the window.

Filter Types

Xataface supports a few different filter types. Use the "filter.type" fields.ini directive to specify the filter type to use for a given field. If you do not specify this, then Xataface will try to choose the most appropriate filter to use based on the type of field. The following filter types are supported:

text

A text field to enter keywords to search for. This includes options for "exact", "contains", "starts with", and "ends with". This is the default for VARCHAR, CHAR, and INT columns.



range

Search fields for "min" and "max". This is the default for FLOAT, DECIMAL, and DATE columns. Date columns will also provide some options to perform common searches as well.

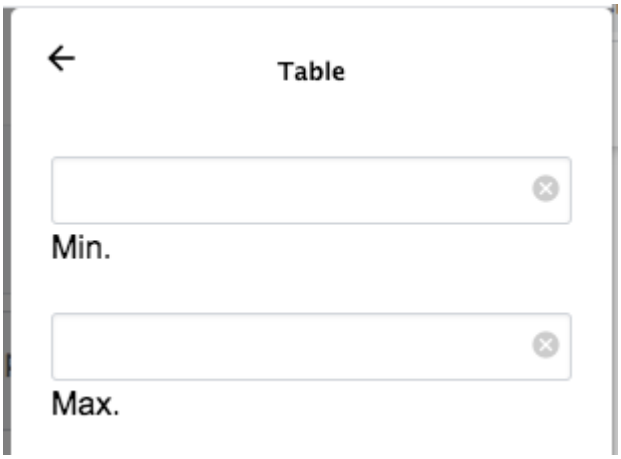


Figure 28. Range filter on a varchar field.

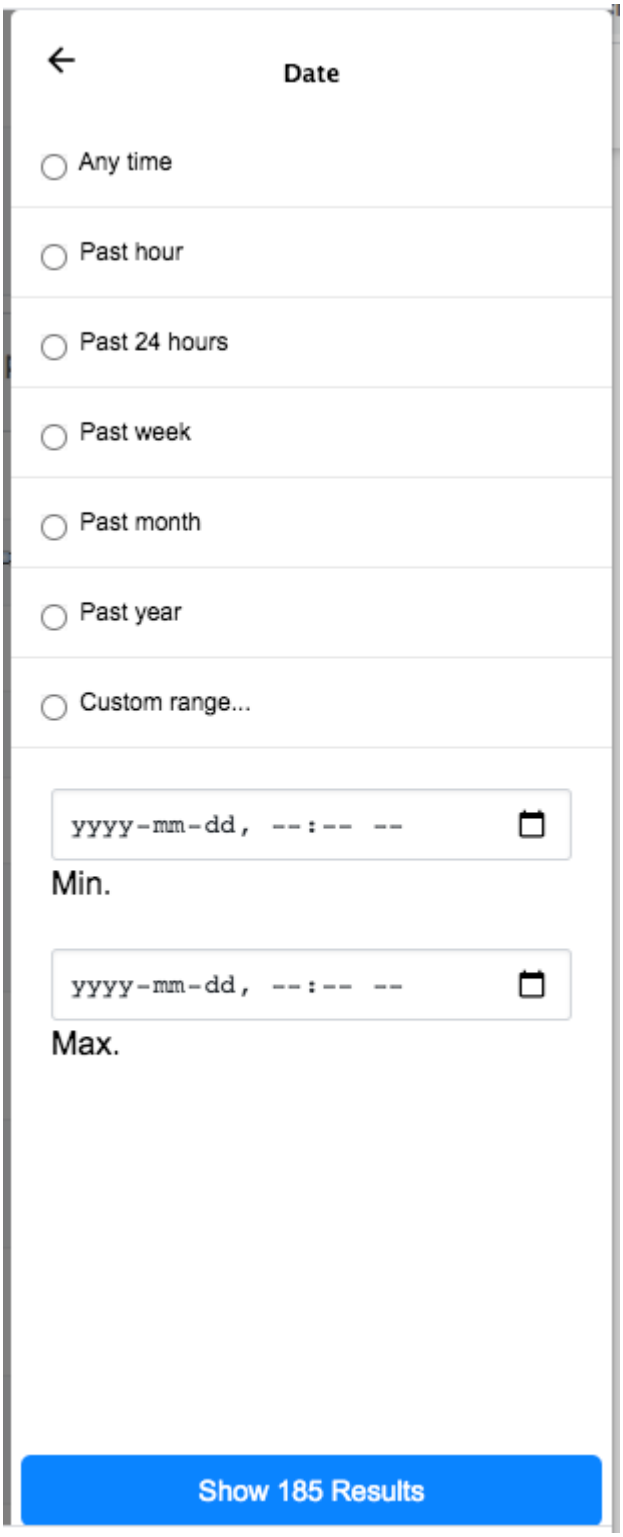
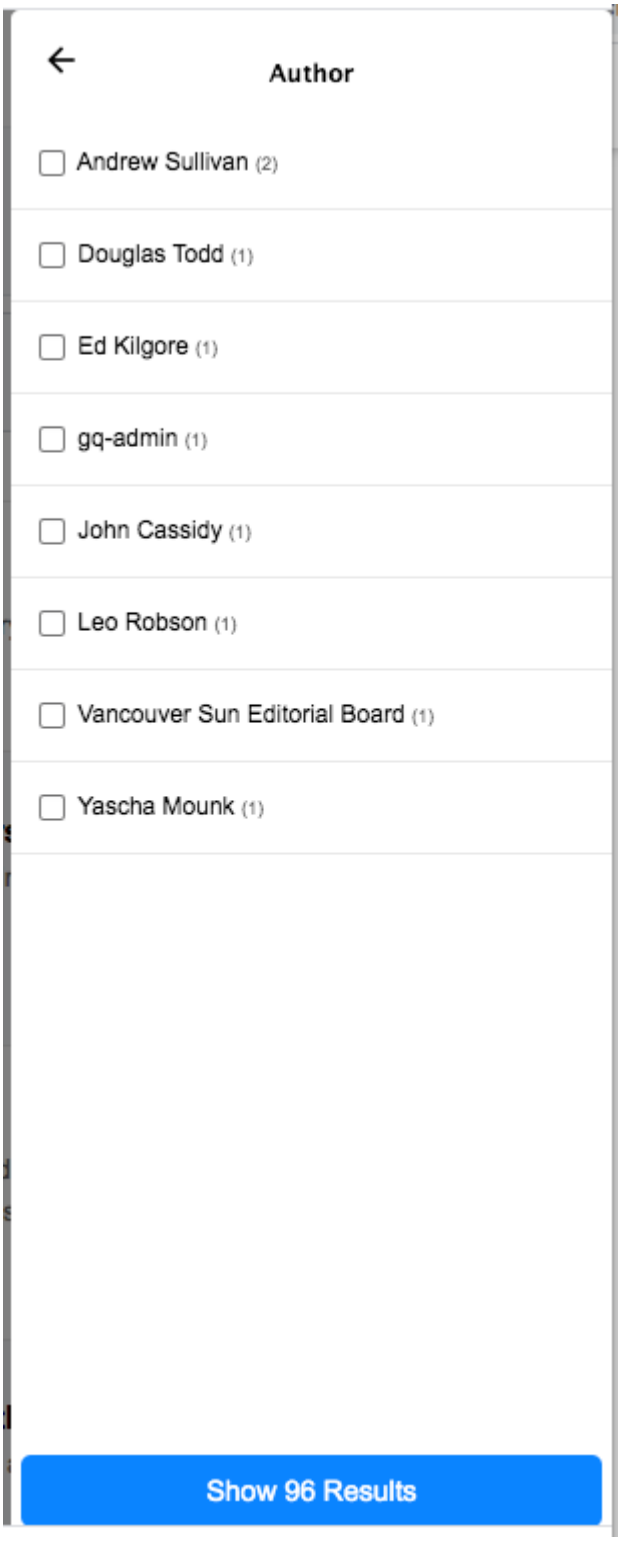


Figure 29. Range filter on a datetime field

filter

User can select from current values for the column in the result set, and can see the number of matches per value.



min

Same as the "range" filter type, except it only includes the "Min" field.

max

Same as the "range" filter type, except it only includes the "Max" field.

Filters Configuration

The following are some of the configuration options related to filtering that you can define in your fields.ini files.

filter

A value of "1" indicates that this field is filterable.

filter.type

The type of filter to use. Options include "text", "range", "min", "max", and "filter". See Filter Types.

filter.label

The label to use for the filter. This defaults to the `widget:label` for the field.

filter.icon

Icon to use in the text field when using the "text" filter type. This should be the name of a material icon. See Using Material Icons for details about material icons in Xataface.

filter.min.icon

Optional icon to use inside the "min" field for min and range filters. The icon should be a valid material icon name. See Using Material Icons for details about material icons in Xataface.

Figure 30. **Example** `filter.max.icon=euro_symbol`

filter.max.icon

Same as `filter.min.icon` except for the "min" field.

filter.input.type

Specify the `type` attribute of the `<input>` tag used in the "text", "range", "min", and "max" filter types. This will be "text" by default in most fields. It will be date by default for date fields, and datetime-local for datetime fields.

filter.sort

Used for the "filter" filter type. This specifies the column to use for sorting the options in the fitler.

filter.placeholder

Placeholder text used for the "text" filter type. Placeholder text is only displayed when the field is empty.

filter.min.placeholder

Placeholder text used the "min" field. Placeholder text is only displayed when the field is empty.

filter.max.placeholder

Placeholder text used the "max" field. Placeholder text is only displayed when the field is empty.

filter.input.*

Specify HTML attributes on the `<input>` element used in the "text" filter type. E.g. `filter.input.maxlength=5`

filter.min.input.*

Specify HTML attributes on the `<input>` element used in the "min" field. E.g. `filter.min.input.maxlength=5`

filter.max.input.*

Specify HTML attributes on the `<input>` element used in the "max" field. E.g. `filter.max.input.maxlength=5`

filter.vocabulary

A valuelist that can be used to provide "common" search options. These are displayed before the text or range fields to allow the user to easily select common searches.

Exporting Data

Xataface includes built-in support for exporting data in a variety of formats, including:

1. RSS
2. CSV
3. XML
4. JSON

Additional formats are provided via modules. The following chapters describe how to integrate these formats into your Xataface applications.

RSS Feeds

A default Xataface application provides RSS feeds to any found set in your application. This article explains a little bit about RSS and how you can configure Xataface to give you the desired results for your RSS feed.

What is RSS?

From Wikipedia's RSS article:

> "RSS is a family of Web feed formats used to publish frequently updated works such as blog entries, news headlines, audio, and videoin a standardized format.[2] An RSS document (which is called a "feed", "web feed",[3] or "channel") includes full or summarized text, plus metadata such as publishing dates and authorship. Web feeds benefit publishers by letting them syndicate content automatically. They benefit readers who want to subscribe to timely updates from favored websites or to aggregate feeds from many sites into one place. RSS feeds can be read using software called an "RSS reader", "feed reader", or "aggregator", which can be web-based or desktop-based. A standardized XML file format allows the information to be published once and viewed by many different programs. The user subscribes to a feed by entering the feed's URI (often referred to informally as a "URL", although technically, those two terms are not exactly synonymous) into the reader or by clicking an RSS icon in a browser that initiates the subscription process. The RSS reader checks the user's subscribed feeds regularly for new work, downloads any updates that it finds, and provides a user interface to monitor and read the feeds."

In a way, RSS replaces email subscriptions so that you can subscribe to receive updates when content is added or changed on websites that you monitory. This way you can monitory these changes in your RSS reader so that your email box doesn't get clogged up.

Using RSS in Xataface

Xataface allows you to subscribe to:

1. Entire tables
2. Any found set
3. Changes to a particular record
4. Related record lists

Example 1: Subscribing to receive news updates

A user wants to be alerted whenever a new item is inserted into the news table, so he navigates to the list tab of the news table, and clicks the RSS Feed icon in the upper right. If he has an RSS reader application set up, this is all he has to do to subscribe to the RSS feed for the news table. When new records are inserted, he'll receive alerts in his RSS reader.

Example 2: Subscribing to receive found set updates

A user wants to be alerted whenever a new item is inserted into the news table that contains the phrase "Buffalo Bills", because he is a Buffalo Bills fan. So he navigates to the news table, and does a search for the phrase "Buffalo Bills". Then he clicks on the "RSS Feed" icon in the upper right of the result set list. If he has an RSS reader application set up, this is all he has to do to subscribe to the RSS feed for news items containing the phrase "Buffalo Bills". Whenever a new item is posted with this phrase, he will be notified via RSS of the new record.

Example 3: Subscribing to a related list

Suppose you want to receive updates whenever a particular author adds a book to his list of published works. Further suppose this is represented by a relationship between the authors table and the books table named publications. You can subscribe to the RSS feed for his publications by navigating to the publications tab for that author, then clicking on the "RSS Feed" icon in the upper right. Now whenever this author adds a new book to his publications list, you'll be notified via RSS.

Example usage in Xataface

A user wants to be alerted whenever a new item is inserted into the news table, so he navigates to the list tab of the news table, and clicks the RSS Feed icon in the upper right. If he has an RSS reader application set up, this is all he has to do to subscribe to the RSS feed for the news table. When new records are inserted, he'll receive alerts in his RSS reader.

A user wants to be alerted whenever a new record about "Wayne Gretzky" is inserted in to the news table. He navigates to the news table, then performs a search for "Wayne Gretzky" using the top right search box. Then, he clicks on the "RSS Feed" icon in the upper right of the result list. Now, whenever a new item is inserted with the phrase "Wayne Gretzky", the user will be notified via RSS.

Configuring RSS Feeds

As with everything else in Xataface, you can configure your RSS feeds to appear just as you want them to. The following delegate class methods are available to be defined in the table delegate class for your feed:

See RSS Configuration Directives for available configuration directives and delegate class methods related to RSS feeds.

Example Configuration

There are 2 parts to configuring your RSS feeds:

1. Configuring the feed as a whole
2. Configuring the feed items (that is each record that will appear in your RSS feed).

Configuring the Feed as a whole

For configuring the feed as a whole, we have 2 options. We can specify the title, description, and link for the feed in the `[_feed]` section of your "conf.ini" file. This is sort of a "one size fits all" approach where all feeds generated from your application will share the same title. E.g.

Configuring RSS feed in conf.ini file

```
[_feed]
    title="My Site News"
    description="News updates from my site"
    link="http://www.example.com"
```

However, if we want our feed's information to depend on the user's query (e.g. what the user was searching for, or which table the feed is generated on, we have more flexibility if we define the `getFeed` method in either the application delegate class or the table delegate class. E.g.

Configuring RSS feed in delegate class

```
function getFeed($query=array()){
    $params = array();
    if ( @$query['-search'] ) $params['title'] = '"'.$query['-search'].'" results';
    else $params['title'] = 'All records from my table';
    return $params;
}
```

Notice that I don't need to define all possible parameters. Any parameters that I don't define will be provided automatically by Xataface, or it will simply use the values specified in your `[_feed]` section of the "conf.ini" file.

Configuring Feed Items

Configuring the feed items is quite important for ensuring that subscribers are seeing what you want them to see in the RSS feed. Xataface tries to guess appropriate content for your feed items if you don't specify it explicitly, but you'll likely want to tweak it a little bit to make the feed look more polished for your purposes.

Use the `getFeedItem` delegate class method to specify how a feed item behaves (e.g. the title, content, date, author, link). E.g.

Configuring a feed item description in the delegate class.

```
function getFeedItem(&$record){
    return array(
        'description' => $record->val('body')
    );
}
```

Once again, notice that we don't need to specify all available options. Only those options that we want to override. In this case we want the description of the feed item to simply display the body of our news item. The description of an RSS feed item is effectively the body text that the user sees why they click on an item in their news reader, so this is quite important.

Recipes

This section of the book includes recipes for common patterns in Xataface applications.

Actions and Menus

The following sections pertain to actions in Xataface. An action may either be a menu item, or an HTTP request handler. Or it can be both. They are defined in the actions.ini file (or actions.ini.php file) of your application, and their "handlers" are defined inside the "actions" directory of your application.

Using Material Icons

Problem

You want to use a material icon for a menu-item in your application, instead of an image.

Solution

The default theme of Xataface includes the material icons web font, so you can use any icons in that font on your actions via the `materialIcon` directive in your action. For example, suppose we want to add a "Play" button to the rows of our table in list view. We define our action as follows:

A play action for the "songs" table.

```
[play]
    condition="$query['-table'] == 'songs'" ①
    category=list_row_actions ②
    materialIcon=play_circle_outline ③
    label="Play" ④
    description="Play narration" ⑤
    url="javascript:playSong()"
```

① The `condition` directive is used to limit our action so it only displays for the "songs" table.

② The `category` directive makes the action appear in the "list_row_actions" menu (which is displayed as icons in each row of the list view.

③ The `materialIcon` directive specifies that we want to use the play_circle_outline material icon.

④ The label, which is hidden for this menu type because the stylesheet is set to show only icons for the "list_row_actions" action. It is still a good idea to define the label though in case this action is used in other contexts.

⑤ The description which is shown as tool-tip text if the user mouses over the action.

Finding the Right Material Icon

You can browse the available material icons here.

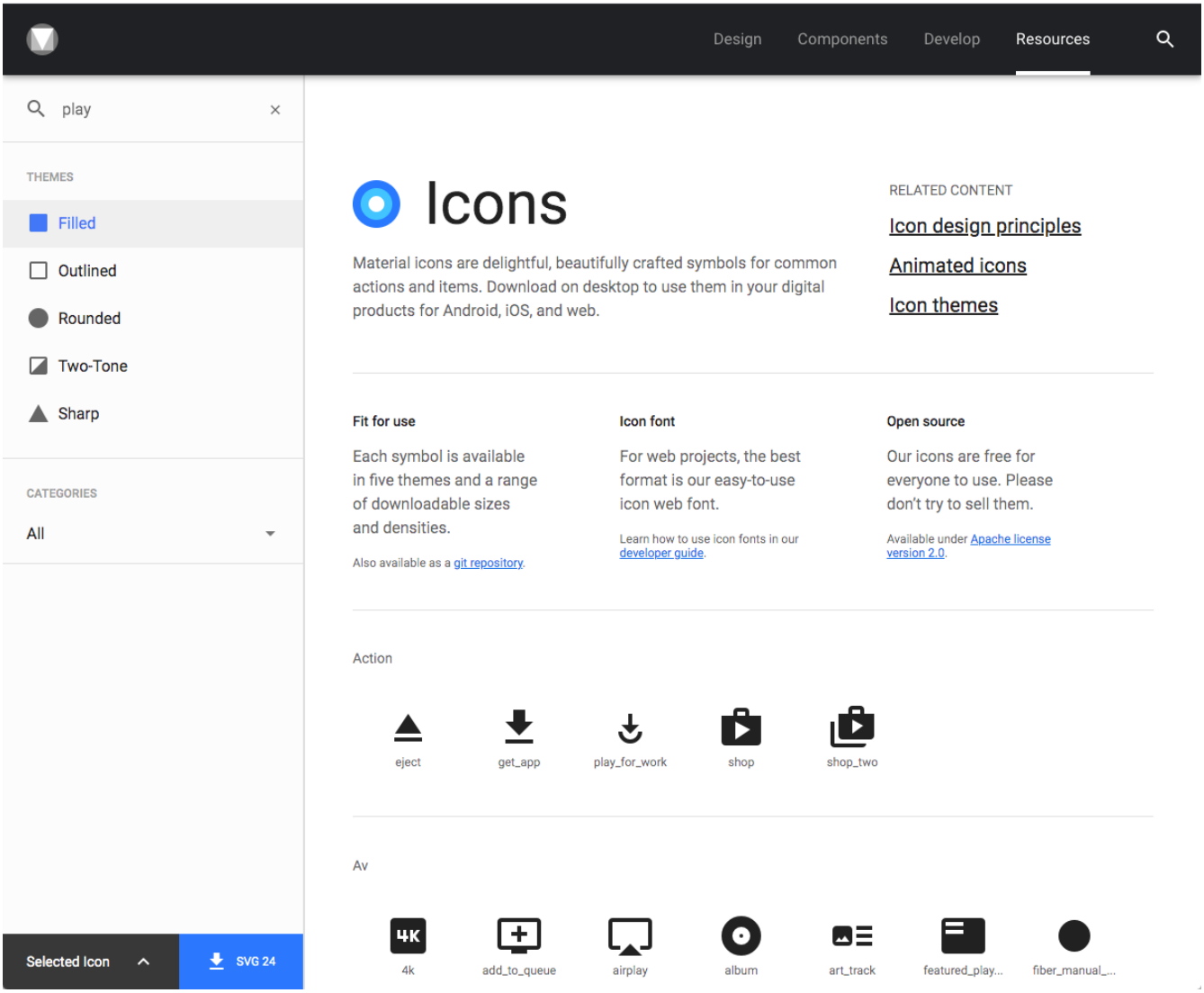


Figure 31. Material Icons website

The label below the icon is the name of the icon, that you would use for your `materialIcon` directive. If the lable is truncated, you can click the "Selected Icon" button in the lower left to get a more detailed view.

Triggering Javascript Function with Action

Problem

You want to trigger a Javascript function when the user clicks on an action.

Solution

Use the `onclick` directive for the action definition in your actions.ini file. The javascript you specify here will be executed when the user clicks on the action. Perhaps the "hardest" part of this recipe is simply knowing where to put the javascript function that you wish to call. There are many ways to include custom Javascript into your application. My preferred way is to use the `xf_script($scriptpath)` inject your Javascript file.

I'll illustrate this process by way of an example. I'm going to create a simple action called "hello_world" that pops up an Alert box that says "Hello World".

NOTE	This example is simple enough that it could have been achieved without having to include a separate Javascript file. E.g. `onclick="alert('Hello World!');"` would do the trick in the action definition. But, I'm going create a separate Javascript file with this functionality for educational purposes.

Step 1: Create a Javascript File

If you don't have a "js" directory in your application yet, create it now. This is where you will place all Javascript files in your application.

Now create a file inside the "js" directory named "hello.js", with the following contents.

hello.js, containing our helloWorld() function that we wish to call.

```
window.helloWorld = function() { ①
    alert('Hello World!');
}
```

Step 2: Include the Javascript File

You can include this Javascript file into your application by calling:

```
xf_script('hello.js');
```

IMPORTANT	Notice that we include 'hello.js', and not 'js/hello.js'. This is because the Javascript tool always looks in its "include" paths for Javascript files, and it treats all paths as relative to the include path root.

Where you choose to call this code depends on **when** it will be needed. If your Javascript file is only needed inside a particular page of your app, then you are probably best to call this inside the action for that page, or inside a block which only appears on that page.

If you want it to be included application-wide, then you should call this inside a method that will be called for every request. I usually place all "global" stuff inside the `beforeHandleRequest()` method of the Application Delegate class.

In this case, I'm not sure yet, which pages will be displaying the menu item for my "hello" action, so I'll include it inside the `beforeHandleRequest()` method:

Application delegate class (`conf/ApplicationDelegate.php`) with `beforeHandleRequest()` method defined.

```
<?php
class conf_ApplicationDelegate {
    function beforeHandleRequest() {
        xf_script('hello.js');
    }
}
?>
```

TIP

By default, `xf_script()` uses the JavascriptTool to include the script with the rest of the application's scripts, minified. All of these scripts are included in the HTML page with a single script tag just before the `</body>` tag.

If you need to include a Javascript file that is included in the `<head>` of the document for some reason, then you can pass `false` as the second parameter

```
xf_script('hello.js', false);
```

The down-side of adding the script to the `<head>` is that it isn't pre-compiled by the Javascript tool, and, thus, cannot use the `//require` directive to depend on other scripts.

Step 3: Defining the Action

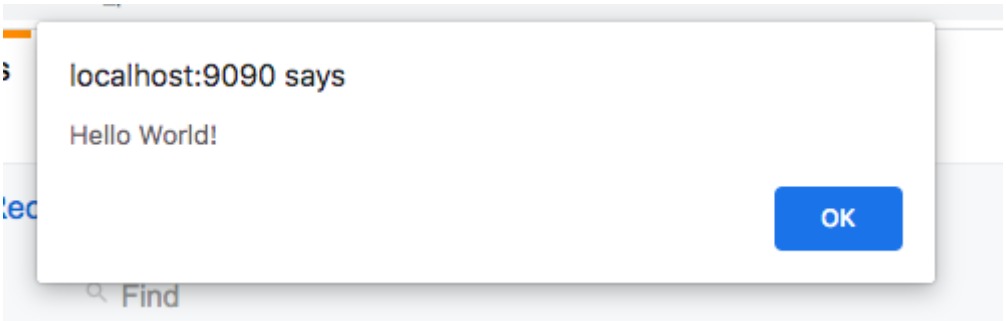
Now that we have our script included, we can define our action:

Action definition inside the actions.ini (or actions.ini.php) file.

```
[hello]
    onclick="window.helloWorld();"
    category=record_actions ①
```

① For demonstration we'll add this to the "record_actions" category, which are displayed in a drop-down menu on the record details page.

Now, we can click on our "Hello" button to see the pay-off:



Troubleshooting

Things never work the first time. There are a couple of things that can go wrong in setting up this recipe for the first time:

My "hello" Action doesn't appear in the menu

Things to check:

1. Double check the "category" directive of your action. It be `category=record_actions`. **Case-sensitivty matters!!**
2. Ensure that your actions.ini file is getting picked up. Your actions.ini file should be located in the root directory of your application. E.g. "/path/to/myapp/actions.ini". Make sure it is named "actions.ini" and not "Actions.ini". **Case-sensitivity matters!** (on Linux)
3. Check your PHP error log. It is possible you have a syntax error in your actions.ini file, and the app isn't able to load it.
4. If nothing shows up in your PHP error log, add the "debug=1" directive to the beginning of your `conf.ini` file, then reload the page. You'll see a whole bunch of warnings now when you look at your PHP error log. See if there are any fatal errors on your actions.ini file.

Nothing happens when I click on my "hello" Action

Things to check:

1. Make sure you have the "onclick" directive in your action definition. Check for typos.
2. Look at the Javascript error log in your browser. E.g. Right click on your page, if using Chrome, and select "Inspect". Then click on the "Console" tab. This will show you errors. If you see an error like "window.helloWorld is not a function", it means that your Javascript file did not get included. If you see a syntax error listed, probably you have a Javascript error in your hello.js file.
3. Enable Debug mode in the Javascript tool. This will cause your Javascript files to NOT be minified so it will be easier to debug in the browser. You can do this by adding the following to your conf.ini file:

```
[Dataface_JavascriptTool]
    debug=1
```

Customizing Action Labels

Problem

You want to customize the label for an existing action

Solution

If you want to customize the action for all tables, you can simply override the action in your app's actions.ini file, and set the `label` property.

Overriding the "new" action in your app's actions.ini file

```
[new > new]
    label=Insert New Record
```

TIP To override the tooltip text for the action, you could set the `description` directive.

Alternatively, you can use Xataface's internationalization support to override the label. E.g. in your app's "lang/en.ini" file (which contains your English translations), you can define the key "actions.[ACTION_NAME].label". E.g.

Overriding the "new" action's label in the lang/en.ini file

```
actions.new.label="Insert New Record"
```

TIP To override the tooltip text for the action, you can set the `actions.new.description` property.

Overriding Label on a Particular Table

The above examples would override the action label in the entire application. If you want to specify the label in a particular table, you can define the "tables.[TABLENAME].actions.[ACTIONNAME].label" proeprty in your language file (e.g. lang/en.ini).

Overriding the label for the "new" action in the "articles" table.

```
tables.articles.actions.new.label="Insert Article"
```

TIP You can also override the the tooltip text using `tables.[TABLENAME].actions.[ACTIONNAME].description`, and the material icon using `tables.[TABLENAME].actions.[ACTIONNAME].materialIcon`

Customising Navigation Menu

Problem

You want to customize the options in the navigation menu

Solution

Define actions in the `_tables` category. These will be used instead of the tables listed in the `_tables` section of the conf.ini to form the tables navigation menu.

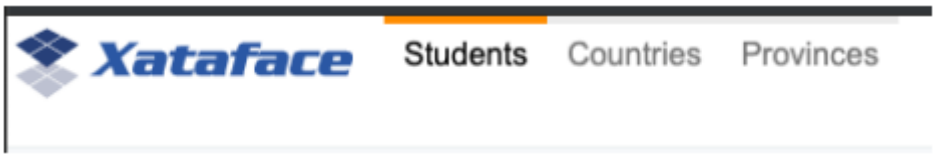
Discussion

The top-level navigation menu in Xataface allows you to select which database table you with to work with. By default, it is generated from the `[_tables]` section of the conf.ini file.

For example, given the following _tables section:

```
[_tables]
    students=Students
    countries=Countries
    provinces=Provinces
```

Xataface will generate a menu that looks like:



In some cases, you may want to generate your own custom menu. For example, you may want to group some tables together into a single drop-down menu. You can do this by defining actions inside your actions.ini file in the `_tables` category.

For example:

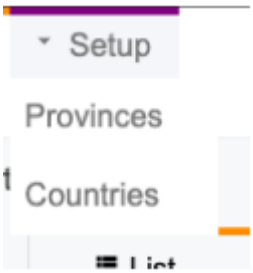
Defining actions in the `_tables` category in your actions.ini file. These will be used to form the navigation menu instead of your app's tables.

```
[menu_students]
    label=Students
    category=_tables
    url="?-table=students"
    selected_condition="$table=='students'"

[menu_setup]
    label=Setup
    category=_tables
    subcategory=_tables_setup
    order=10

[menu_countries]
    label="Countries"
    category=_tables_setup
    url="?-table=countries"
    selected_condition="$table=='countries'"

[menu_provinces]
    label="Provinces"
    category=_tables_setup
    url="?-table=provinces"
    selected_condition="$table=='provinces'"
```

In this case we have defined two top-level menus in the `_tables` category: "menu_students" and "menu_setup". The "menu_setup" action has uses the "subcategory" property to assert that it is a drop-down menu. Any actions in the "_tables_setup" category will be included in this drop-down menu.

The resulting menu for this setup would be:

If you hover over the "Setup" menu, it will expand:



Action to Trigger AJAX Request

Problem

You want your action button to trigger an AJAX (background) request rather than linking to another page. Additionally you would like to provide some UI feedback to inform the user that the action is in progress. And finally, when the action completes, you would like some UI feedback to the user to indicate the result of the action, and handle errors and failures gracefully.

Solution

There are two parts to this problem:

The server-side

We need to write a PHP handler that your action should trigger. Since we are using AJAX, this action will output JSON instead of HTML.

The client-side

We need to provide a button or menu that the user clicks to trigger the action, as well as the user interface elements to keep the user informed on the progress of the action.

The Server-Side

For the Server-side, let's create a simple action that outputs JSON. In your app's "actions" directory, create a file named "hello.php" with the following contents:

actions/hello.php

```
<?php
class actions_hello {
    function handle($params = []) {
        df_write_json([ ①
            'code' => 200, ②
            'message' => 'Action succeeded' ③
        ]);
    }
}
```

① We use the `df_write_json()` function to encode our output as JSON.

② The `code` is a status code that you create. Generally follow the HTTP convension where codes from 200-299 indicate success. 400-499 indicate some sort of "not allowed" error. 500-599 indicate some sort of server error. Etc..

③ The `message` Property will contain a human-readable message about the result of the action.

The Client-Side

I'll discuss two different solutions for the client side:

1. Writing a Custom Javascript Function
2. Using the `ajax` directive of the actions.ini file.

Solution 1: Writing a Custom Javascript Function

See Triggering Javascript Function with Action for details on triggering a Javascript function using an action. After setting up your action, you'll have a definition in your actions.ini file like:

```
[hello]
    onclick="window.helloWorld();"
    category=record_actions
```

Once you have your action linked up to your Javascript function you can use the `jQuery.post()` function to trigger your action handler as follows:

hello.js, containing our helloWorld() function that we wish to call.

```
window.helloWorld = function() {
    jQuery.post(DATAFACE_SITE_HREF, { ①
        '-action' : 'hello' ②
    }, function(result) { ③
        var message = (res && res.message) ? res.message : 'Server error';
        if (result && result.code == 200) {
            alert('Success: ' + message);
            return;
        }

        alert("Failed: " + message);

    });
}
```

① The `DATAFACE_SITE_HREF` constant is always available, and refers to the entry point of your Xataface application. Uaually `index.php`.

② The 2nd parameter of `jQuery.post()` is a dictionary with the POST request variables. In our case we want to call our custom handler so we reference it using the `-action` parameter.

③ The 3rd parameter of `jQuery.post()` is a callback function that will be run with the action completes. The JSON result of our action PHP handler is includd in the `result` argument.

The example above will perform an AJAX request to trigger our PHP action handler. It will then display the result in an `alert()` dialog.

Figure 32. The hello action displayed in the record actions menu.

This example is overly simplistic. You can improve it in a number of ways, including:

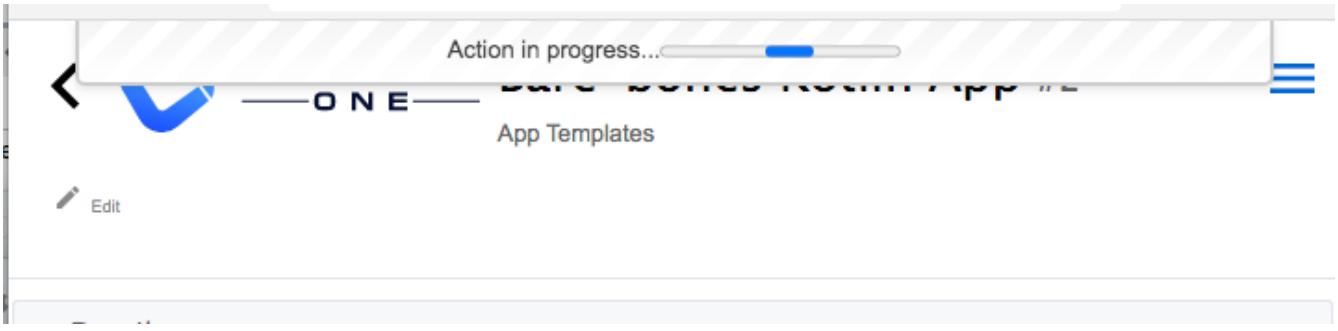
1. Adding some sort of progress indicator to provide some feedback to the user while the action is processed. This is especially important for long-running actions.
2. Add a `fail()` callback to deal with the case where the HTTP request completely fails for some reason. The callback in this example will only be called if the handler returns a non-error HTTP status code.

Solution 2: Using `ajax=1` Directive

Xataface provides a simpler alternative to providing your own Javascript function for triggering your action handler. You can simply specify the `ajax=1` directive for our action:

```
[hello]
    category=record_actions
    ajax=1
```

This directive instructs Xataface to treat this as an AJAX action. When the user clicks on the action button, it will issue a POST AJAX request, and it will display the result in a status message.



When the action completes, it will display the contents of the "message" property of the JSON

response in a similar status dialog. If the action fails, it will display an error message.

It expects the following properties in the JSON response:

code

The Status code. It will interpret any code between 200 and 299 as a success.

message

The message to display to the user.

silent

Optional boolean parameter that will suppress the error or success message so that the action completes silently.

Relationships

Setting Default Sort for Related Lists

Problem

You want sort the related record tab on a particular column by default.

Solution

Use the `table.default_sort.RELATIONSHIP_NAME` fields.ini directive.

Suppose we want to sort our "posts" relationship by date posted in descending order (i.e. newest first). Then we would add the following directive to the beginning of the fields.ini file.

```
table.default_sort.posts=date_posted desc
```

TIP See Specifying Default Sorting to learn how to set the default sorting behaviour of the list view (i.e. for sorting NON-related records).

Security

The following chapters cover all things security-related in Xataface.

Authentication

Xataface comes with authentication ready to roll out of the box. With a couple of configuration options in the conf.ini file, you can activate the default authentication scheme which uses a table (of your choice) in the database to authenticate against. It supports password encryption, and even includes a registration form if you choose to allow registrations for your application.

In addition Xataface's authentication is pluggable, meaning you can write your own plug-ins to integrate your application with any authentication scheme you choose. Some authentication modules that already exist include:

Yale CAS

A module to use Yale's Central Authentication Service for authentication.

LDAP

A module to use LDAP for authentication. There is also another, more advanced LDAP module developed by Viharm available here.

HTTP

A module to use standard HTTP basic authentication.

OAuth

A module to use an OAuth service for authentication. This module provides all of the common infrastructure required to support OAuth. There are also modules built on this module which provide authentication using a few popular web sites such as Facebook, Twitter, LinkedIn, and Instagram.

See Adding OAuth2 Login Support for more information about setting up OAuth authentication.

Setting up Basic Authentication

1. Create a table (if you haven't already) to store your application's users. At the bare minimum, this table should have fields to store the username and password (you may call these fields whatever you like). An example table might be:

```
CREATE TABLE `users` (
   `username` VARCHAR(32) NOT NULL,
   `password` VARCHAR(32) NOT NULL,
   PRIMARY KEY (`username`)
)
```

2. Add the following (`_auth` section) to your `conf.ini` file:

```
[_auth]
    users_table=users
    username_column=username
    password_column=password
```

This tells Xataface which table you are storing your user accounts in, and the names of the username and password columns.

3. Add a sample user record to the **users** table if one does not exist yet.

```
INSERT INTO `users` (`username`,`password`) VALUES ('steve','mypass')
```

4. Load your application in your web browser and you'll notice a "login" link in the upper right that allows you to log in.

Using Encryption for the Password

It is good practice to perform some type of encryption on passwords that you store in a database, so that they will be safe, even if your server's security is compromised. Some common forms of encryption are SHA1 and MD5. You can apply encryption to your passwords by defining the encryption property to the `password` field's section of the users table `fields.ini file`. E.g.

fields.ini definition on the users table password field to store passwords with md5 encryption

```
[password]
    encryption=md5
```

This tells Xataface to save data to the password field of the users table with MD5 encryption.

fields.ini definition on the users table password field to store passwords with sha1 encryption

```
[password]
    encryption=sha1
```

This tells Xataface to save data to the password field of the users table with SHA1 encryption.

IMPORTANT	In order to switch to MD5 or SHA1 encryption with an existing Xataface installation, all un-encrypted (plain text) passwords must be first converted to MD5. There are several ways to do this. One method is to directly convert the passwords in the database with the MySQL MD5 or SHA1 function. This can be done from the command-line or using a tool such as phpMyAdmin.
TIP	If you only have a small number of user accounts that require encryption to be updated, it may be easier to just change the passwords manually through Xataface by editing the user records. They will be automatically encrypted according to the `encryption` directive in the fields.ini file.

Limiting Access Based on User

Authentication and permissions are distinct issues, but they are related. It is quite common to require a user to log in to access a section of an application. Permissions can be defined in either the Application delegate class or a table's delegate class - or both.

As an example, if we want to require users to log in to access our application we could define the following `getPermissions()` method to our application delegate class:

Application delegate class with `getPermissions()` implemented. This implementation allows ALL access to logged in users, and NO access otherwise.

```
<?php
class conf_ApplicationDelegate {
    function getPermissions(Dataface_Record $record=null){
        // $record is a Dataface_Record object
        $auth = Dataface_AuthenticationTool::getInstance();
        $user = $auth->getLoggedInUser();
        if ( $user ) return Dataface_PermissionsTool::ALL();
        else return Dataface_PermissionsTool::NO_ACCESS();
    }
}
```

Checking Who Is Logged In

The `Dataface_AuthenticationTool` class handles all of the dirty work of Xataface's authentication. It provides public methods to check who is logged in and perform authentication if necessary. Anywhere inside your Xataface application you can find out who is logged in using one of the following two methods:

- `getLoggedInUser()` - Returns a Dataface_Record object representing a record from the users table.
- `getLoggedInUsername()` - Returns a string.

It is quite useful in the `getPermissions()` method of your delegate classes to find out who is logged in:

```
function getPermissions(Dataface_Record $record=null){
    $auth = Dataface_AuthenticationTool::getInstance();
    $user = $auth->getLoggedInUser();
    if ( $user and $user->val('username') == 'shannah' ){
        // Steve is logged in so we give him special permissions
        return Dataface_PermissionsTool::ALL();
    } else {
        // Steve is not logged in so we give only read only permissions
        return Dataface_PermissionsTool::READ_ONLY();
    }
}
```

Checking Who is Logged In from a Template

All templates in Xataface have access to the `$ENV` array that contains references to lots of useful information, including the currently logged in user:

`$ENV.user`
: The user object of the currently logged in user (or null if nobody is logged in). This is a Dataface_Record object.

`$ENV.username`
: The name of the currently logged in user. A string.

For example:

```
<!--
     Print 'Hello Steve' if Steve is logged in,
     'Hello Helen' if Helen is logged in, or just
     'Hello' if nobody is logged in.
-->
Hello {$ENV.username}

<!-- Print some personal user info -->
{if $ENV.user}
    Phone number: {$ENV.user->val('phone')}<br/>
    Email address: {$ENV.user->val('email')}<br/>
{/if}
```

This example presumes that the users table has `phone` and `email` fields.

Allowing User Registration

By default, there is no way for users to create an account themselves. A user account would need to be set up by the system administrator first. If you want users to be able to register for accounts themselves, you can add the `allow_register=1` directive to the `_auth` section of the conf.ini file.

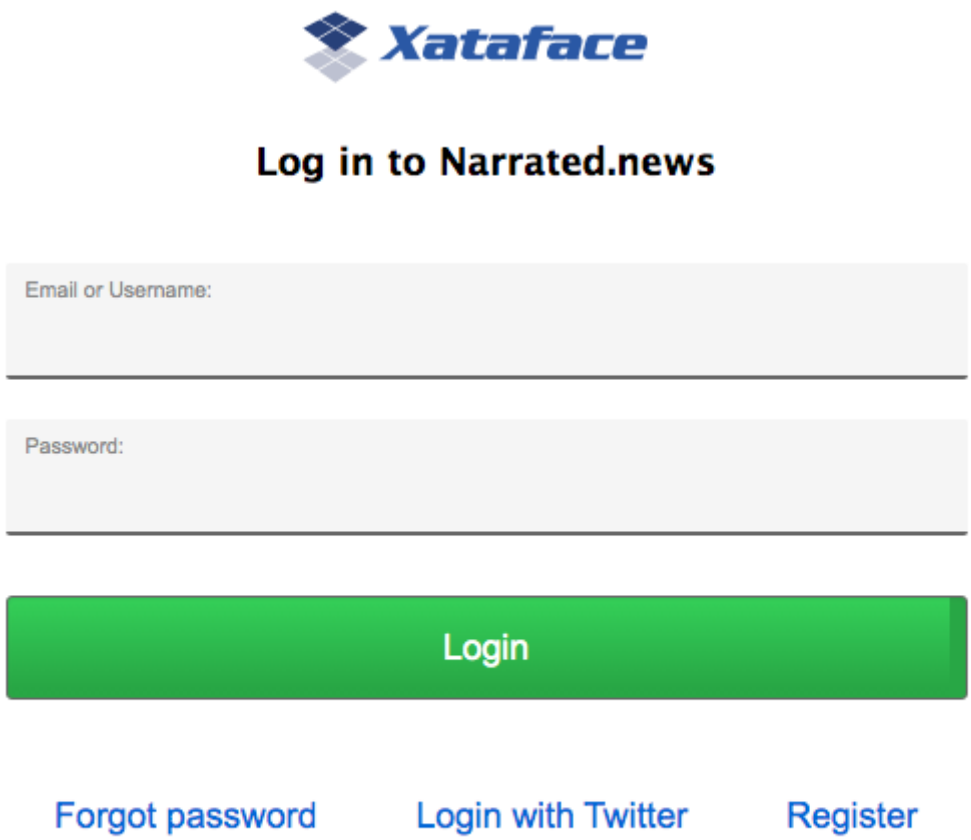
E.g.

```
[_auth]
    users_table=users
    username_column=username
    password_column=password
    email_column=email ①
    allow_register=1 ②
```

① The `email_column` directive specifies the column that should store the user's email address. This is required for user registration since it needs to send an activation email to verify the user's email address.

② The `allow_register=1` directive turns on user registration.

With these settings, the login form will now contain a "Register" link as shown below:



If the user clicks on this link, they'll be taken to a registration form, which is basically a "new record" form on the Users table.

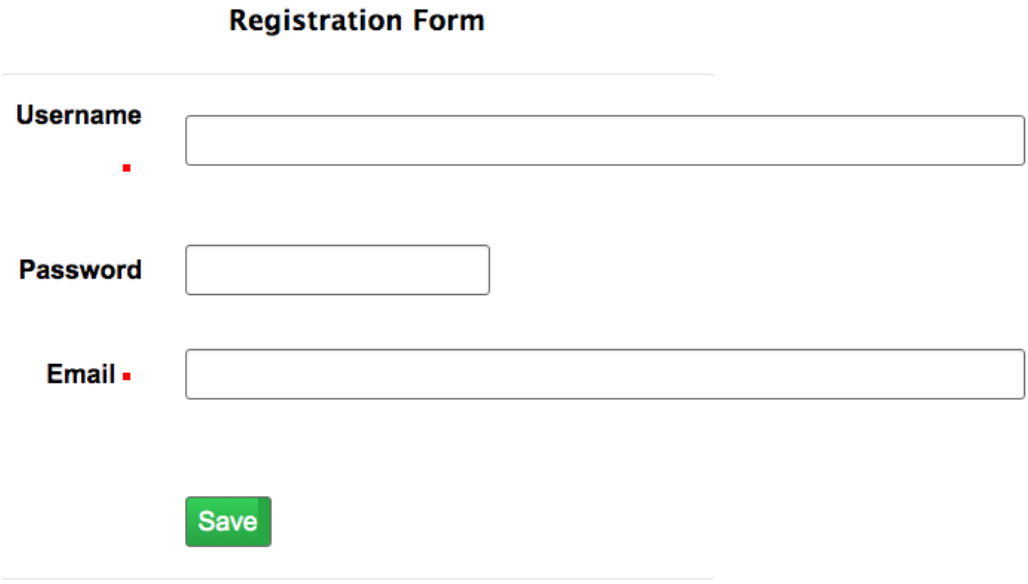


Figure 33. A plain-Jane registration form which contains fields from the users table.

The difference between the registration form and the New record form is that the registration form doesn't immediately add records into the database. When the user submits the form, it stores the data in a special registrations table, and sends the user an email with a link to confirm their registration. If the user clicks on this link, it will then copy the registration information into an actual record of the users table and save it.

Recommended Users Table Permissions

The registration form includes all fields of the users table that grants the "register" permission. The register permission is the **only** permission that is part of the "NO ACCESS" role, and it is not included in any of the default roles. Ideally you should be explicit about which fields of the users table you grant the "register" permission on.

The following is a snippet from the delegate class for the users table of an application which demonstrates one way to define permissions.

Delegate class of users table which provides read-only access to the user record owner, and no access to other users. It also grants the 'register' permission on the "username", "password", and "email" fields.

```
<?php
class tables_users {

    /**
     * Record/Table-level permissions.
     * Admins = ALL access
     * Owner (i.e. the user whose record this represents) = READ ONLY access
     * Non-logged in user = Only 'register' permission
     * Other users = NO ACCESS
     */
    function getPermissions(Dataface_Record $rec = null) { ①
        if (isAdmin()) {
            // Admins get ALL access (this defers to application delegate class
            // which grants all access to admin).
            return null;
        }
        $user = getUser();
        if ($user and $rec and $rec->val('userid') == $user->val('userid')) {
            // This record is the user record for the current user.
            // give him read only access.
            return Dataface_PermissionsTool::READ_ONLY();
        }
        $user = getUser();
        if (!$user) {
            // User is not logged in.
            // Grant the 'register' permission to allow the register action
            // to work properly.
            return array('register' => 1);
        }

        // No access to anyone else.
        // This defers to the application delegate class which grants no
        // access to non-admin users.
        return null;
    }
```

```
    /**
     * Default field permissions.
     * Non-Logged-in users = Deny the 'register' permission
     * All other users = Defer to record-level permissions.
     */
    function __field__permissions(Dataface_Record $rec = null) { ②
        $user = getUser();
        if (!$user) {
            return array('register' => 0);
        }
    }

    /**
     * Permissions for username field.
     * Non-logged-in users = Allow the 'register' permission.
     * All other users = Default to default field permissions.
     */
    function username__permissions(Dataface_Record $rec = null) { ③
        $user = getUser();
        if (!$user) {
            return array('register' => 1);
        }
    }

    /**
     * Permissions for password field.
     * Non-logged-in users = Allow the 'register' permission.
     * All other users = Default to default field permissions.
     */
    function password__permissions(Dataface_Record $rec = null) { ④
        $user = getUser();
        if (!$user) {
            return array('register' => 1);
        }
    }

    /**
     * Permissions for the email field.
     * Non-logged-in users = Allow register permission.
     * All other users = Default to default field permissions.
     */
    function email__permissions(Dataface_Record $rec = null) { ⑤
        $user = getUser();
        if (!$user) {
            return array('register' => 1);
        }
    }

    // ...
}
```

① `getPermissions()` defines record-level permissions.

② `fieldpermissions()` defines default field-level permission overrides. In this case we are denying the "register" permission by default so that no fields appear on the registration form by default.

③ `username__permissions()` overrides permissions of the "username" field to grant the "register" permission, so that it will appear on the registration form.

④ `password__permissions()` overrides the permissions of the "password" field to grant the "register" permission, so that it will appear on the registration form.

⑤ `email__permissions()` overrides permissions of the "email" field.

TIP This snippet makes use of the `getUser()` and `isAdmin()` functions which are not a part of the Xataface public API. They are defined separately in this app. You can see sample implementations of these functions here.

Disabling Email Validation

By default the registration form doesn't create the account directly. It will first send a validation email to the user. When the user clicks on the "activation link" in this email, the account is created and the user is automatically logged in.

If you with to skip this step, and have the registration form create accounts directly, you can override the "register" action in your actions.ini file and override the "email_validation" directive as follows:

actions.ini file overriding "register" action to skip the email validation step.

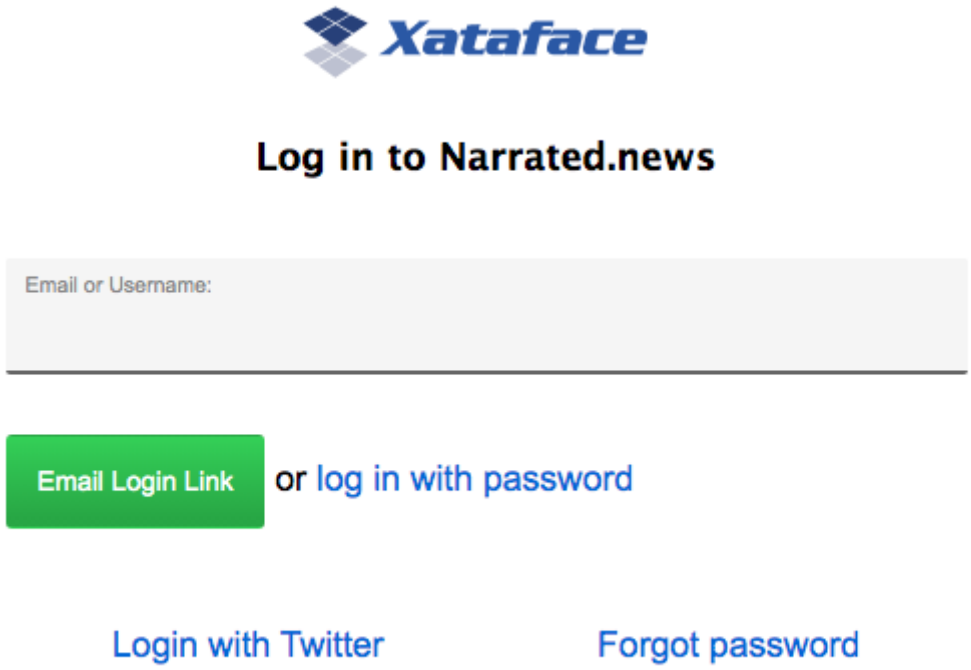
```
[register > register]
  email_validation=0
```

Enabling Email Login

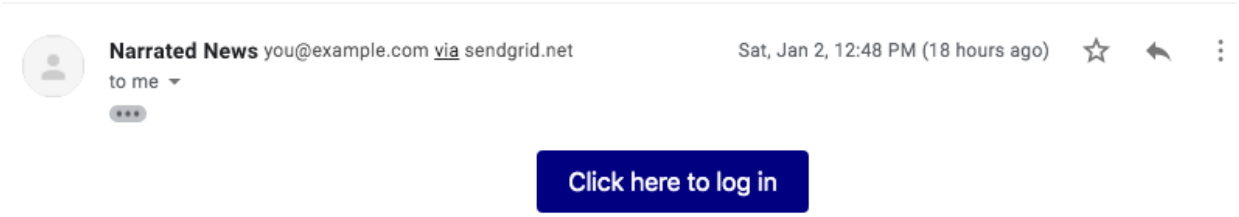
I hate passwords. I hate having to think of a new password every time I register for a website, as I know I won't remember it. When visiting a website for the first time in a while, I almost always need to use the "Forgot Password" function. This process is painful as it requires several extra steps, and, at the end of it all, I'm forced to create yet another password that I won't remember.

In many cases a better option is for the site to support "Email Login" directly. The workflow for email login is simple:

1. The login form has a single field for "Email", and a button "Email Login Link" as shown here:



2. The user enters their email address and presses "Email Login Link".
3. An email is sent to the user's email with a single-use link to log into the app. The email looks like the following:



4. The user clicks on the link and they are logged in directly without being hassled to enter a password.

To enable Email login, your users table must have an email field. You may use the "username" field to store the email address if you like, but the `_auth` section of the conf.ini file needs to declare which field contains the email.

conf.ini authentication settings which enables email login.

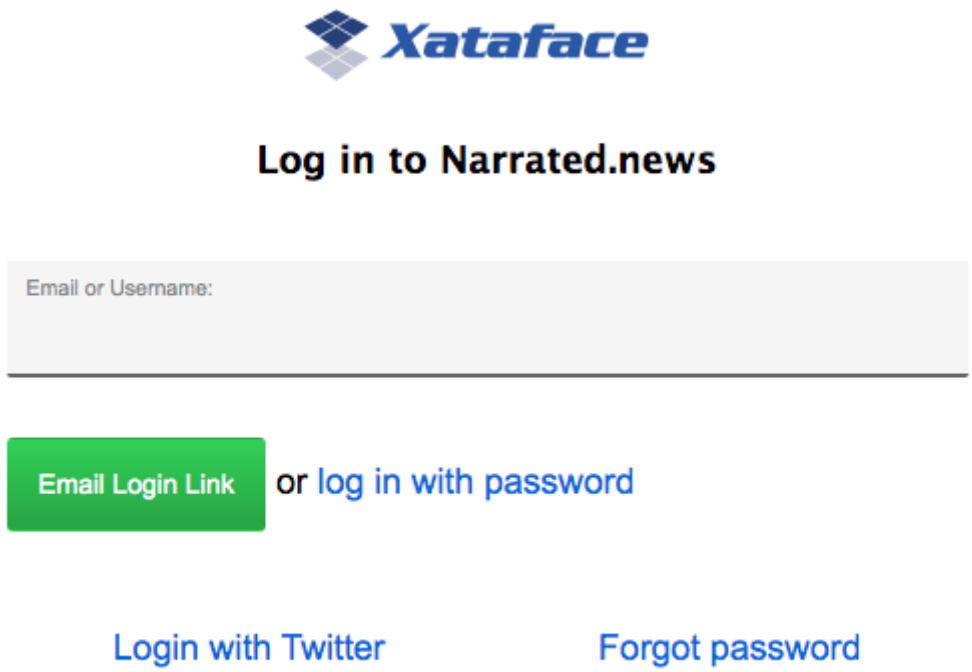
```
[_auth]
    users_table=users
    username_column=username
    password_column=password
    email_column=email ①
    allow_email_login=1 ②
```

① `email_column` directive, specifying that the user email address is stored in the "email" column.

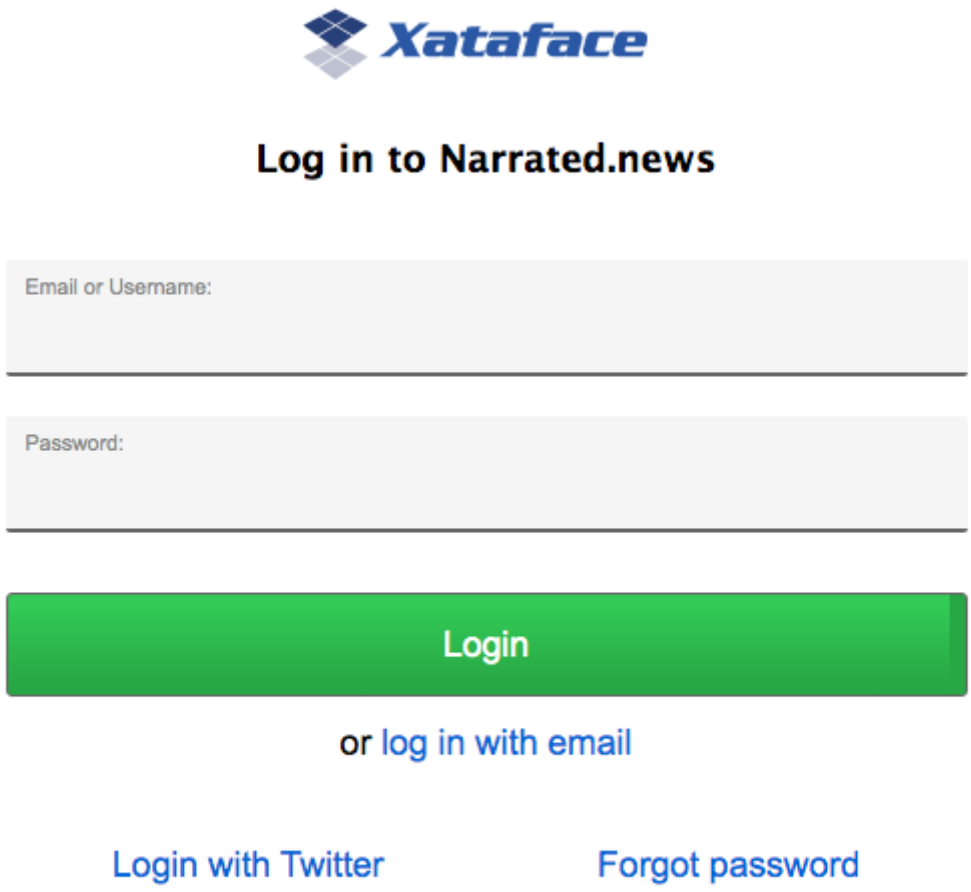
② `allow_email_login` directive enables Email login.

WARNING	If you are allowing users to log in with their email address, you should take some care to prevent duplicate emails. Xataface puts some automatic safe-guards in place such as login won't work if it finds two user accounts with the same email address. You should additionally add a Unique Key/Index on your email column to further prevent users from having the same email address.
WARNING	While you **can** use the same field for the username and email address, but I don't recommend this as users sometimes change their email address, and the username should stay unchanged to ensure referential integrity.

With these directives in place, the login form will look something like the following:



Notice that there is a link to "log in with password". Pressing this link will toggle back to the password login form:



Also notice that there is still a "Forgot password" option, in case the user would prefer to log in with their password.

Disabling Password Login

If you have email login enabled, you can optionally disable password login entirely. This may make sense for some services, in the spirit of "less is more" in terms of usability. You can use the `allow_password_login=0` directive in the `_auth` section of the conf.ini file to achieve this:

conf.ini file with password login disabled.

```
[_auth]
    users_table=users
    username_column=username
    password_column=password
    email_column=email
    allow_email_login=1
    allow_password_login=0 ①
```

① The `allow_password_login` directive disables password login so that email login is the only option.

With these options, the login form will not include the "or log in with password" link as shown below:

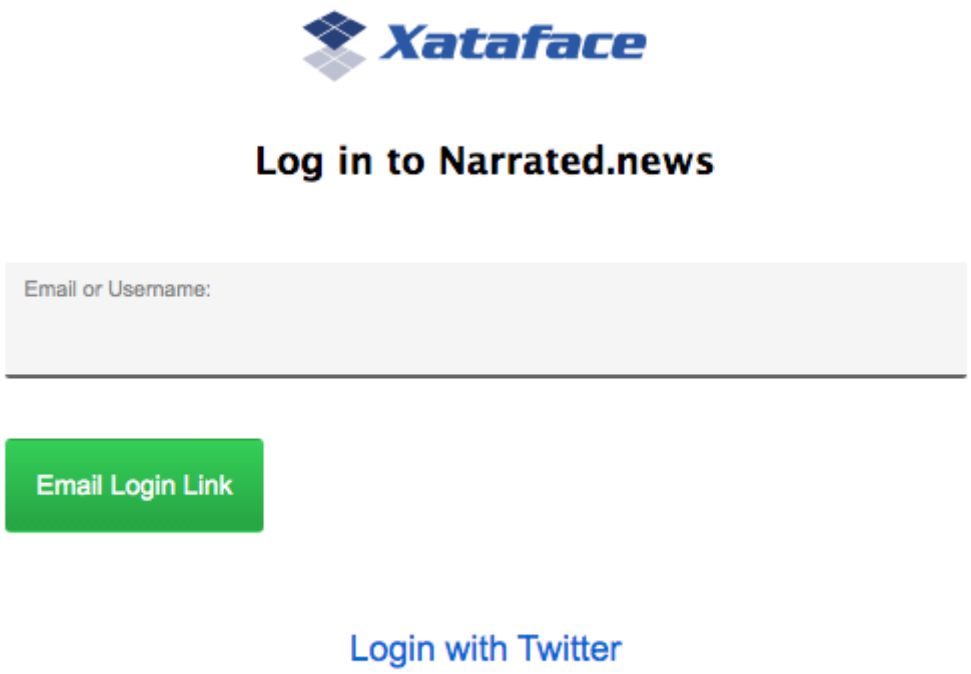
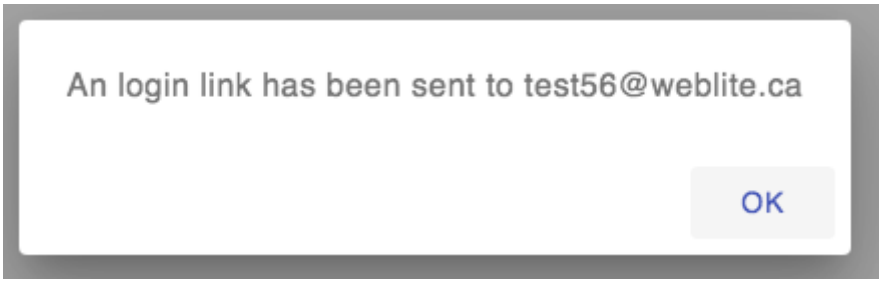


Figure 34. Login form with password login disabled

Also notice that the "Forgot Password" option is no longer displayed. With `allow_password_login=0` you'll also notice that there is no "Change Password" option once logged in.

Email Registration

The email login examples shown thus far have not included user registration. (See Allowing User Registration), but it is fully supported. If the user clicks on the "Email Login Link", and there is a valid email address in the Email field, it will always at least "pretend" to send a login email. I.e. it will always display the following dialog:



This is for security purposes to prevent malicious actors from testing different email addresses to see if they have an account.

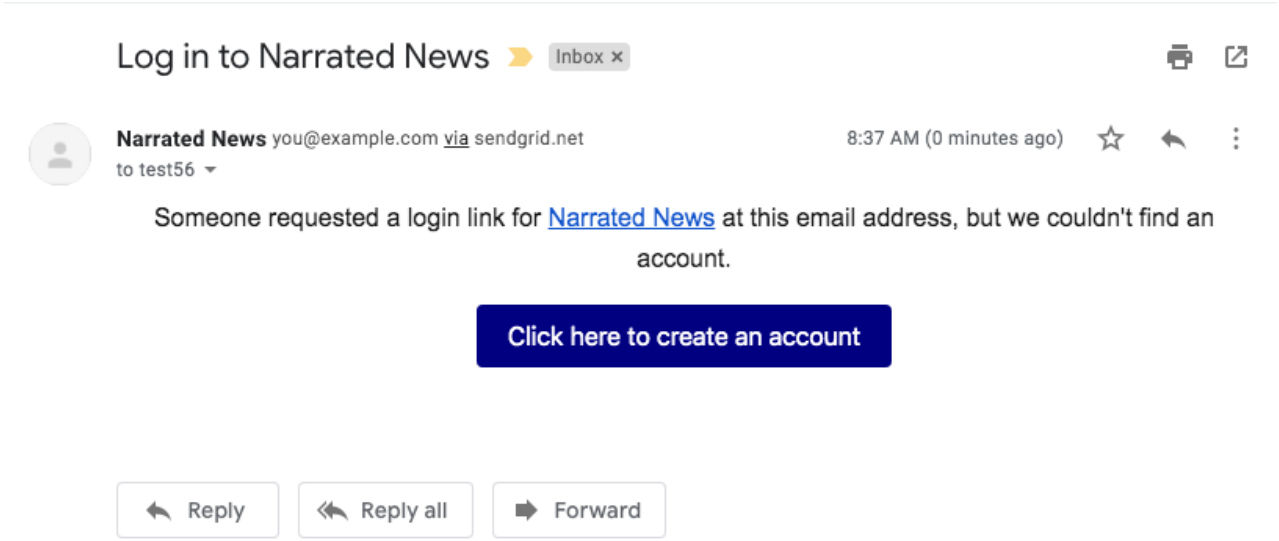
However, depending on your authentication configuration, it will do something different.

If `allow_register=0` or `allow_register` is not set

The system won't send an email at all, but it will log this to the PHP error log.

If `allow_register=1`

The system will send an email, but instead of a login link, it will include a link to the registration form. The email will look something like:



Enabling Auto-Registration

Xataface supports an auto-registration feature that helps to minimize the amount of friction involved in creating a user account. When Auto-registration is enabled, the "Email login link" will work (almost) identically for existing user accounts as they do for non-existent accounts.

To enable auto-registration, you can add the `auto_register=1` directive to the `_auth` section of your conf.ini file. E.g.

```
[_auth]
    users_table=users
    username_column=username
    password_column=password
    email_column=email
    allow_register=1 ①
    allow_email_login=1
    auto_register=1 ②
```

① The `auto_register=1` directive turns on auto-registration.

② The `allow_register=1` directive is required for auto-registration to work.

Auto-registration pertains to the scenario when a user presses the "Email Login Link" and they don't already have an account on the system. The "normal" workflow, in this case is to send a registration link (if `allow_register=1`), which takes the user to the registration form.

With `auto_register=1`, the register link simply creates an account for the user and logs them in directly, without visiting any registration form.

This presents the minimum amount of friction possible for creating new accounts.

The Register Action

If you have email authentication enabled (i.e. `allow_email_login=1`), password authentication disabled (i.e. `allow_password_login=0`), and auto registration enabled (i.e. `auto_register=1` and `allow_register=1`), then the "Register" link will still appear on the login form, **but** it will merly display a prompt advising the user to use the "Email Login Link" button to create an account.

Session Configuration

By default, Xataface authentication uses PHP sessions, which relies on a SESSION ID cookie to link requests to a session file on the server file system. The logged in username is stored in the `$_SESSION['UserName']` variable. If you want to log the user out programmatically, you could simply unset this variable, or destroy the session. Most of the time, however, it is recommended that you just use the built-in Xataface workflows for login/logout.

The three most common aspects of sessions that developers want to configure are:

1. **The Cookie Timeout** - E.g. When should the cookie expire. This can be configured using the `session_timeout` property in the `_auth` section of the conf.ini file. The default value is "0", meaning that the cookie will persist in the browser until the browser is closed.
2. **The Cookie Path** - E.g. What path in your app's domain will have access to the session cookie. By default the cookie is only availalble to the application root. E.g. If your application is located at `http://example.com/path/to/myapp/index.php`, then the cookie path will be "/path/to/myapp/". Therefore scripts running under "/path/to/anotherapp/" won't be able to access the cookie (and thus won't share sessions with this app). Neither will scripts in a parent directory (e.g. `http://example.com/anotherscript.php`). Only scripts under the path `/path/to/myapp/⋯` will have access to the session cookie. This can be configured using the `cookie_path` property in the `_auth` secton of the conf.ini file.
3. **Garbage Collection Timeout** - E.g. How long after a session is idle, before the server will delete the session files. By default this is set to 5 minutes longer than the cookie timeout, and thus, can be configured using the same `session_timeout` property.

Example Settings

Example session configuration in conf.ini file

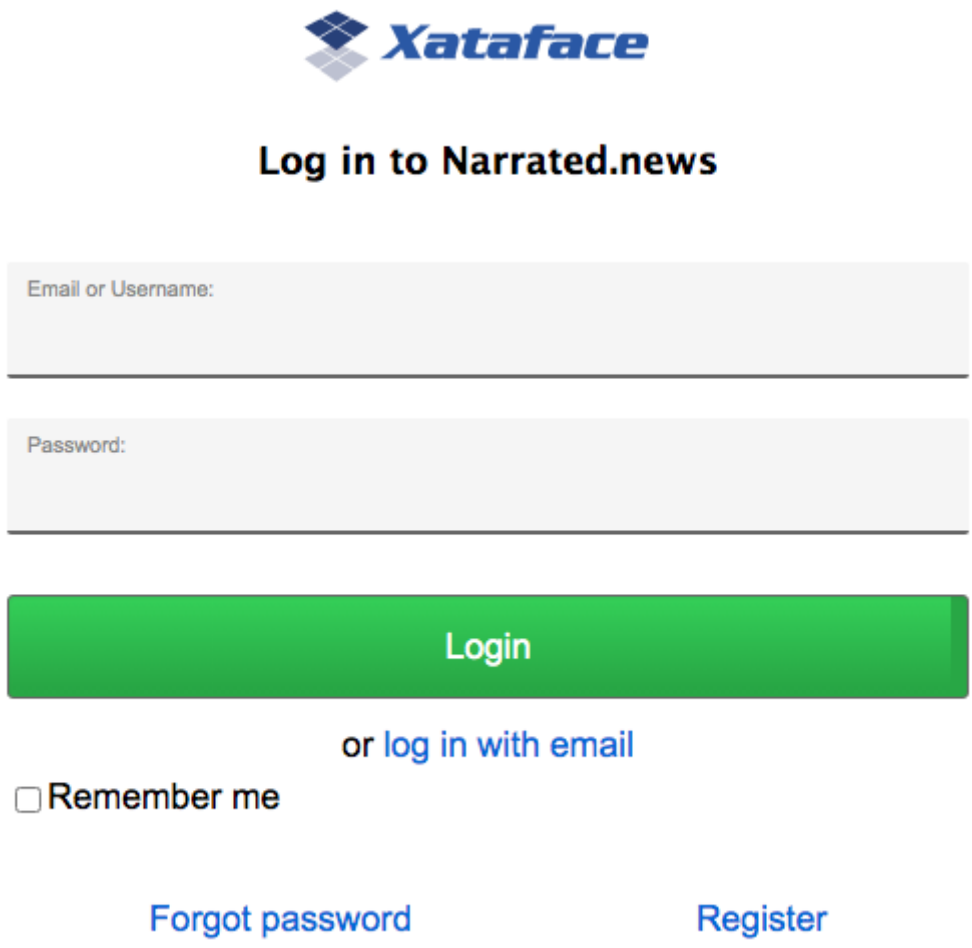
```
[_auth]
  session_timeout = 86400   ; 1 day
  cookie_path=/             ; Session cookie available to whole domain
  session_name=my_app_sid   ; Optional custom session name to avoid collisions with
other apps
```

Auto-Login Support

In some cases you may want your sessions to last "forever". I.e. If the user logs in once, you want them to stay logged in forever- or until they explicitly log out. Your first instinct might be to use the `session_timeout` directive to a really big number so that sessions last for 10 years. This is problematic for two reasons:

1. Keeping session files lingering for 10 years can fill up your server disk space pretty quickly. Especially on sites that get a lot of traffic.
2. Some servers may thwart your intentions and delete the session files despite your explicit intention to keep them. Especially on a shared server, it can be difficult to get full cooperation of the server to **not** delete those session files.

A better alternative is to activate "auto-login" support in your app. With auto-login support enabled, the login form will include a "Remember me" checkbox as shown below:



If the user checks this box, it will save a token on the server (in the `dataface__autologins` table), add a long-lived cookie. If the user tries to load a page a few days later, Xataface will first try to load the session. If none is found, it will look for an "autologin" cookie to and, if found, it will log the user in automatically, starting a new session seamlessly.

Example

Sample conf.ini file with auto-login support enabled.

```
[_auth]
    users_table=users
    username_column=username
    password_column=password
    email_column=email
    allow_register=1
    allow_email_login=1
    allow_password_login=1
    auto_register=1
    autologin=1 ①
```

① The `autologin` directive which enables autologin support.

Auto-Login Configuration Directives

You can customize the behaviour of the auto-login support using the following directives, which all go in the `_auth` section of the conf.ini file.

`autologin_cookie`

The name of the cookie to use for storing the autologin token. Default is "xf_pulse"

`autologin.logout_all_devices`

Set to "1" to cause the autologin tokens to be invalidated for ALL devices when the user logs out. By default, when the user logs out, it will invalidate the autologin token in the current device, but if they are logged in on other devices, it will leave those untouched.

OAuth2 Authentication

Xataface supports Oauth2 authentication via the oauth module. This module provides all of core functionality to support OAuth2. There are also modules built to provide Oauth support for specific services, such as Facebook, Twitter, LinkedIn, and Instagram. These "sub" modules all depend on the core oauth module. They simply provide a few specific configuration settings to support OAuth2 on those services.

TIP

OAuth 2.0 is the industry-standard protocol for authorization. OAuth 2.0 focuses on client developer simplicity while providing specific authorization flows for web applications, desktop applications, mobile phones, and living room devices. This specification and its extensions are being developed within the IETF OAuth Working Group.

For more information about the Oauth2 spec, see the official OAuth 2.0 website.

Adding OAuth2 Login Support

The first step toward adding OAuth2 support in your app, is to download the oauth module into the `modules` directory of your application. E.g.

`modules/oauth/oauth.php`

And add a a corresponding entry to the `[_modules]` section of your conf.ini file:

```
[_modules]
  modules_oauth=modules/oauth/oauth.php
```

You'll also need to add the `pre_auth_types` entry to the `[_auth]` section oc your conf.ini file:

Adding `pre_auth_types=oauth_token` to the `_auth` section of your conf.ini file instructs Xataface to attempt authentication using the oauth

```
[_auth]
    users_table=users
    username_column=username
    password_column=password
    pre_auth_types=oauth_token
```

API Authentication

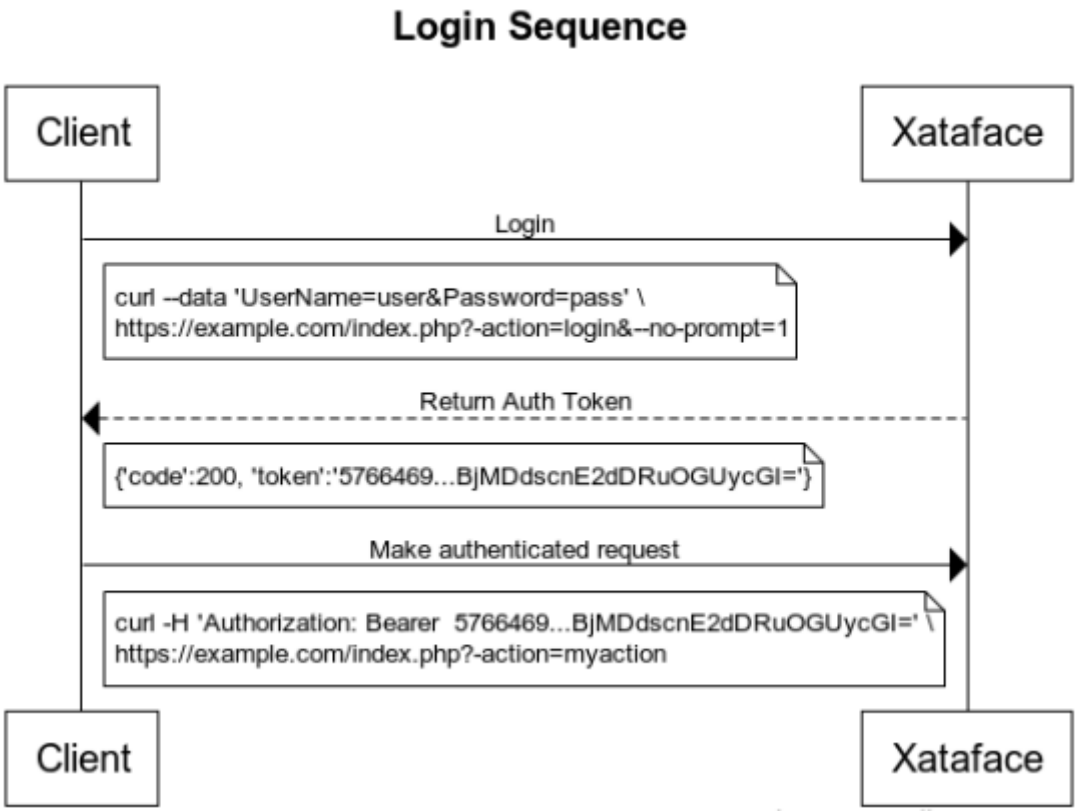


Figure 35. Login sequence using example curl HTTP request.

Xataface provides a REST API for authentication so that you can access your application using a REST client. When using this API, you'll perform a request to the "login" action to obtain an authentication token. You can then make authenticated requests to your app by adding this token in the Authorization header as a bearer token.

Login

To log in using the API, simply perform a POST request to `?-action=login&--no-prompt=1`

1. `UserName` - The username to log in with.
2. `Password` - The password to log in with.

If login succeeds, you'll receive a JSON response with a token. E.g.

```
{
  "code":200,
  "token":"576646...2dDRuOGUycGI=",
  "message":"Logged in"
}
```

An unsuccessful login will look something like:

```
{"code":500,"message":"No UserName provided."}
```

Making Authenticated Requests

Once you have obtained a token, you should include this token in the `Authorization` header of HTTP requests. E.g.

```
curl -H 'Authorization: Bearer {TOKEN}' https://example.com?index.php
```

But replace `{TOKEN}` with your token received during login.

Logging Out

To log out, simply perform a POST or GET request to `?-action=logout&--no-prompt=1`

Theme Customization

The following sections form a sort of cook book with recipes for customizing themes in Xataface.

Adding a Custom Stylesheet

Problem

You want to add a custom stylesheet to your application so that you can override the default styles, and provide styles for your custom elements.

Solution

The `xf_stylesheet()` function can be used to inject a stylesheet into either the `<head>` section of the app's page, or into the CSS bundle that is compiled by the `CSSTool`. Let's start with the simplest case, where you want to include the stylesheet in the entire application (i.e. it should be loaded in every page of the app), and the stylesheet is hosted on a CDN (content-delivery network). In this case, you should place the call to `xf_stylesheet()` inside the `beforeHandleRequest()` method of the application delegate class.

e.g.

The Application delegate class ("conf/ApplicationDelegate.php")

```
<?php
class conf_ApplicationDelegate {
    function beforeHandleRequest() {
        xf_stylesheet('https://example.com/styles.css');
    }
}
```

This will append a `<link rel="stylesheet"···>` tag in the `<head>` section of every page.

Hosting Stylesheet

If you want to host the stylesheet as part of the app, it is customary to create a `css` directory in your application's main directory where you place your CSS files. So we can copy our stylesheet into this directory:

```
myapp/
  css/
    mystylesheet.css
```

And use embed it just as before in the `beforeHandleRequest()` method.

```
<?php
class conf_ApplicationDelegate {
    function beforeHandleRequest() {
        xf_stylesheet('mystylesheet.css');
    }
}
```

The CSS Tool and Include Paths

`xf_stylesheet()` takes an optional 2nd parameter which is a flag to indicate whether the stylesheet should be included directly in the `<head>` section, or bundled by the CSS tool, and injected dynamically on page load.

```
xf_stylesheet('mystylesheet.css')
```

is the same as

```
xf_stylesheet('mystylesheet.css', true)
```

Which means that the stylesheet will be bundled by the CSS tool. All stylesheets in a particular request that are included using the CSS tool are bundled together into a single minified file, which is added to the document on load. The CSS tool has a set of include paths where it looks for CSS files to include, and these paths are treated as "roots" for all CSS files. The "css" directory is one of these "roots" by default. This is why we only need to specify "mystylesheet.css" in the path rather than "css/mystylesheet.css" - because all CSS files processed by the CSS tool are searched relative to the include path roots.

You can set the 2nd argument to `false` to simply include the CSS file in the `<head> of the document, and not have the CSS tool process it. In this case, you would need to include the full relative path to the CSS file. E.g.

```
xf_stylesheet('css/mystylesheet.css', false);
```

When to use the CSS Tool

With two different options for including stylesheets, you might be wondering when you should and should not use the CSS tool. Generally, I'll use the CSS tool if I'm building a module and I want other modules and apps to be able to override the CSS file. However, if I'm just including a CSS file that will be used for my application styles, I won't use the CSS tool.

TIP

If you specify the CSS file using a full URL (e.g. "http://..." or "https://...." or "//..."), `xf_stylesheet()` won't use the CSS tool. If you specify it as a relative path, it **will** use the CSS tool unless you explicitly add `false` as the 2nd argument.

```
xf_stylesheet('mystylesheet.css');        // uses CSS tool
    // Will use ./css/mystylesheet.css
xf_stylesheet('mystylesheet.css', false); // does NOT use CSS tool
    // Will use ./mystylesheet.css
xf_stylesheet('//example.com/mystylesheet.css'); // does NOT use CSS tool
xf_stylesheet('http://example.com/mystylesheet.css'); // does NOT use CSS
tool
xf_stylesheet('https://example.com/mystylesheet.css'); // does NOT use CSS
tool
xf_stylesheet('https://example.com/mystylesheet.css', true); // Style
Doesn't
    // 2nd arg is ignored if URL is absolute
```

Changing the Color Scheme

Problem

You want to override the default color scheme with your own color scheme.

Solution

Add a custom stylesheet that redefines Xataface's theme color variables

Xataface uses CSS variables to define the colors for its theme. You can create an entirely new color scheme by simply creating a custom stylesheet (see Adding a Custom Stylesheet) which redefines these variables. Here is a bare-bones example of such a "theme" stylesheet:

```
:root {

    --mainBgColor: white; /* Body background color */
    --mainTextColor: black; /* Default text color */
    --secondaryTextColor: #666666; /* Used for descriptions text*/

    /* Link text colors */
    --linkTextColor: #0366d6;
    --linkTextVisitedColor: Purple;
    --linkTextActiveColor: Red;

    /* Colors used for block borders */
    --highlightColor: rgb(225, 228, 232);
    --highlightColorLight: rgb(236, 239, 241);

    --trimBgColor:#f6f8fa; /* Alt background color used for striping or providing
```

```
contrast */

    /** Color of text in main buttons and menu items **/
    --buttonColor: rgb(118, 118, 118);
    --buttonBgColor: #28a745;

    /** Color of text in main buttons and menu items when selected */
    --buttonSelectedColor: black;

    /** Navigation tab top border color when tab is selected */
    --tabRidgeSelectedColor: darkorange;
    --menuSelectedColor: black;
    --menuBorderColor: rgb(218, 220, 224);
    --menuBgColor: #fefefe;
    --menuColor: #888888;

    /** Navigation tab top border color when hovering over the tab. */
    --tabRidgeHoverColor: purple;

    /** The navigation tab ridge color when not selected. */
    --tabRidgeColor: #eeeeee;

    /** Bg color of tab when hovering */
    --tabHoverBgColor: rgb(244, 246, 250);

    --inputBgColor: var(--mainBgColor);
    --inputTextColor: var(--mainTextColor);
    --inputBorderColor: #666666;
    --inputFocusedBorderColor: #ffa500;

    /** Login Form-specific Colors */
    --loginFieldBgColor: #f5f5f5;   /* Input fields background */
    --loginFieldUnderlineColor: #666666;  /* Input fields underline */
    --loginFieldUnderlineFocusedColor: #28a745;
    --loginFieldLabelColor: #888888;
    --loginFieldLabelFocusedColor: #28a745;

    /* Submit buttons */
    --submitButtonBgColor: #28a745;
    --submitButtonBgImage: linear-gradient(-180deg,#34d058,#28a745 90%);
    --submitButtonTextColor: #fff;

    /* Alert and error message colors */
    --messageBorderColor: #222;
    --messageBgColor: #eaeaea;
    --messageTextColor: #333;

    /* Mobile theme footer colors.  E.g. for bottom tabs */
    --mobileFooterBgColor: #fefefe;
    --mobileFooterBorderColor: #666666;
    --mobileTabIconColor: #999999;
```

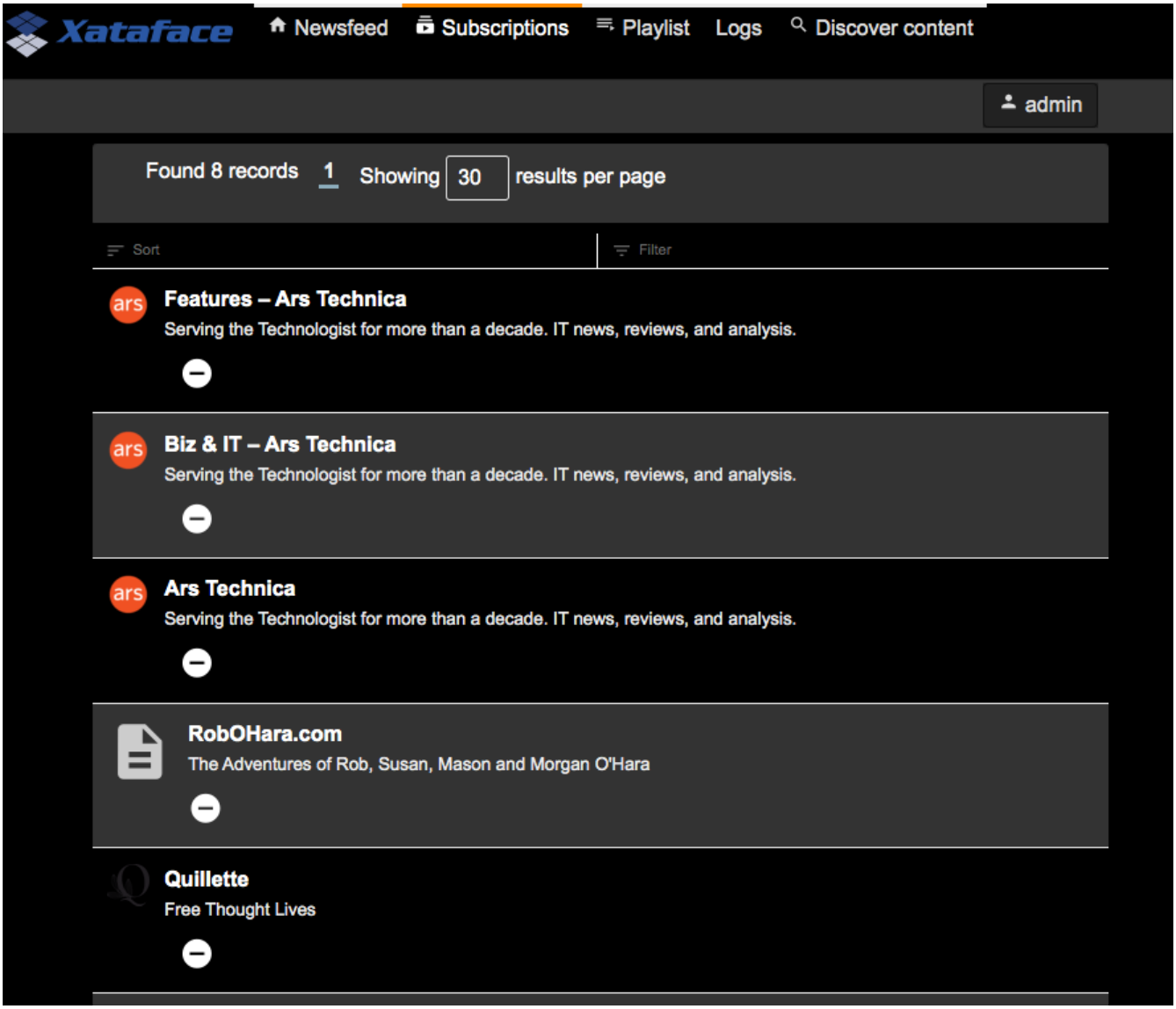
```
    --mobileTabLabelColor: #999999;
    --mobileTabIconSelectedColor: rgb(10,132,255);
    --mobileTabLabelSelectedColor: rgb(10,132,255);

    /* Mobile theme status bar/titlebar */
    --mobileStatusBarBgColor: black;
    --mobileStatusBarBorderColor: black;
    --mobileTitleTextColor: white;


    /* Mobile theme sidebar */
    --sidebarMenuTextColor: #fff;
    --sidebarTextColor: rgba(255, 255, 255, 0.50);

}
```

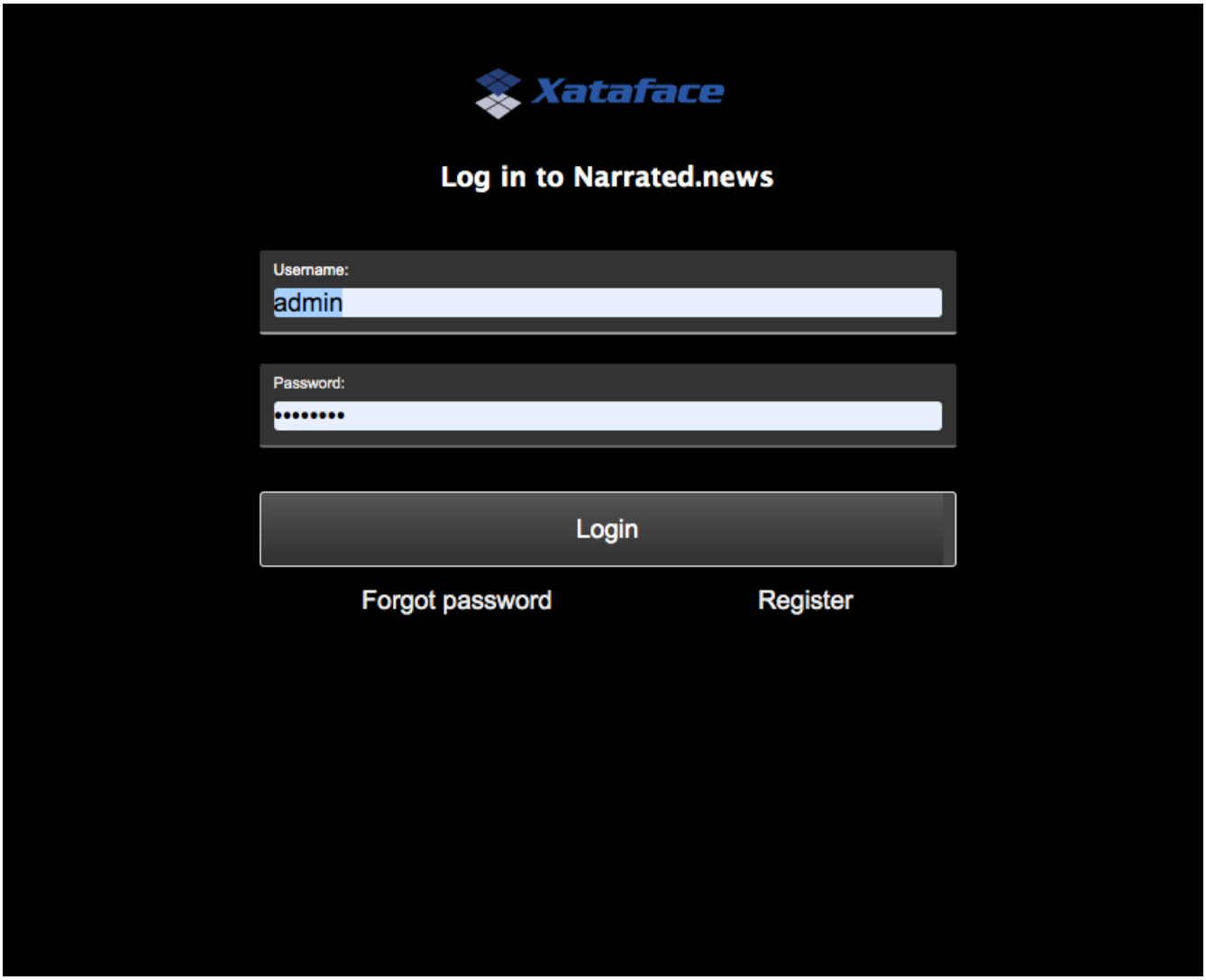
NOTE	The list of CSS variables may grow or change over time. Refer to the plone.css file in the Xataface root directory for a definitive list of styles.

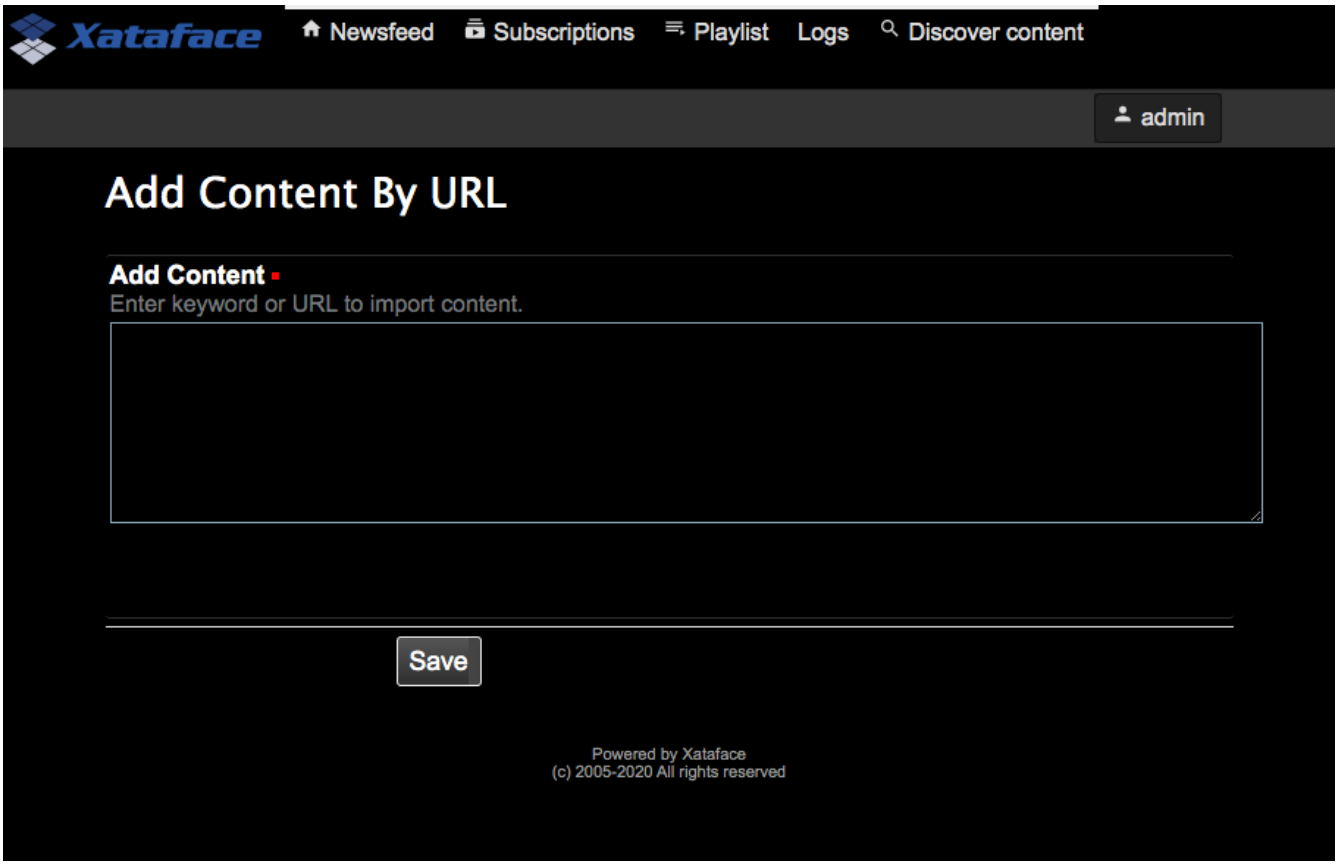
The following is an example "dark" theme for Xataface defined wholly overriding CSS color variables:

```
:root {
    --mainBgColor: black;
    --trimBgColor:#333333;
    --stripeBgColor: #333;
    --mainTextColor: white;
    --secondaryTextColor: #eaeaea;
    --buttonColor:white;
    --menuColor:#ddd;
    --highlightColor: #333;
    --highlightColorLight: #222;
    --menuBorderColor: #111;
    --menuBgColor:#222;
    --tabHoverBgColor: #444;
    --menuSelectedColor: white;
    --linkTextColor: #eee;
    --linkTextVisitedColor: #ddd;

    --loginFieldBgColor: #333;
    --loginFieldUnderlineColor: #666;
    --loginFieldUnderlineFocusedColor: #999;
    --loginFieldLabelColor: #eee;
    --loginFieldLabelFocusedColor: #fff;
    --submitButtonBgColor: #444;
    --submitButtonBgImage: linear-gradient(-180deg,#555,#333 90%);

    --mobileFooterBgColor: #333;
    --mobileFooterBorderColor: #555;

    --inputBgColor: #333;
    --inputBorderColor: #eee;


}
```

The result is:


Xataface
Newsfeed
Subscriptions
Playlist
Logs
Discover content
admin
Found 8 records
1
Showing
30
results per page
Sort
Filter
Features – Ars Technica
Serving the Technologist for more than a decade. IT news, reviews, and analysis.
Biz & IT – Ars Technica
Serving the Technologist for more than a decade. IT news, reviews, and analysis.
Ars Technica
Serving the Technologist for more than a decade. IT news, reviews, and analysis.
RobOHara.com
The Adventures of Rob, Susan, Mason and Morgan O'Hara
Quillette
Free Thought Lives


Xataface
Log in to Narrated.news
Username:
admin
Password:
Login
Forgot password
Register


Xataface
Newsfeed
Subscriptions
Playlist
Logs
Discover content
admin
Add Content By URL
Add Content
Enter keyword or URL to import content.
Save
Powered by Xataface
(c) 2005-2020 All rights reserved

Using Preferences to Override Color Scheme

Problem

You want to use a different color scheme depending on which user is logged in, or other run-time environment factors.

Solution

Use the `user_stylesheet` preference to specify the name of a stylesheet to use.

The "user_stylesheet" preference (See Preferences Directives) allows you to specify the name of a stylesheet to inject into the current request. Since preferences can be dynamically defined using the Application delegate's `getPreferences()` method, you can easily use environment information such as the current user or the current URL to define a custom color scheme on a per-user basis.

For example:

A `getPreferences()` method inside the conf/ApplicationDelegate.php file for an application that defines a custom stylesheet for user "fred".

```
<?php
function getPreferences() {
    $prefs = [];
    if (getUserName() == 'fred') {
        // Assuming you've defined your own getUserName() function somewhere
        $prefs['user_stylesheet'] = 'fred.css';

    }
    return $prefs;
}
```

Now add a CSS file as "css/fred.css" with your custom styles for fred.

See Changing the Color Scheme for details on changing the color scheme usinc CSS variables.

TIP

Since preferences can also be defined statically in the conf.ini file, you can also provide a custom default stylesheet by specifying the "user_stylesheet" preference there. E.g.

```
[_prefs]
    user_stylesheet=fred.css
```

In this case every user would receive the fred.css file.

Allowing Users to Choose Their Own Color Scheme

Problem

You want users to be able to select their own preferred color scheme.

Solution

Add a field to the "users" table with the `prefs.key=user_stylesheet` fields.ini property.

Xataface allows you to override preferences values using data from the currently logged in user's record. The `prefs.key` fields.ini directive allows you to specify that the value of the field, in the currently logged in user record, will be used as a value for the specified preference.

As an example, let's add a `VARCHAR(100)` column named "stylesheet" to the "users" table.

Add the following to the "tables/users/fields.ini" file:

fields.ini file definition for "stylesheet" field.

```
[stylesheet]
    prefs.key=user_stylesheet
    vocabulary=stylesheets ①
    widget:type=select
    widget:label="Theme"
    widget:description="Select your preferred theme"
```

NOTE	I specify the location as "tables/users/fields.ini", but, of course, your path will depend on the name of your users table.

Notice that we specified a vocabulary for the vield. We'll define that in the valuelists.ini file.

E.g.

"stylesheets" vocabulary defined in the valuelists.ini file; used as options in the stylesheet select list.

```
[stylesheets]
dark.css="Dark Theme"
ocean.css="Ocean Theme"
.. etc..
```

And, finally, ensure that we have added our stylesheets (dark.css and ocean.css) into the "css" directory of our app.

For details on creating custom color schemes using CSS, see Changing the Color Scheme.

Now the user can change their own color scheme, by simply editing their profile inside the app.

IMPORTANT	The user will require edit permissions for the "stylesheet" field of their own user record in order for this solution to work.

Using a Custom favicon

Problem

You want to install a custom favicon for your app.

Solution

Use the `favicon` block/slot.

Implementing the favicon block in your ApplicationDelegate class.

```
function block__favicon($params = []) {
        $icons = [
            '16x16' => '/images/AppImages/chrome/chrome-favicon-16-16.png',
            '32x32' => '/images/AppImages/firefox/firefox-generate-32-32.png',
            '96x96' => '/images/AppImages/android/android-launchericon-96-96.png'
        ];
        foreach ($icons as $sizes => $url) {
            printf('<link rel="icon" type="image/png" href="%s" sizes="%s" />',
htmlspecialchars($url), htmlspecialchars($sizes));
        }
    }
```

Templates

The following sections form a sort of cook book with recipes for working with Smarty Templates in Xataface

Passing Parameters to Blocks

Problem

You want to pass a parameter from the template to a block so that the block can output different content depending on the parameters.

Solution

Add parameters as as smarty parameters on the `{block}` tag.

E.g.

Smarty template defining a block named "product_description", which passes a product ID from the `$productId` *smarty variable.*

```
{block name="product_description" productId=$productId}
```

The block implementation inside a delegate class may look like:

```
function block__product_description($params = []) {
    if (@$params['productId']) {
        echo "<p>A description for product {$params[productId]}</p>";
e
    } else {
        echo "<p>A generic description</p>";
    }
}
```

Special Parameter Names

A small set of parameter names are treated specially by Xataface, so make sure your custom parameters don't collide with these. These special parameter names are:

name

The name of the block. **(Required)**

IMPORTANT

table

The table name. This dictate's which table delegate class's implementation for the block will be used. The default value is the current table. (i.e. `$query['-table]`).

record

A `Dataface_Record` object referring to the record on which this parameter should operate. This record's table's delegate class's implementation for the block will be used, unless the `table` parameter is also explicitly supplied.

Form Customization

The following chapters form a sort of cook book with recipes for customizing forms in Xataface.

Multiple Tabs in Forms

Problem

You want to split your edit/new record forms into multiple tabs

Solution

Use the `tab`directive in each field definition of the fields.ini file to specify the "tab" that each field should be placed in.

The tab directive of the fields.ini file specifies which tab of the record edit form a field should be displayed on. Xataface supports multiple tabs on the edit form by way of this tab directive. If no fields contain the tab directive then all fields are displayed in a single tab (named `main`).

Example 1: Placing address info on separate tab Consider the following people table:

```
CREATE TABLE `people` (
    person_id int(11) not null auto_increment primary key,
    first_name varchar(32) not null,
    last_name varchar(32) not null,
    address varchar(100),
    city varchar(100),
    province varchar(100),
    country varchar(100),
    postal_code varchar(20)
)
```

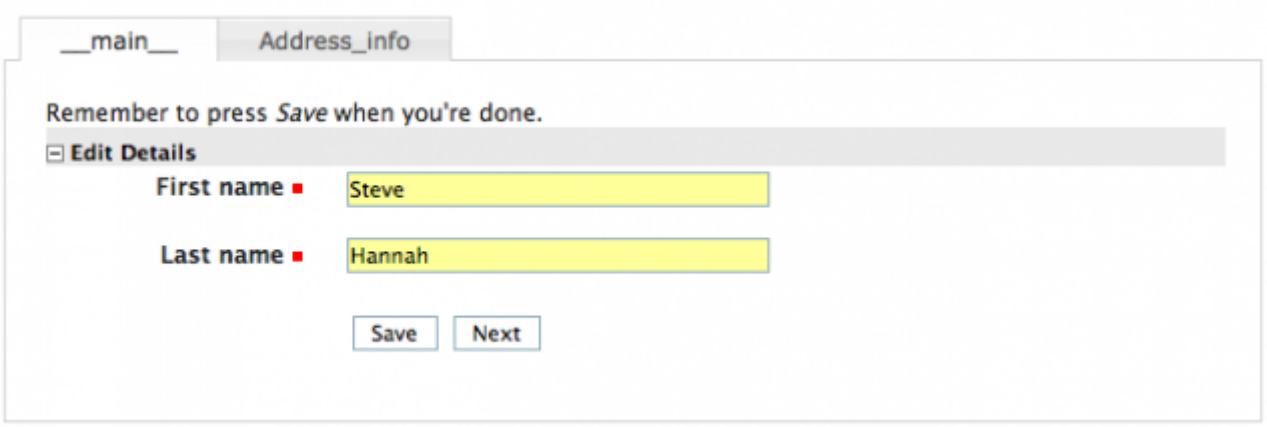
We want to split the fields into two tabs: "Personal Info" and "Address Info"

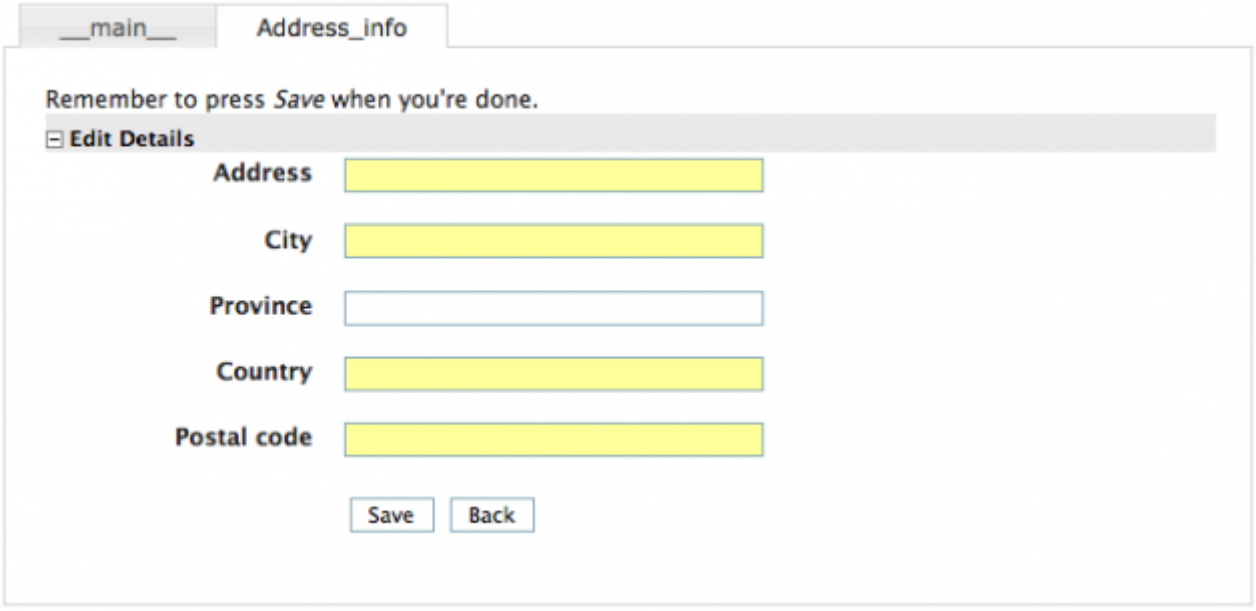
We'll do this in two steps. We use the `tab` directive to assign all address-related fields to the `address_info` tab.

fields.ini file. Assigning fields to the "address_info" tab.

```
[address]
    tab=address_info

[city]
    tab=address_info

[province]
    tab=address_info

[country]
    tab=address_info

[postal_code]
    tab=address_info
```

Now, when we load the edit form of the people table, we see two tabs: "__main__" and "address_info"





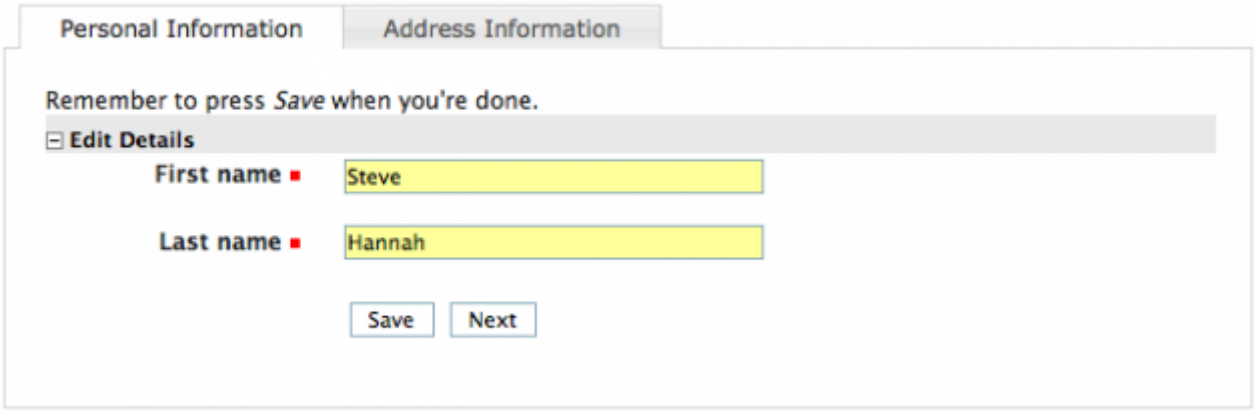
TIP	`__main__` is the name assigned to the default tab (for all fields that don't have a tab defined explicitly.

Customizing the tab labels

Next we will customize the tab labels by adding the following to the beginning of the fields.ini file:

Defining the tabs in the fields.ini file.

```
[tab:__main__]
    label="Personal Information"

[tab:address_info]
    label="Address Information"
```



http://media.weblite.ca/files/photos/Picture%2012.png?max_width=640

Reordering the tabs

If we want to reorder the tabs so that the "address_info" tab comes first, we would just reorder the definitions of the tabs:

```
[tab:address_info]
    label="Address Information"

[tab:__main__]
    label="Personal Information"
```

Delegating "New Record Form" to a Different Table

Xataface allows you to delegate "new record" input to a different table. E.g. Given a Table `A`, you can configure Xataface to use the "new record" form for a different table `B` for inserting new records.

Why might you want to do this?

Xataface forms are built around the data model of the underlying table. It generates input fields for

each column of the underlying table. In some cases, the "new record" form may want to take data in a different form that allows you to generate the underlying data.

For example, if you have a "Contacts" table, but you want the user to be able to insert contacts by simply entering their employee ID - and this will be used in the back-end to fetch some initial data about the user from another database. In this case, your "new record" form should really just include a single field: "Employee ID".

Instructions: Short Version

Definitions

1. `SOURCE_TABLE` - The source table into which you wish to insert records.
2. `TARGET_TABLE` - The target table whose "New Record" form you wish to use for the UI.

Steps:

1. Add the `new_record_table=TARGET_TABLE` directive to the beginning of the fields.ini file of the SOURCE_TABLE.
2. Add a column named `xf_inserted_record_id` of type `TEXT` into the TARGET_TABLE.
3. In either the `beforeInsert()` or `afterInsert()` hooks of the TARGET_TABLE, process the inputs, and programmatically insert the appropriate record into the SOURCE_TABLE.
4. Also inside the `beforeInsert()` or `afterInsert()` hooks of TARGET_TABLE, set the value of the `xf_inserted_record_id` to the record ID of the SOURCE table that you programmatically inserted in step 3.

Instructions By Example

Let's take the example I mentioned above. We have a "contacts" table with lots of details about a contact, including `employee_id`. When the user inserts a record, all they need to do is enter the "employee_id" and it will pull the rest of the data in from an external database. So we will create a second "dummy" table that is only here to facilitate the creation of a new contact. It includes only a single field "employee_id".

Our two tables might have the following definitions.

```
CREATE TABLE contacts (
  employee_id VARCHAR(32) PRIMARY KEY,
  first_name VARCHAR(64),
  last_name VARCHAR(64),
  ....
 )

 CREATE TABLE new_contact_form (
   employee_id VARCHAR(32) PRIMARY KEY,
   xf_inserted_record_id TEXT ①
 )
```

① The `xf_inserted_record_id` field is a special field that will be used to pass the record ID of the corresponding contact record after insertion.

Step 1: Set `new_record_table`

At the beginning of the fields.ini file for the "contacts_table", add:

tables/contacts/fields.ini file

```
new_record_table=new_contact_form
```

This tells Xataface that the "new" action for the "contacts" table should redirect to the "new" action of the "new_contact_form" table.

Step 2: Implement `beforeInsert()` Hook

If we simply defined the `new_record_table` directive, it would result in the user being redirected to the `new_contact_form` table when they want to insert a new record into the `contacts` table, but it wouldn't actually insert anything into the contacts table. Nor would it return them back to the contacts table when done. It would just leave the user in the "new_contacts_form" table - and would insert the record there only.

If we want to actually insert a record into the "contacts" table, we just do this programmatically. Preferably inside the `beforeInsert()` or `afterInsert()` hooks of the `new_contact_form` table.

In the delegate class for the `new_contact_form`, we'll do:

tables/new_contact_form/new_contact_form.php file (Delegate class for the "new_contact_form" table).

```
<?php
class tables_new_contact_form {
    function beforeInsert(Dataface_Record $record) { ①
        $employeeData = fetchEmployeeData($record->val('employee_id');
        // Assume that you've implemented fetchEmployeeData() elsewhere to get
        // the employee info from another database

        if (!$employeeData) {
            XFException::throwValidationFailure("Failed to find employee data for
given employee ID.");
        }


        // Create a new contact record
        $contact = new Dataface_Record('contacts', array()); ②
        $contact->setValues(array(
            'employee_id' => $employeeData['empid'],
            'first_name' => $employeeData['empFirstName'];
            ...
        ));
        $res = $contact->save(); ③
        if (PEAR::isError($res)) {
            XFException::throwValidationFailure("Failed to insert contact: ".$res-
>getMessage());
        }

        // Store the record ID of the new contact record
        $record->setValue('xf_inserted_record_id', $contact->getId()); ④
    }
}
```

① We implement the `beforeInsert()` callback, which is executed before the "new_contact_form" record is inserted.

② We create a new `Dataface_Record` object for the "contacts" table, and insert data for the contact.

③ We call `save()` to store the "contacts" record.

④ Get the ID of the newly inserted contact, and add it to the `xf_inserted_record_id` field of the "new_contact_form" record. This will be used by Xataface after to redirect back to the original contact table record when it is done.

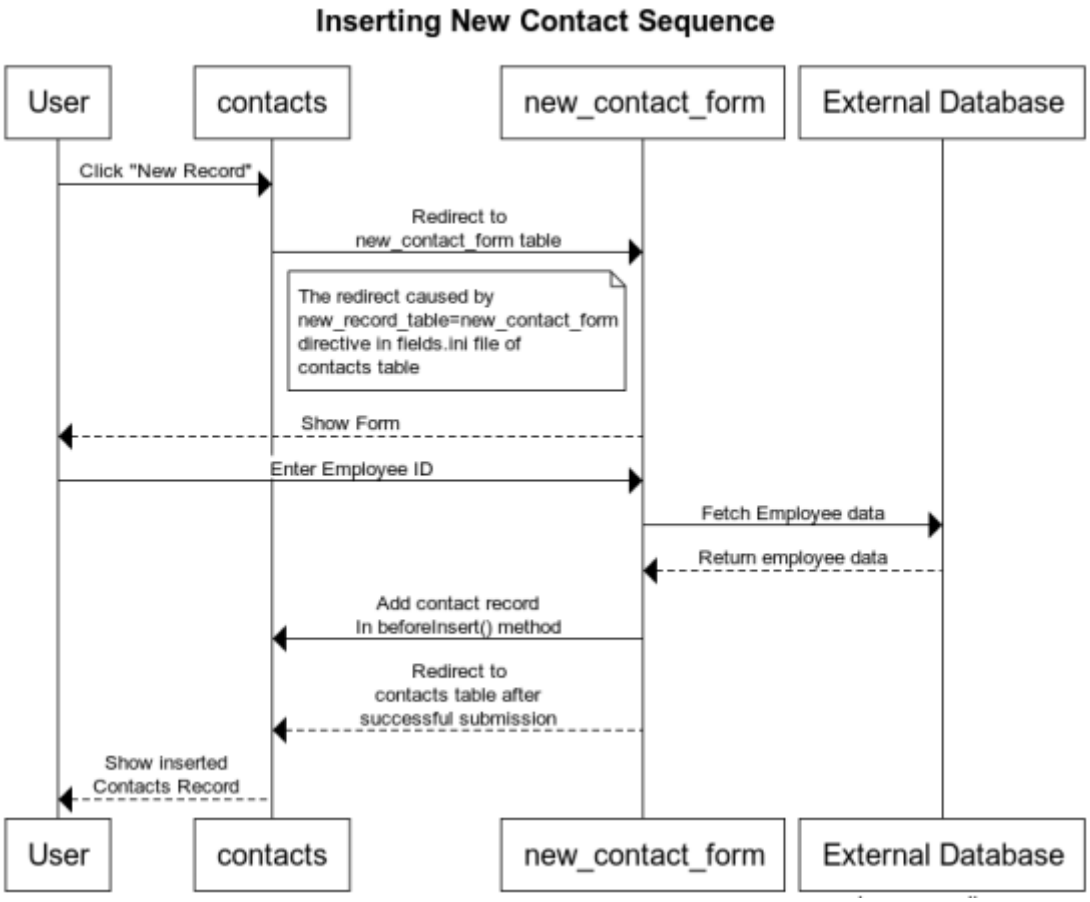


Figure 36. Sequence diagram for inserting a new record in the Contacts table

Using `ownerstamp` to Mark Record Ownership

Problem

You want to "stamp" a record with the username or user ID of the user who created a record automatically.

Solution

Use the `ownerstamp` fields.ini directive on the field that you wish to store the userid in.

For example, consider a table "posts" that stores posts that users of the system make. This table has a `posted_by` field to record the user that posted it. You want this field to automatically populated with the user ID of the user that is currently logged in, so you can add the `ownerstamp` directive in the fields.ini file.

```
[posted_by]
  ownerstamp=1
```

Adding this directive does a number of things simulataneously:

1. It will set the user ID of the currently logged in user at the time that the record is inserted.
2. It will prevent the field from being updated later.

3. It will hide the "posted_by" field from all forms.

Discussion

Before the "ownerstamp" directive existed, you could accomplish the same thing by implementing a `beforeSave()` trigger and setting the field value to the currently logged in user, changing the field permissions so it can't be changed after the fact, and setting the widget type to "hidden". But since this is such a common requirement, it is much simpler to just set `ownerstamp=1` and be done with it.

Redirecting User to Different Page After Saving Record

Problem

By default, when the user presses "Save" on the "Edit record form", they will be redirected back to the edit record form again after the save is complete. You want to redirect them to a different page, such as the "View" page.

Solution

Override the "edit" action in your actions.ini file to specify the "after_action" directive.

E.g. Add the following to your application's actions.ini (or actions.ini.php) file.

the actions.ini file. Specifying that user should be directed back to the "view" action after editing the record.

```
[edit > edit]
    after_action=view
```

If you only want to apply this rule to a particular table, you can use the `after_action.{TABLENAME}` instead. E.g.

Specifying an after_action directive that only applies to editing records of the "users" table.

```
[edit > edit]
    after_action.users=view
```

TIP

The "new" action also supports the `after_action` and `after_action.tablename` directives. E.g.

```
[new > new]
    after_action=view
```

Auto-Updating a Field When Other Fields are Changed

Problem

You want the contents of a field to be automatically updated when the value of another field on the same form is changed. For example, you have a "Program Title" field that should automatically be populated when the user selects the program ID.

Solution

You can use the `ajax_value` fields.ini property to make a field dynamically update whenever one or more other fields on the same form is changed. When a change is detected, the field will load new data from a JSON web service specified by the URL in the property.

Syntax:

`ajax_value=<url-template>#<json-path-query>`

`<url-template>` is a string that is used as a template for the URL to the web service from which to load the field's content. The template should contain one or more placeholders of the form `{fieldname}` which are replaced by the form value of the corresponding field.

`<json-path-query>` is a jsonPath query describing which part of the JSON response should be used as the new field value.

TIP	You can omit the json path query (everything from `#`), if the HTTP request will just return plain text or HTML.

Triggers

The field will be updated whenever the URL would be changed. The URL template may include variables with the syntax `{fieldname}` that will be replaced by the corresponding field when generating the web service URL. If the values of any of the fields marked as variables changes, it will trigger an update.

Example

Consider the following fields.ini file:

[source,ini

```
[ProgramID]
widget:type=select
vocabulary=programs

[ProgramTitle]
ajax_value="?-action=export_json&-table=Programs&ProgramID={ProgramID}#0.ProgramTitle
```

In the above example, whenever the `ProgramID` field is changed (say to a value of "1"), it will trigger an AJAX request to `index.php?-action=export_json&-table=Programs&ProgamID=1`.

The JSON response will look like:

```
[{"ProgramID":"1", "ProgramTitle":"Some program", ....}]
```

When it receives the response, it will take the `ProgramTitle` attribute of the first result in the JSON response, and place it in the ProgramTitle field. In the above example, it would be "Some program".

TIP You can use the `widget:atts:data-xf-update-condition=empty` directive to **only** update the field value if it is currently empty.

Displaying Field Preview using AJAX

Problem

You want to display some richer feedback to the user based on the value entered into a field. For example, on a field where the user enters a URL, you may want to display some information about the URL so that the user knows that they have entered the correct URL.

Solution

Use the `ajax_preview` directive, which works just like the `ajax_value` directive, except that it displays the result of the AJAX request just below the field as a "preview", rather than in the field itself.

Consider the scenario where you have the following table structure:

```
CREATE TABLE posts (
    post_id INT(11) PRIMARY KEY AUTO_INCREMENT,
    page_url TEXT,
    article_title TEXT,
    article_description
)

CREATE TABLE user_posts (
    user_post_id INT(11) PRIMARY KEY AUTO_INCREMENT,
    post_id INT(11),
    comment TEXT
)
```

The "posts" table is central repository of posts. The user_posts table is for a user to "post" a comment about a post. The idea is that a particular URL should only be imported into the "posts" table once, but many users can post comments around a "post" in the "users_posts" table. We will only give the user direct access to the "user_posts" table, where they will provide the URL they want to post along with a comment about the post.

The challenge here is that the user_posts table doesn't have a "page_url" field - just a post_id field. We could use the depselect widget here, but this adds a step. It would be better to hide the post_id field, and just provide a page_url field, which will automatically populate the "post_id" field with the correct post ID from the posts table.

So for our first step, we'll hide the "post_id" field and add a page_url transient field:

Adding a transient field for the post_url in the users_posts fields.ini file

```
[post_id]
    widget:type=hidden

[post_url]
    transient=1
    order=-1
    widget:description="Please enter the URL to the article you wish to post"
```

When the user enters a URL into the post_url field we want to trigger an AJAX request to a custom action that will:

1. See if a post has already been added at that URL, and return the ID of the post if found.
2. If the post hasn't been added yet, we add it, and return the ID.

In either case the AJAX request should obtain a post ID which can be inserted into the post_id field.

Such a custom action might look like the following:

Sample Action (defined in actions/get_post_id.php) to get a Post ID for a given page url.

```
<?php
class actions_get_post_id {
    function handle($params) {
        header('Content-Type:text/plain');
        if (!@$_GET['page_url']) {
            return;
        }
        //echo $_GET['page_url'];exit;
        $user = getUser();
        $post = df_get_record('posts', array('page_url' => '='.$_GET['page_url']));

        if (!$post) {
            $post = new Dataface_Record('posts', array());
            $post->setValues(array(
                'posted_by' => $user->val('user_id'),
                'page_url' => $_GET['page_url']
            ));
            $res = $post->save();
        }
        echo $post->val('post_id');
    }
}
?>
```

We will use the `ajax_value` directive on the `post_id` field to automatically populate it from that AJAX action when the value of `page_url` changes.

Add the ajax_value directive to populate the post_id field when post_url is updated.

```
[post_id]
    widget:type=hidden
    ajax_value="?-action=get_post_id&page_url={post_url}"
```

Lastly, we want to display a preview of the page content below the page_url field. We will use the `ajax_preview` directive for this. First we'll create an AJAX action to display this preview, given the post ID.

```
<?php
class actions_ajax_post_preview {

    function handle($params) {
        if (!@$_GET['post_id']) {
            return;
        }
        $post = df_get_record('posts', array('post_id' => '='.$_GET['post_id']));
        if ($post) {
            df_display(array('post' => $post), 'ajax_post_preview.html'); ①
        }
    }
}
?>
```

① "ajax_post_preview.html" template should be in the application's templates directory.

Now we can use this from our `ajax_preview directive:

Adding the ajax_preview directive to update the preview automatically with post_id is changed.

```
[post_url]
    transient=1
    order=-1
    widget:description="Please enter the URL to the article you wish to post"
    ajax_preview="?-action=ajax_post_preview&post_id={post_id}"
```

Figure 37. Ajax preview displayed below the post_url field.

Bonus Points

We're not quite done. Our current setup works great for the new record form, because the user will be adding the URL. But if they're editing an existing record, the post_id value will already by set, but the user hasn't entered anything the post_url field (because it is transient). We need to add an `ajax_value` directive to the post_url field so that it auto-populates based on the value of the post_id field.

We'll use the export_json action as our AJAX action so we don't need to create a custom action.

Adding the ajax_value directive to the post_url field so that it auto-populates on the edit form.

```
[post_url]
    transient=1
    order=-1
    widget:description="Please enter the URL to the article you wish to post"
    ajax_preview="?-action=ajax_post_preview&post_id={post_id}"
    ajax_value="?-table=posts&-action=export_json&post_id=={post_id}&-mode=browse&-
limit=1&--fields=page_url#0.page_url"
```

Disabling Client-side Validation

Problem

You want to disable client-side validation for a particular field, but keep the server-side validaton.

Solution

Use the `widget:validation=server` fields.ini directive.

E.g.

```
[myfield]
  widget:validation=server
```

Setting Fixed Number of Rows in the Grid Widget

Problem

You have a grid widget for editing related records on a form. Rather than have it start with only a single row, and have additional rows appear only as the user enters data into the last row, you want it to display a fixed number of rows and have some of the data pre-populated.

Solution

Use the `widget:fixedrows` directive to a specific number of rows, and you can implement the `fieldname__prepareGridData($record, $cols, $data)` delegate method to return the data to

prepopulate the grid with.

fields.ini file

```
[exam_results]
  relationship=exam_results
  widget:type=grid
  widget:fixedrows=3
  widget:cols="exam_name,exam_grade"
```

Delegate class

```
class tables_students {
    function exam_results__prepareGridData($record, $cols, &$data) {
        if (count($data) == 0) {
            $data[] = array('exam_name' => 'Midterm 1', 'exam_grade' => '');
            $data[] = array('exam_name' => 'Midterm 2', 'exam_grade' => '');
            $data[] = array('exam_name' => 'Final', 'exam_grade' => '');
        }
    }
}
```

Adding Actions to Fields

Problem

You want to add an an action button next to a field in your form. For example, suppose you have a text field that stores the URL to a logo for the record, and you want to provide a link for the user to be able to upload an image, and then copy its URL into the field. Ideally the field would have an "upload" button next to it.

Solution

Use the `actions` directive of the fields.ini file to specify an action category on the field, and then define an "upload" action with that category.

E.g.

The fields.ini definition for our field. Notice the `actions` directive.

```
[feed_cover_art_url]
    logo=1
    group=details
    order=-10
    widget:type=text
    display=inline
    actions=feed_cover_art_url_actions
```

The upload_feed_cover_art action definition in the actions.ini file. Notice that it is added to the "feed_cover_art_url_actions" category.

```
[upload_feed_cover_art]
    category=feed_cover_art_url_actions
    label="Upload"
    description="Upload cover art for this feed"
    url="javascript:void(0)"
    onclick="uploadCoverArt(this)"
```

And the result:

TIP

This example uses the `onclick` directive of the action to bind it to a Javascript function. See Triggering Javascript Function with Action for details on triggering javascript functions with actions. In this case, since the script is only needed on the edit form for this table, I would place `xf_script()` call inside the "before_feed_cover_art_url_widget" block:

Defining the before_feed_cover_art_url_widget block inside the table delegate class.

```
function block__before_feed_cover_art_url_widget() {
    xf_script('uploadCoverArt.func.js');
}
```

Then, I would create my Javascript file inside at "js/uploadCoverArt.func.js":

Implementing the uploadCoverArt function in js/uploadCoverArt.func.js

```
window.uploadCoverArt = function(source) {
     // Do the upload cover art stuff here.
};
```

TIP

See the RecordBrowser usage example for an example implementation of the `uploadCoverArt()` function that allows the user to actually select records from a table, and upload images.

List Customization

The following sections form a sort of cook book with recipes for customizing result lists in Xataface.

Adding Option to Filter Result LIst

Problem

You want to add a drop-down list for the user to select filters for the result set.

Solution

Use the `filter` directive in the fields.ini file on any field that you want the filter to be added for.

Field definition in fields.ini file using the filter directive.

```
[test_field]
  filter=1
```

Now, if you navigate to this table's list view, you'll see a drop-down list at the top of the results where you can select all of the distinct values in the `test_field` column.

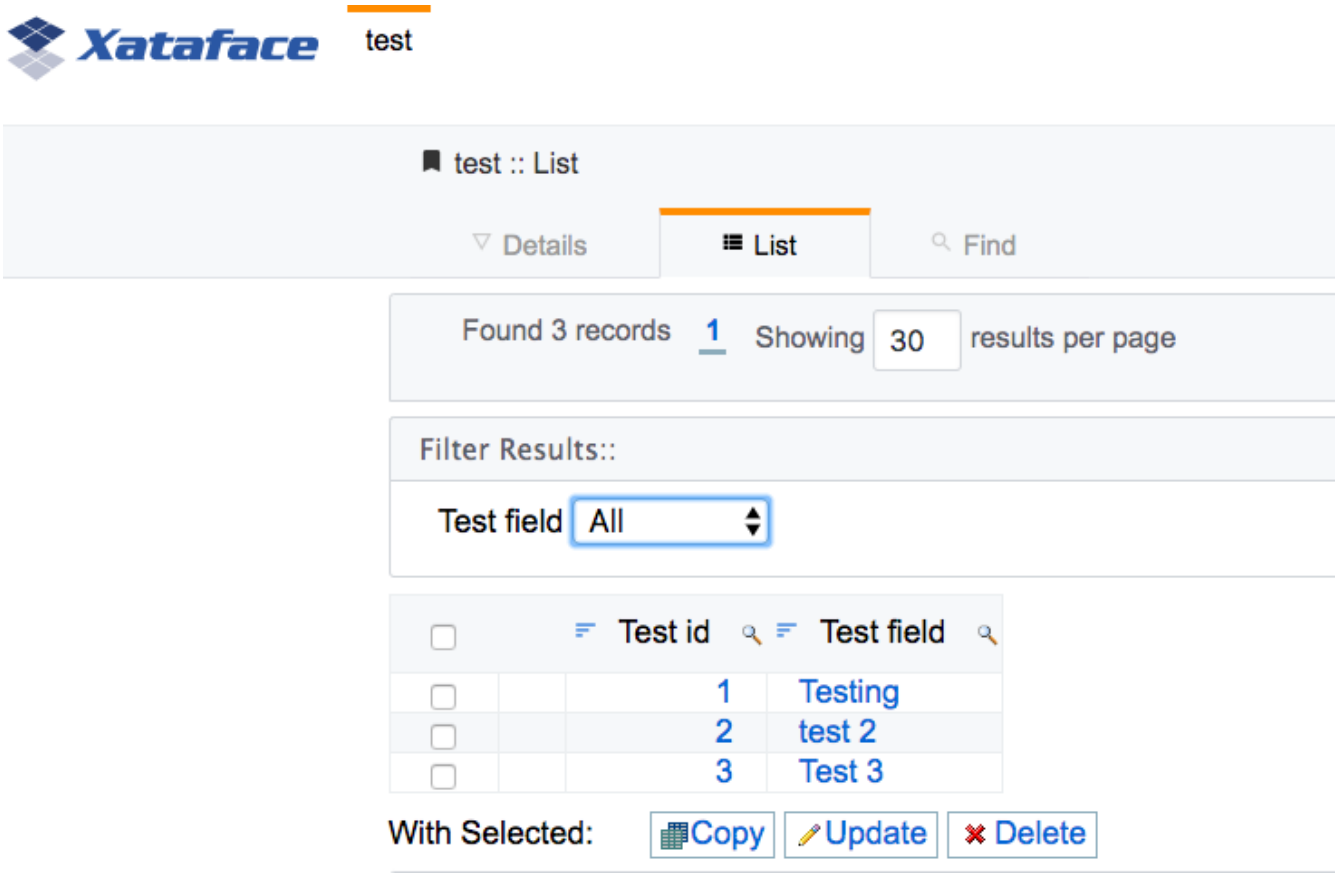


Figure 38. List View when a filter field defined.

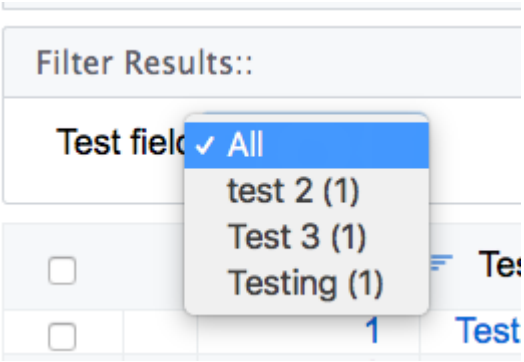


Figure 39. Expanding the filter list, you can see all of the distinct values for the test_field column.

If you select one of the options, it will filter the results to only show those results that match the filter.

Hiding Filter Counts

Problem

You want to hide the counts for each entry in the "filters" drop-down list on the list view. By default when you add a filter list via the `filter` directive, each row has the "count" displayed beside it:

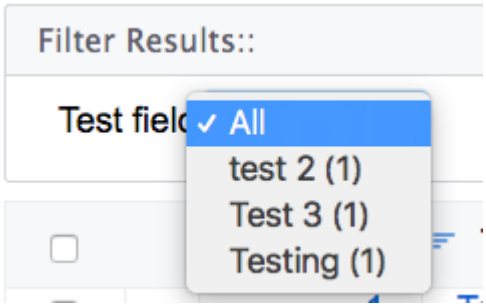


Figure 40. A result filter list. Notice each row has a (1) beside it indicating that there is 1 row matching that filter.

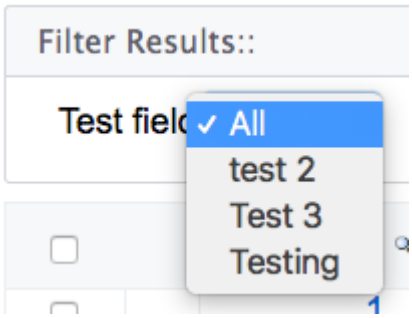
We want to hide this.

Solution

Use the `show_filter_counts` preferences directive to hide these counts as follows. In the `_prefs` section of the `conf.ini` file, add:

```
show_filter_counts=0
```

After this change, the filter lists will look like:



Sorting Filter Results

Problem

Filter lists are sorted by the "filtered" field in alphabetical order. You want to sort the filter lists on some other column.

Solution

Use the `filter.sort.` fields.ini directive to specify the field that the filter should sort on.

E.g.

Sort the "city" filter in descending order

```
[city]
  filter=1
  filter.sort="city desc"
```

Adding CSS Classes to Rows

Problem

You want to add custom CSS classes to the rows of the table in list view.

Solution

Implement the `css__tableRowClass()` method in the table delegate class. Have it return a string with the CSS classes you wish to add.

```php
<?php
class tables_MyTable {
    ...

    function css_tableRowClass(Dataface_Record $rec) {
        if ($record->val('status') == 'approved') {
            return 'status-approved another-css-class';
        } else {
            return 'another-css-class status-pending';
        }
    }
}
```

In the above example, on rows where the 'status' field is a approved you'll see something like:

```
<tr class="status-approved another-css-class">
```

and in other rows you'll see

```
<tr class="another-css-class status-pending">
```

Adding Row Actions

Problem

You want to add a button to each row of the list view to perform some action on that row.

Solution

Define an action with `category=list_row_actions` and `condition="$query['-table'] == 'tablename'`.

E.g.

Defining an action named "play_post" that is displayed in each row of the list view for the `_tmp_newsfeed` table.

```
[play_post]
    condition="$query['-table'] == '_tmp_newsfeed'" ①
    category=list_row_actions
    materialIcon=play_circle_outline ②
    label="Play"
    description="Play narration"
    url="{$record->getURL('-action=play_post')}" ③
    url_condition="$record" ④
    order=1
```

① Only display this action in the `_tmp_newsfeed` table.

② Uses a material icon for the action.

③ The `url` directive specifies the URL where the action should go when the user clicks on it. THe `$record` variable is a `Dataface_Record` object that encapsulates the current row. We call the `getURL()` method to get the URL for that record with the `play_post` action.

④ The `url_condition` directive is necessary to stop Xataface from trying to parse the `url` directive if `$record` is `null`. It is interpretted as a boolean expression. When it evaluates to a falsey value, it will skip parsing the `url` directive.

IMPORTANT	When the user clicks on this action, they will be directed to the URL `index.php?-table=_tmp_newsfeed&-action=play_post&…`. You need to make sure to implement this action handler in `actions/play_post.php`.

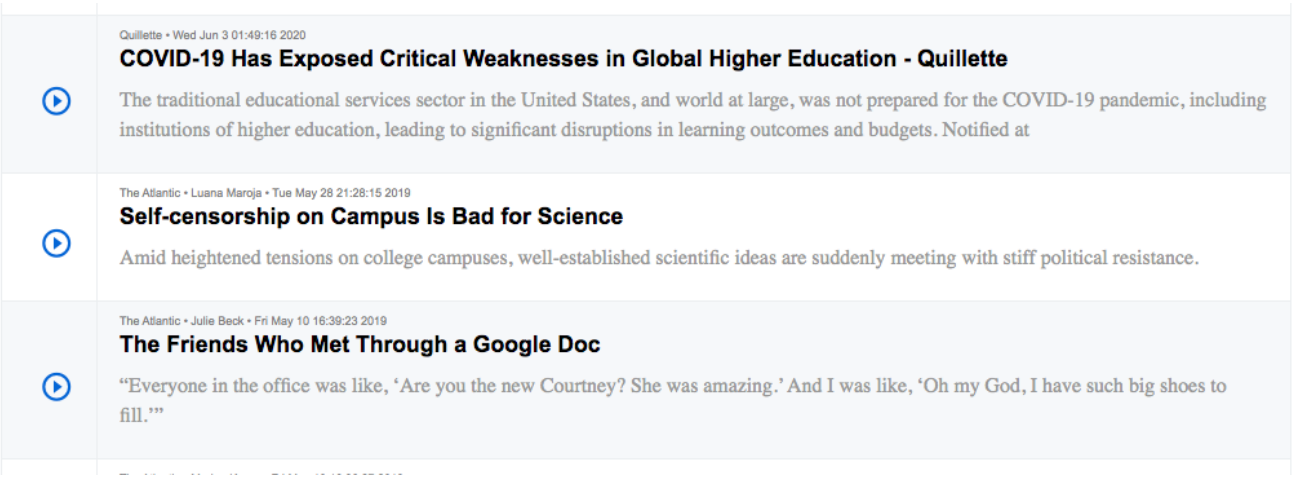


Figure 41. The "play_post" action appears in the left-most column of the list view

Customizing Row Action Styles

Problem

You want to customize the style on a particular action

Solution

Use the `class` directive on the action to specify a custom CSS class on the `<a>` tag of the action. Then use this CSS class to target that button specifically from your stylesheet.

```
[play_post]
    condition="$query['-table'] == '_tmp_newsfeed'"
    category=list_row_actions
    materialIcon=play_circle_outline
    label="Play"
    description="Play narration"
    order=1
    class=large-button
```

Then in your CSS file you can target this action directly:

```
.large-button {
    font-size: 150%;
}
```

Adding Javascript Row Actions

Problem

You want to trigger a Javascript function when the user clicks on a row action instead of just directing the user to a URL.

Solution

Use the `onclick` directive instead of the `url` directive.

See Triggering Javascript Function with Action for an introduction to Javascript actions with a detailed example using the `onclick` handler. The only thing we need to add to make our Javascript action useful, is the ability to retrieve the record ID of the current row. There are two ways to do this:

1. Use the `$record` variable inside the `onclick` directive to obtain details about the record, and add them as parameters to your Javascript function.

e.g.

```
[myaction]
    category=list_row_actions
    onclick="window.playPost('{$record->val('post_id')}');"
```

An alternative way is to make user of the `xf-record-id` attribute that can be found on the `<tr>` tag of the row in list view. If you look at the resulting HTML source of the list view, and drill down to the individual rows of the table, you'll see something like:

```
<tr class="listing odd " xf-record-id="_tmp_newsfeed?post_id=73">
...
```

We can use this inside our Javascript function, as follows. First we pass `this` as an argument to our function. `this` will refer to the `<a>` tag that was clicked.

```
[myaction]
    category=list_row_actions
    onclick="window.playPost(this);"
```

Javascript file definine the function that we want to call from our `playPost` function

```
(function(){
    var $ = jQuery;
    window.playPost = playPost;

    function playPost(el) {
        if (!$(el).attr('xf-record-id')) {  ①
            var trTag = $(el).parents('[xf-record-id]').first();
            if (trTag.length == 0) {
                return new Promise(function(resolve, reject){ ②
                    reject('Not found');
                });
            } else {
                el = trTag; ③
            }
        }
        return new Promise(function(resolve, reject) { ④
            // Do the actual playing here, and either call resolve() or reject()
            // when done.
        });

    }
})();
```

① Check to see if the HTML element that element contains the `xf-record-id` attribute. If it doesn't we need to walk up the DOM until with find an element that does.

② If we didn't find **any** elements with the xf-record-id attribute, we'll just return a promise that rejects.

③ If we found an element with `xf-record-id` we will just use this element instead of the one that was passed into the method. Since our action is called with `window.playPost(this)`, it will always be passing the `<a>` tag to the `playPost()` method, and the `a` tag doesn't have the attribute. The parent `<tr>` tag has the attribute, so this is where we crawl up to.

④ We perform our action on the provided element. In this case, I'm returning a Promise to get us prepared for performing asynchronous actions cleanly.

Making Row Actions Toggleable

Problem

You want to add an action to each row of the list view that can be toggled between two different states. For example, we have functionality to add and remove rows from a playlist. If the record is currently "on" the playlist, we want the action to display "Remove from playlist". If the record is not on the playlist, we want the action to display "Add to playlist".

Solution

Use two different actions: "add_to_playlist" and "remove_from_playlist" and conditionally show

either action depending on whether the record is currently "on" the playlist.

I'll include two different recipes here to achieve this:

1. A fully server-side solution using the `condition` directive.
2. A server **and** client-side solution using Javascript, CSS, and AJAX to add and remove rows from the playlist.

The 2nd option is more complex but yields a better user experience.

Solution 1: Using `condition` directive

We can define our actions as follows: (And assume that our table has an "on_playlist" field that indicates whether or not a record is on the playlist currently.

```
[add_to_playlist]
    condition="$query['-table'] == '_tmp_newsfeed' and $record and !$record-
>val('on_playlist')"
    category=list_row_actions
    label="Add to Playlist"
    materialIcon="playlist_add"
    order=2
    onclick="window.addToPlaylist(this)"


[remove_from_playlist]
    condition="$query['-table'] == '_tmp_newsfeed' and $record and $record-
>val('on_playlist')"
    category=list_row_actions
    materialIcon="remove_from_queue"
    order=3
    onclick="window.removeFromPlaylist(this)"
    label="Remove from Playlist"
```

The key here is in the `condition` directives of these actions. The `add_to_playlist` is set to appear only when we are on the `_tmp_newsfeed` table **AND** the record is not on the playlist. The `remove_from_playlist` action is set to appear only when the record is on the playlist.

IMPORTANT

In both actions we need to ensure that `$record` exists before calling `$record->val('on_playlist')` otherwise the application will crash in cases where there is NO record in the current context. I.e. We need to have

```
$record and $record->val('on_playlist')
```

and not just

```
$record->val('on_playlist')
```

There is a lot hidden in this solution inside the `addToPlaylist()` and `removeFromPlaylist()` Javascript functions. These are responsible for actually adding and removing records from the playlist. See Using AJAX To Modify Row Records for an example using AJAX to do this.

Solution 2: Using CSS to Show/Hide Actions

The first solution relies on the `condition` directive to show or hide our actions. However, this directive is processed on the server-side, so we would need to reload the whole page if we wanted to update state. We can offer a better user experience by using CSS to show/hide the actions.

The gist of this solution is to:

1. Add a CSS class, `on-playlist`, to the `<tr>` tag (i.e. each record row) to indicate whether that record is currently on the playlist.
2. Add CSS classes to the two actions, so that we can easily target them from a stylesheet.
3. Add custom CSS to show/hide actions depending on whether the `<tr>` tag includes the `on-playlist` CSS class.
4. The `addToPlaylist()` function removes the `on-playlist` CSS class from the `<tr>` tag, and the `removeFromPlaylist()` adds it.

Adding the CSS class to the `<tr>` tag:

TIP See Adding CSS Classes to Rows for more details on adding CSS classes to rows.

Method from the table delegate class that causes the `<tr>` tag to have the `on-playlist` CSS class if the record is on the playlist.

```
function css__tableRowClass(Dataface_Record $rec = null) {
    if ($rec->val('on_playlist')) {
        return 'on-playlist';
    }
    return '';
}
```

Adding CSS classes to the two actions:

TIP See [custom-row-actions-styles] for more details on using the `class` directive to customize action styles.

```
add_to_playlist]
    condition="$query['-table'] == '_tmp_newsfeed'"
    category=list_row_actions
    label="Add to Playlist"
    materialIcon="playlist_add"
    order=2
    onclick="window.addToPlaylist(this)"
    class="add-to-playlist" ①

[remove_from_playlist]
    condition="$query['-table'] == '_tmp_newsfeed'"
    category=list_row_actions
    materialIcon="remove_from_queue"
    order=3
    onclick="window.removeFromPlaylist(this)"
    label="Remove from Playlist"
    class="remove-from-playlist" ②
```

① We add the `add-to-playlist` CSS class to the `<a>` tag for the "add" action.

② We add the `remove-from-playlist` CSS class to the `<a>` tag for the "remove" action.

Defining Styles to Show/Hide Actions

Now that we have our CSS actions defined, we'll be dealing with HTML like:

```
<tr class="on-playlist">
  ....
  <a class="remove-from-playlist" ...> ... </a>

  <a class="add-to-playlist"...> ...</a>
```

Now we can target our `<a>` tags with the following CSS directives in our stylesheet.

```
/* Hide add-add-to-playlist when tr has on-playlist class */
tr.on-playlist .add-to-playlist {
    display:none;
}

/* Hide remove-from-playlist by default */
span.row-actions .remove-from-playlist {
    display:none;
}

/* Show remove-from-playlist when tr has on-playlist class */
tr.on-playlist .remove-from-playlist {
    display:block;
}
```

Adding/Removing CSS classes using Javascript

As we've seen above, our actions will trigger the `addToPlaylist()` and `removeFromPlaylist()` functions respectively. We just need add/remove the CSS class as appropriate here.

e.g.

```
function addtoPlaylist(el) {
    if (!$(el).attr('xf-record-id')) {
        var trTag = $(el).parents('[xf-record-id]').first();
        if (trTag.length == 0) {
            return new Promise(function(resolve, reject){
                reject('Not found');
            });
        } else {
            el = trTag;
        }
    }
    $(el).addClass('on-playlist'); ①
    return new Promise(function(resolve, reject) {
        // Do the actual playing here, and either call resolve() or reject()
        // when done.

        addToPlaylistImpl(el.attr('xf-record-id')).then(function(data) {
            // success
            resolve(data);
        }).catch (function(data) {
            // Failed
            $(el).removeClass('on-playlist'); ②
            reject(data);
        });;
    });
}
```

```
function removeFromPlaylist(el) {
    if (!$(el).attr('xf-record-id')) {
        var trTag = $(el).parents('[xf-record-id]').first();
        if (trTag.length == 0) {
            return new Promise(function(resolve, reject){
                reject('Not found');
            });
        } else {
            el = trTag;
        }
    }
    $(el).removeClass('on-playlist');③
    return new Promise(function(resolve, reject) {
        // Do the actual playing here, and either call resolve() or reject()
        // when done.

        removeFromPlaylistImpl(el.attr('xf-record-id')).then(function(data) {
            // success
            resolve(data);
        }).catch (function(data) {
            // Failed
            $(el).addClass('on-playlist'); ④
            reject(data);
        });;
    });
}
```

① Optimistically add the 'on-playlist' CSS class when user clicks the "add" button. This will toggle the actions immediately.

② If the action failed, we revert the CSS class back, by removing the "on-playlist" CSS class.

③ Optimistally remove the 'on-playlist' CSS class when user clicks the "remove" button. This will toggle the actions immediately.

④ If the action failed, we revert the CSS class back, by re-adding the "on-playlist" CSS class.

Using AJAX To Modify Row Records

Problem

You need to perform a server-side action when the user clicks on a row action. E.g. From Making Row Actions Toggleable, we needed to add and remove the row record from the playlist.

Solution

Create a custom action handler that performs the the function, and returns JSON, and write a Javascript function that calls this AJAX action.

TODO: Need to write this solution

Specifying Default Sorting

Problem

You want the records in a particular table to be sorted on a particular column by default.

Solution

Use the `table.default_sort` property of the fields.ini file.

Using the `table.default_sort` property in the fields.ini file to sort records in descending order on the date_posted field.

```
table.default_sort=date_posted desc
```

TIP See Setting Default Sort for Related Lists to learn how to set the default sort order on a related tab.

Searching

The following section include tips on configuring search support in Xataface application.

Case-Sensitive Searches

Problem

You searches on a particular column to be case-sensitive. (E.g. If the user searches for "Bob", it should match "Bob" but not "bob").

Solution

Use the `collate` fields.ini directive to "utf8_general_cs" (or any other supported collation that is case-sensitive.

E.g.

fields.ini file, specifying that searches of the "name" field should be case sensitive.

[source,ini

```
[name]
   collate=utf8_general_cs
```

Discussion

By default, the case-sensitivity of searches depends on the collation of the underlying table and column in MySQL. If the column was defined with a case-sensitive collation (e.g. `utf8_general_cs`), then all searches on this column will be case-sensitive. If, however, it was defined with a case-insensitive collaction (e.g. `utf8_general_ci`), all searches will be case-insensitive. If you want to change the behaviour of the app, you could simply change the underlying collation. But in some cases you may not want to modify the table structure (or you won't have access to the table structure). In such cases, the "collate" directive is helpful.

Explicitly Specifying Case-sensitivity of a Search

Problem

You want to perform a case-sensitive search on a field that has a case-insensitive collation.

Solution

Wrap the query value in a command wrapper, and use the "cs" command to specify "case-sensitive" (or "ci" to specify case-insensitive").

E.g.

If you want to search for "Bob" in the name field, enter the following in the search field for "Bob".

```
#Bob#cs
```

If you, instead wanted to explicitly perform a case-insensitive search you would enter

```
#Bob#ci
```

Making Columns Not-Searchable

Problem

The main search box at the top of the application searches for matches in all of the char, varchar, and text fields by default. What if you want to only match against specific fields?

Solution

Use the `not_searchable` fields.ini directive on any field cause searches **not** to match using that column.

E.g. If I don't want the search field to match on a the "private_info" column, I could do the following:

fields.ini directives, disabling search matching on the private_info field

```
[private_info]
    not_searchable=1
```

Now, if the user enters a search in the top search box, it won't match against the "private_info" column.

You can "inverse" this behaviour, and make all of the columns not searchable by default, using the `__global__` section.

E.g.

Making all fields unsearchable except for the `myfield` column.

```
[__global__]
    not_searchable=1

[myfield]
    not_searchable=0
```

IMPORTANT

`not_searchable` only affects the top search box (i.e. the `-search` query parameter). Users can still peform "finds" on a field with `not_searchable=1`by directly performing a find on that column using either the "advanced find" form, column search, filters, or via URL conventions (e.g. `myfield=someval`).

If you want to make a field completely "un-findable", you should use the `not_findable` directive.

File Uploads

The following sections pertain to management of file uploads.

Specifying Content Disposition of File Download

Problem

By default the contents of `blob` fields and container fields are downloaded as a file download in the browser. You want the browser to navigate to the file instead of downloading it.

Solution

Use the `contentDisposition=inline` fields.ini directive.

```
[myfield]
    contentDisposition=inline
```

Now, when users click on the link for this field, the browser will navigate to the field content.

TIP The `contentDisposition` directive will be used to set the `Content-Disposition` HTTP header. Learn more about this header here.

Generating Thumbnails

Problem

I want to automatically resize uploaded images to specific dimensions.

Solution

Use the `transform` property on the Container field in the fields.ini file.

```
[file]
    Type=container
    widget:description="Select image to upload"
    transform="itunes300 fill:300x300; itunes1400 fill:1400x1400"
```

In the above snippet, I've defined two thumbnail sizes for uploaded images:

1. **itunes300**, which resizes images to 300 pixels wide and 300 pixels high, and crops the image so that it fills the entire image (so it may cut off some of the image on top/bottom or left/right.
2. **itunes1400**, which resizes images to be 1400 pixels high and wide. It also fills the entire image, so may cut off some of hte image on top/bottom or left/right.

The Right Thumbnail for the Right Occasion

The **transform** directive will cause images to be automatically resized at the time that the images are uploaded, but it doesn't specify how and when the thumbnails are used. You might want a small (100px) thumbnail used when displaying the record in list view, and a slightly larger image (640x480) used in the view tab. In the above example we've defined two thumbnail sizes "itunes300" and "itunes1400".

The default behaviour is to display the **first** thumbnail type defined in all situations. If you want a particular action to use a different thumbnail by default, then you can use the `thumbnail.ACTIONNAME` fields.ini directive to specify this.

For example, if you want the "view" action to use the "itunes1400" thumbnail, you would add the following:

```
thumbnail.view=itunes1400
```

So the full snippet becomes:

```
[file]
    Type=container
    widget:description="Select image to upload"
    transform="itunes300 fill:300x300; itunes1400 fill:1400x1400"
    thumbnail.list = itunes1400
```

Storing Files on Amazon S3

Problem

Rather than storing uploaded files directly on the server file system, you want to store them on Amazon S3 for scalability purposes.

Solution

Use the s3 module.

Installation Instructions

You can find installation instructions for the s3 module in the README.

NOTE	The S3 module requires the Amazon AWS SDK for PHP which you can install in your project using Composer.

Configuration

Once the module is installed, you need to add some configuration to your app's conf.ini file.

```
[modules_s3]
  key=YOUR_AWS_API_KEY      ; Change to your AWS key
  secret=YOUR_SECRET_KEY    ; Change to your AWS secret key
  region="us-east-1"        ; Change to the region of your S3 buckets
```

fields.ini Configuration

In addition to the conf.ini configuration, you need to add the `s3.bucket` directive to any Container fields that you wish to store on S3, to specify the name of the bucket where it should store the files.

Example fields.ini configuration

```
[file]
    Type=container
    s3.bucket=YOUR_BUCKET
    s3.key.prefix=FILE_PREFIX/
    widget:description="Select image or video to upload"
    transform="itunes300 fill:300x300; itunes1400 fill:1400x1400"
    thumbnail.view=itunes1400
```

The key properties in the above example are:

s3.bucket

The name of the bucket where your files should be stored.

s3.key.prefix

A prefix for the file names that is prepended to the autogenerated file names in S3.

> **TIP** The S3 module fully supports Xataface's thumbnail feature, as demonstrated in the example above with the "transform" and "thumbnail.view" directives.

HTTP Request Handling

The following sections include tips for configuring how Xataface applications respond to HTTP requests. This includes topics such as event routing, response types, etc...

Specifying a Default Action

Problem

You want your application to use a default action other than the Xataface default, if the user doesn't explicitly provide an "-action" parameter.

Solution

Use the `default_action` conf.ini directive.

E.g.:

Setting a default action at the beginning of your conf.ini file.

```
default_action=find
```

This would result in the user being directed to the "find" action by default.

NOTE	If "default_action" is not specified, then Xataface will use the "list" action as the default.

Using Different Default Action Depending on Table

Problem

You want to specify a default action only for one table in your application. The "default_action" conf.ini directive sets the default action application-wide.

Solution

Use the `default_action.tablename` directive in your conf.ini file. (`tablename` should be replaced with your desired table name. For example, suppose I want to make the "view" action the default action for the "posts" table, then I would define the following at the beginning of the conf.ini file:

```
default_action.posts=view
```

Specifying Default Query Parameters for Default Actions

Problem

You want to supply additional query parameters for your default actions. These parameters should only be applied when the default action is used.

Solution

Use the `default_params.tablename` directive. E.g.

Setting some default query parameters for when the default action is used on the posts table.

```
default_action.posts=view
default_params.posts="post_id=2&foo=bar"
```

These default parameters will be used if the user requests a URL like:

```
index.php?-table=posts
```

The above would effectively be the same as:

```
index.php?-table=posts&-action=view&post_id&foo=bar
```

IMPORTANT

The `default_params.tablename` directive only applies when the default action is being used. E.g. In the above example, if the user requests:

```
index.php?-table=posts&-action=view
```

The default params would not be applied because the "-action" has been specified explicitly by the user.

The above example shows the `default_params.posts` directive specified as a URL-encoded string. However, you can also define the parameters as a section.

E.g.

```
[default_params.posts]
  post_id=2
  foo=bar
```

This would be equivalent to

```
default_params.posts="post_id=2&foo=bar"
```

Showing the "Edit" Tab By Default for Record Details

Problem

By default, when the user clicks on a record to see its details, they will be shown the "View" tab. You want to show them the "Edit" tab instead.

Solution

Use the `default_browse_action` directive of the conf.ini file. This directive is analagous to the `default_action` directive, except it is only applied when the user requests the "browse" action, which is the default action used for displaying record details.

The direct solution to our problem would be the following at the beginning of the conf.ini file.

```
default_browse_action=edit
```

TIP

Just like the `default_action` directive, you can specify a different default browse action for different tables using the `default_browse_action.tablename` directive. E.g.

Only setting the default browse action to edit on the "posts" table.

```
default_browse_action.posts=edit
```

Setting Default Query Parameters for the `browse` Action

Problem

You have specified a custom action that you are using as the default "browse" action for your table via the `default_browse_action.mytable=myaction` directive. However your action requires some additional query parameters to work correctly. You need to add these default parameters somehow.

Solution

Use the `default_browse_params.tablename` directive to add parameters to the `browse` action. This directive works similarly to the `default_params.tablename` directive. E.g. Let's add a "foo" query parameter by default when the user accesses the "browse" action on the "posts" table.

```
default_browse_action.posts=myaction
default_browse_params.posts="foo=bar"
```

TIP

The above example shows the `default_browse_params.posts` directive specified as a URL-encoded string. However, you can also define the parameters as a section.

E.g.

```
[default_browse_params.posts]
  foo=bar
  fuzz=bazz
```

This would be equivalent to

```
default_browse_params.posts="foo=bar&fuzz=bazz"
```

Setting a Related Records Tab as the Default Browse Action

Problem

When the user clicks on a record in the "list" view, you want them to see a related record tab instead of the "View" tab by default.

Solution

We can achieve this by way of the `default_browse_params.tablename` conf.ini directives. For example, suppose we wanted to show the "authors" relationship of the "posts" table by default when a post's details are shown:

Specifying that the "authors" relationship should be shown by default when viewing a record in the posts table.

```
default_browse_params.posts="-relationship=authors"
```

Notice here, that we didn't actually need to use the `default_browse_action` parameter to specify that it should use the `related_records_list` action (which is the action used to display a related list). Xataface infers this by the presence of the "-relationship" directive.

Tables, Views, and Queries

The following chapters pertain tables, views, and queries. It includes tips on how to set up your tables, views, and queries for optimal performance and flexibility.

Accessing an SQL query like a Table

Problem

You want to create a user-specific SQL query and navigate its results as if it were a proper table. You want the results of this table to be different for different users.

Solution

There are a few strategies that you could use for this. You could simply use a MySQL view, and set up a security filter on the table. In some cases, this may not be flexible enough, though. In such cases you can use a dynamic query.

You can create a dynamic query as follows:

1. Add a directory to your application's "tables" directory named `_tmp_{NAME}` where `{NAME}` is the name of your query.
2. Create a `fields.ini.php` (or fields.ini) file inside this directory with at least a `__sql__` directive. This `__sql__` directive is were you specify the SQL query that should be used for the contents of the table.
3. Specify the primary key for the table by adding a `Key=PRI` directive to one of the fields in the fields.ini file. You can inject the user id of the currently logged in user with the `{{USER_ID}}` string. This will be replaced by the user ID.

For example, let's add a dynamic query called "my_posts", which is basically just a list of posts that the current user has posted. This provides an easy way for the user to generate a feed of his own posts.

First we'll create the `_tmp_my_posts` directory, inside the "tables" directory. Then we'll add our `fileds.ini.php` file:

fields.ini.php file

```
;<?php exit; // To prevent this file from being served
__sql__ = "select * from posts where posted_by='{{USER_ID}}'"

[post_id]
   Key=PRI
```

TIP

You can alternatively create a delegate class for your table by creating a delegate class (`tmp_my_posts.php`) and define an `__sql_()` method.

E.g.

```
<?php
class tables__tmp_my_posts {
    function __sql__() {
        return "select * from posts where posted_by='{{USER_ID}}'";
    }
}
```

You can access this "table" just as you would, a normal table. Just remember that the full table name is "_tmp_my_posts". E.g. If you go to "index.php?-table=_tmp_my_posts", it will show you these results.

How Dynamic Queries Work

When xataface receives a request for a table whose name starts with "*tmp*" it begins by performing the `__sql__` and loading the results into a temporary table. This operation is very fast because temporary tables are typically stored in RAM, and they are only usable in the current session (i.e. other users cannot see this table).

IMPORTANT

Dynamic query tables are ephemeral, so any changes you make to is will disappear at the end of the request. This means that you cannot insert or update records into these tables.

Deployment and Administration

The following section includes recipes for administration and deployment of your Xataface applications. This includes things like managing development, staging, and production servers, and dealing with versions and upgrades.

Where is my php.ini file?

Problem

You need to change a setting in your php.ini file but you don't know where it is, or your server has multiple php.ini files and you don't know which one is the correct one.

Solution

Create a file inside your application directory named "phpinfo.php" with the following contents:

```
<?php
phpinfo();
```

Load this page in your web browser and search for "php.ini".

	I/Applications/XAMPP/xamppfiles/include/ncurses -ar
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/Applications/XAMPP/xamppfiles/etc
Loaded Configuration File	/Applications/XAMPP/xamppfiles/etc/php.ini
Scan this dir for additional .ini files	(none)

Now open that file and make your changes.

Using Different Config Files on Different Servers

Problem

You want your production server to use different configuration options than your development server. For example, perhaps you want to enable the output cache on the production server, but not on the development server.

Solution

Use the `__include__` directive in your conf.ini file to load your server-specific configuration options from a different config file. Use the `{host}` placeholder to specify a different config file depending on the host name of the current request.

E.g.

conf.ini.php file

```
;<?php exit;
__include__=hosts/{host}/{host}.conf.ini.php

[_tables]
  table1=My First Table
  table2=My Second Table
```

`hosts/localhost/localhost.conf.ini.php` *Config file when application is accessed via localhost.*

```
;<?php exit;
;; Development Server Config
[_database]
    host=localhost
    name=mydb
    user=root
    password=mypass

[_output_cache]
    enabled=0 ;; Disable output cache on development server
```

`hosts/example.com/example.com.conf.ini.php` *Config file when application is accessed via localhost.*

```
;<?php exit;
;; Production Server Config
[_database]
    host=localhost
    name=mydb
    user=mydbuser
    password=mydbuserpass

[_output_cache]
    enabled=1 ;; Enable output cache on production server
```

User Interface and Themes

The following sections cover user interface considerations such as themes, UI configuration, and customization.

Responsive UI

Starting in Xataface 3.0, the entire the user interface has been revamped to provide a good mobile experience out of the box. Every aspect of the UI has been reviewed and improved to fit user expectations of a mobile application. Elements that don't make sense in a mobile interface have been "hidden" and replaced with other more suitable elements.

Here are a few snapshots of the new look:

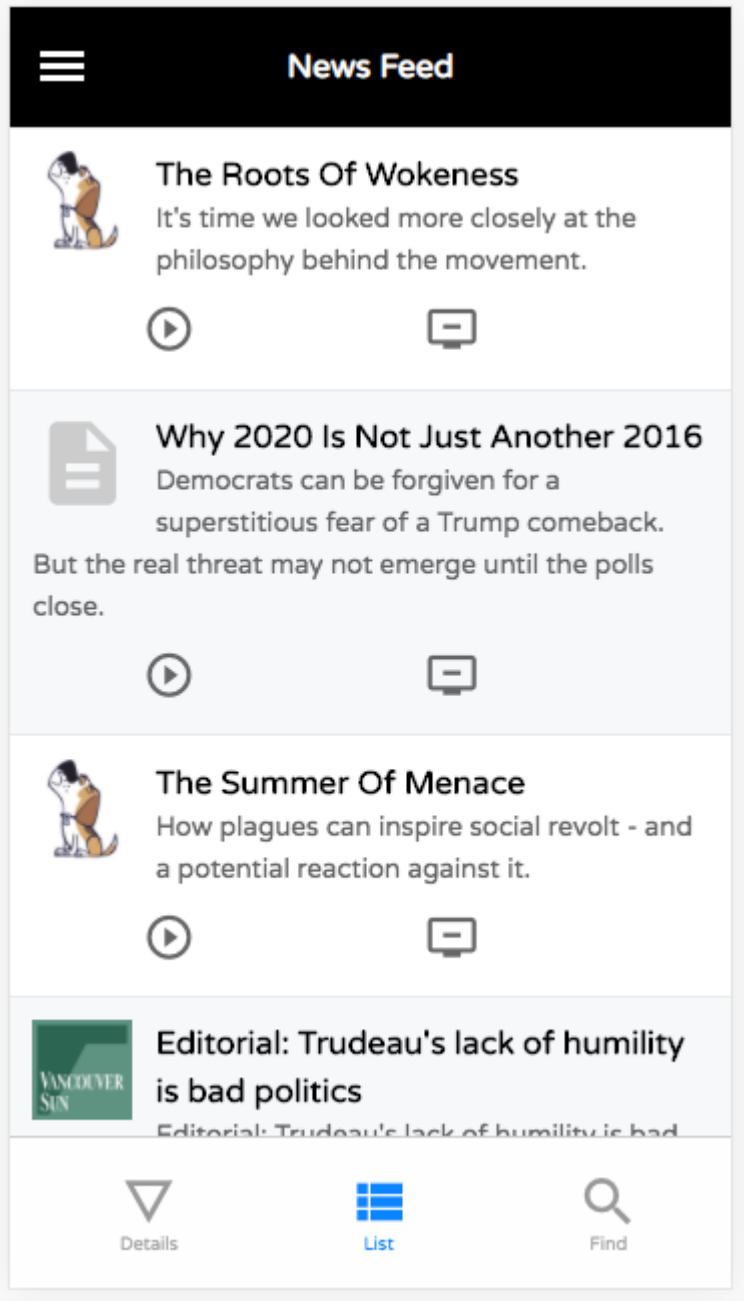


Figure 42. List view

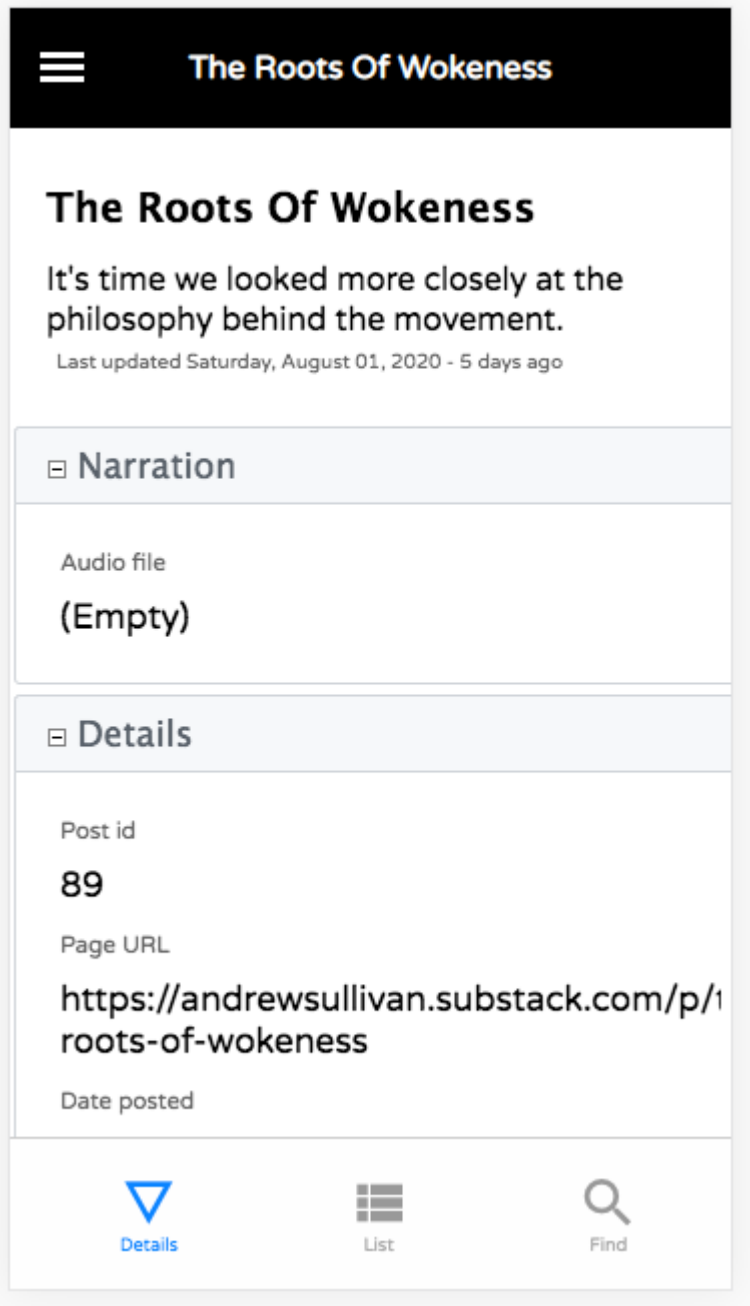


Figure 43. Details view

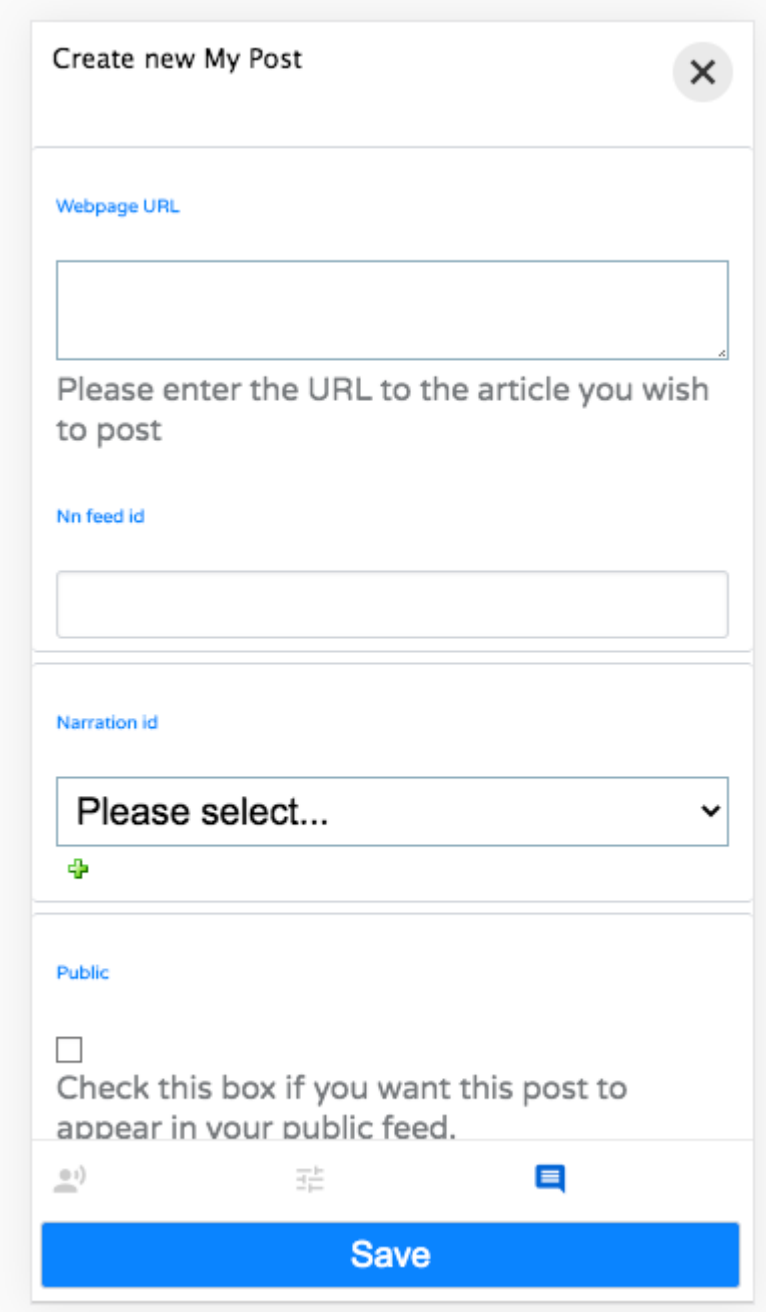


Figure 44. New Record Form

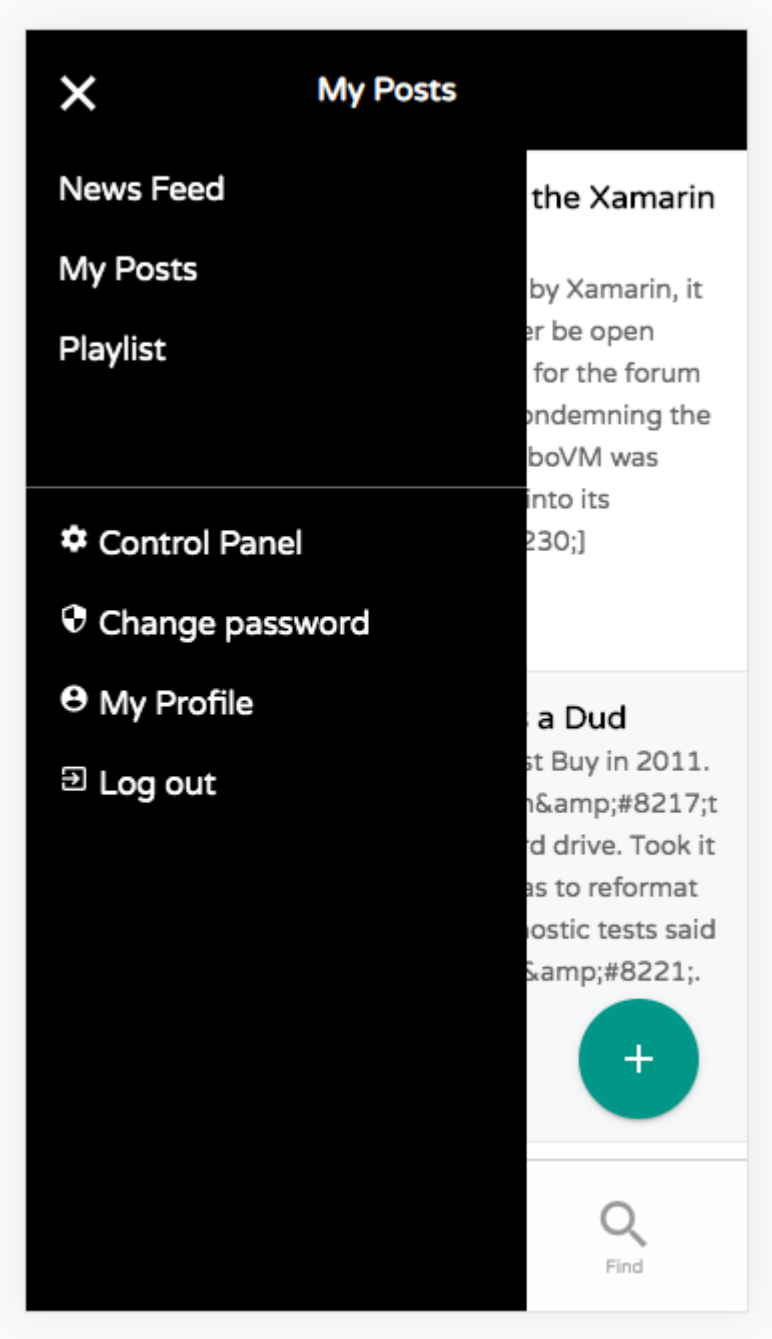


Figure 45. Hamburger Menu

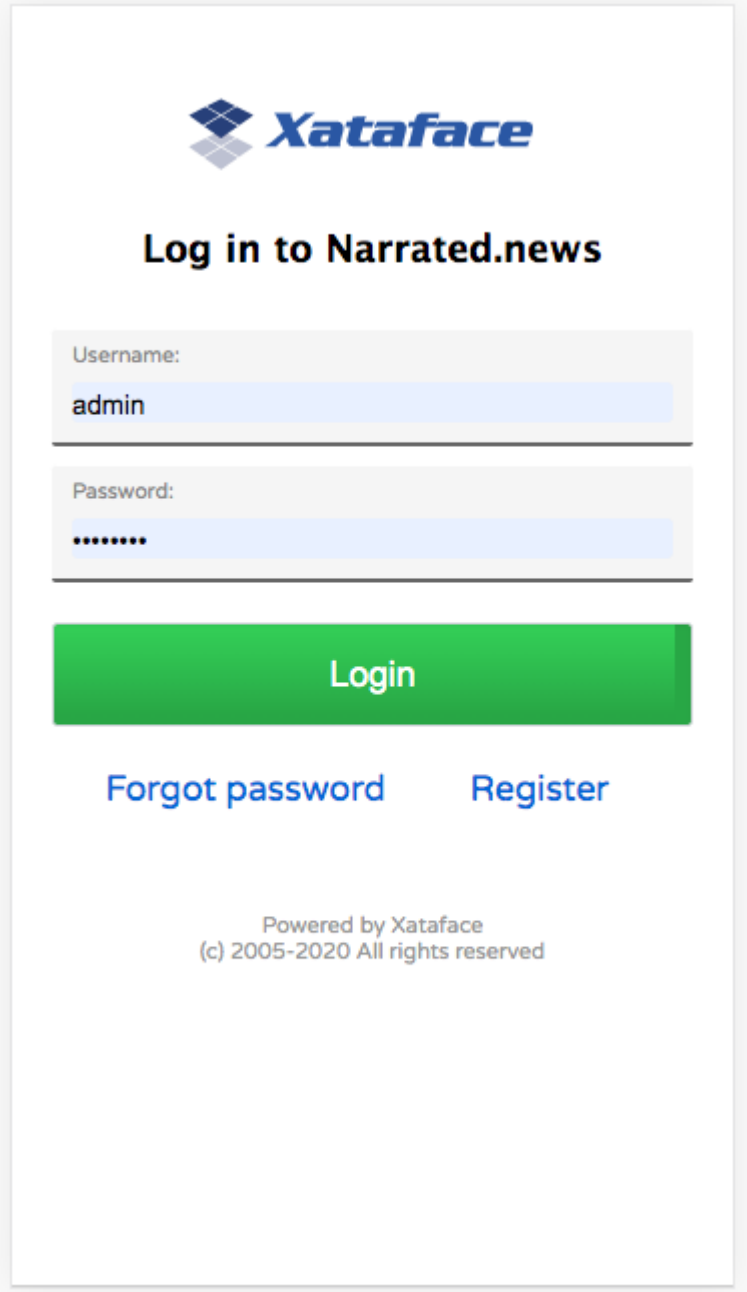


Figure 46. Login form

You'll notice quite a few differences from the desktop theme:

1. Instead of a table with columns, the "list" view renders similar to the view you would expect in a mobile news, mail, or social media app. Each row includes a title, description, icon, and set of actions that can be performed.
2. The familiar "Details", "List", and "Find" tabs are still there, but have been moved to the bottom of the screen and have been restyled to look more like the tabs in native mobile apps.
3. The navigation menu (to select the **table**), and personal tools menu ("logout", "profile", etc..) are now contained in hamburger slide-out menu; a common pattern in mobile apps.
4. Table actions (e.g. "New Record", "Delete", etc..) have been moved into a FAB (floating action button) in the lower right that hovers over the screen. This is also a common element in mobile apps.
5. Forms are laid out in a single column, and the "Save" button has been moved to a fixed position at the bottom of the screen to streamline usability.

Switching Between Mobile And Desktop Theme

The theme is fully responsive, meaning that it will automatically render the appropriate UI based on the size of the window. Currently the threshold occurs as a window width of 768 pixels. If the window is wider than that, it will render the desktop UI. Narrower, and it will render the mobile theme.

When in "mobile" mode, the `body` tag will include the "small" CSS class. When in "desktop" mode, it will include the "large" CSS class. This will allow you to define CSS styles that target mobile or desktop separately. E.g.

Using CSS to target styles to mobile or desktop. The following would render `<h1 class="mystyle">My heading</h1>` *as blue on mobile and green on desktop.*

```
/**
 * red style for h1 tags.  Not used at all because it is overridden
 * by following two rules on mobile and desktop.
 */
h1.mystyle {
    color:red;
}

/**
 * Blue style applied on mobile only.
 */
body.small h1.mystyle {
    color:blue;
}

/**
 * Green style applied on desktop only.
 */
body.large h1.mystyle {
    color:green;
}
```

A Javascript event is fired both when entering and exiting mobile mode. You can use these events in your Javascript code to be notified when transitioning between modes. E.g.

The `xf-mobileenter` and `xf-mobileexit` events are fired when entering and leaving mobile mode respectively.

```
// Event that is fired when the window enters "mobile" mode
window.addEventListener('xf-mobileenter', function() {
    // Do stuff required to adjust to the change to mobile mode
});

// Event that is fired when the window exits "mobile" mode
window.addEventListener('xf-mobileexit', function() {
    // // Do stuff required to adjust to the change to desktop mode
});
```

For more information about these events, see Javascript Events.

Mobile Header and Footer

The header and footer components of the mobile theme have "fixed" positions.

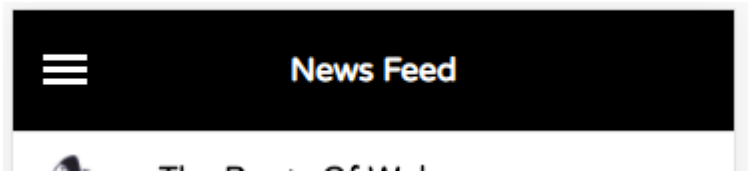


Figure 47. The mobile header

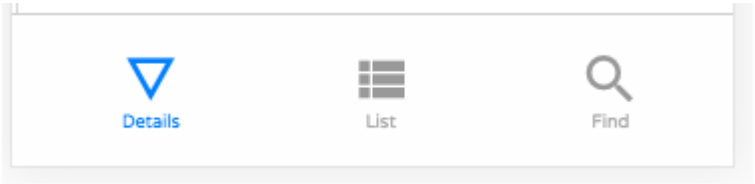


Figure 48. The mobile footer

The size of these components may change as it is possible to add and remove contents from these components. It is also possible to hide them in some contexts.

Xataface automatically configures the body padding so that these do not obscure other content on the page. If you are using fixed or absolute positioning, you should be aware of these components. You can use the `xf-viewport-changed` Javascript event be be notified when the size of the header or footer is changed. For example, the FAB component is designed to hover in the lower right corner of the page, but it shouldn't overlap the bottom tabs, so it needs to be positioned relative to the "mobile-footer" component. It uses the following code to accomplish this:

The FAB component makes use of the `xf-viewport-changed` event to reposition itself when the mobile footer or header is changed.

```
function updatePosition() {
    var zoom = document.querySelector('.zoom');

    if (zoom) {
        var footer = document.querySelector('.mobile-footer');
        if (footer) {
            zoom.style.bottom = (footer.offsetHeight + 10) + "px";
        }
    }
}
window.addEventListener('xf-viewport-changed', updatePosition);
```

Hiding the Header and Footer

You can hide the mobile-header and/or mobile-footer components by adding "no-mobile-header" and "no-mobile-footer" CSS classes to the `body` tag respectively.

Hiding the Header from Javascript

```
document.body.classList.add('no-mobile-header');
```

Hiding the footer from Javscript

```
document.body.classList.add('no-mobile-footer');
```

TIP

You can use the `addBodyCSSClass()` method of the `Dataface_Application` class to add CSS classes to the `body` tag from PHP. E.g.

```
$app = Dataface_Application::getInstance();
$app->addBodyCSSClass('-no-mobile-header');
```

NOTE

Certain Xataface actions hide the header, footer, and FAB by default. Some examples include the login, edit, and new record forms.

Adding Content to the Footer

The mobile footer is a handy place to add content that you want to display in a fixed position at the bottom of the screen. The following snippet shows how to add a component to the top/beginning of the mobile footer.

```
var mobileFooter = document.querySelector('.mobile-footer');
jQuery(mobileFooter).prepend(myElement);
```

Table Tabs

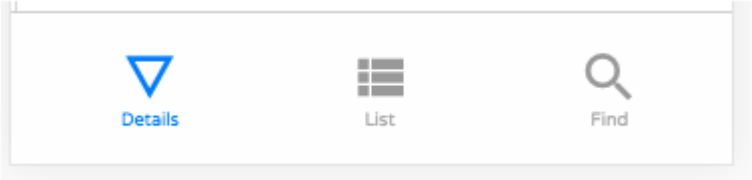


Figure 49. The mobile table tabs.

The table tabs (i.e. "Details", "List", and "Find") are rendered in the mobile footer by default. These are taken from the same actions as the table tabs in the desktop UI. You can add/remove options to this menu by adding actions to the "table_tabs" category.

TIP	For best results, make sure that the action includes a `materialIcon`. See Using Material Icons for more details on material icons.

Like the header and footer, you can hide the table tabs in mobile using the "no-table-tabs" CSS class on the "body" tag.

For example, the "edit" action includes the following snippet to remove the header, fab, and table tabs.

```
$app->addBodyCSSClass('no-table-tabs');
$app->addBodyCSSClass('no-mobile-header');
$app->addBodyCSSClass('no-fab');
```

FAB (Floating Action Button)

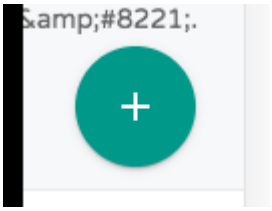


Figure 50. FAB with one action

Figure 51. FAB with more than one action is rendered with a menu icon. Clicking on it expands it to show the individual actions.

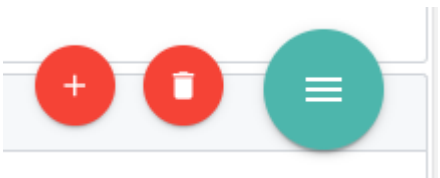


Figure 52. FAB expanded to show actions.

The **table actions menu** is rendered using a floating action button. You can hide this by adding the "no-fab" CSS class to the `body` tag.

To add options to the FAB, simply add actions to the `table_actions_menu` category, and make sure they have a `materialIcon` directive. See Using Material Icons for more about material icons.

TIP

Actions in the `table_actions_menu` category are shared between the desktop and mobile themes. You can make the action desktop-only by adding "#large#" to the `tags` property of the action. E.g.

```
;An action that only shows up on desktop
[myaction]
    category=table_actions_menu
    label="My Action"
    tags="#large#"
```

Customizing the List View

The rows of the list view use different mark-up in mobile than in desktop. Both versions are rendered in HTML, but only one of them is visible at any given time.

There are 4 core content elements of a row in the mobile theme:

Figure 53. A row in the mobile theme.

Logo

A logo or icon that is rendered on the left side. You can customize this image by setting a field of your data base as the "logo". The logo field should contain the URL to an image. You can use a container field for this, a regular field, or a calculated field. E.g.

Logo field defined in fields.ini file.

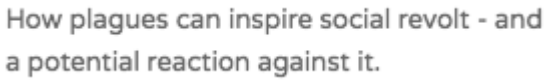
```
[mylogofield]
    logo=1
```

Title

The Summer Of Menace

The title field. There are many ways to define the title field. Xataface uses some heuristics to guess the field, but you can configure this explicitly using the `getTitle()` delegate method or the `title` fields.ini property.

Description



The description field. There are many ways to define the description field. As with "title", Xataface uses some heuristics to guess the most appropriate field, but you can configure this explicitly using the `getDescription()` delegate method or the `description` fields.ini property.

Record Actions

Actions from the "list_row_actions" category are rendered in the south of the row. For best results, the action should include the "materialIcon" directive. See Using Material Icons for more details about material icons.

Useful CSS Classes In Mobile List View

mobile-listing-row

The `<div>` tag wrapping the row. This tag will also include the `xf-record-id` attribute whose value is the record ID of the record. This element is the analog of the `<tr>` tag of the desktop interface.

mobile-row-content

Inner `<div>` tag containing the row content.

mobile-logo

`<div>` tag wrapping the logo.

mobile-title

`<div>` tag wrapping the record title.

mobile-description

`<div>` tag wrapping the record description.

Infinite Scroll

You'll notice that the mobile list view doesn't include any paging buttons (e.g. "Previous" or "Next"). This is because it uses infinite scrolling. When the user scrolls to the bottom of the list, it will automatically load the next 30 records and append them to the end of the list seamlessly.

Appendix 1: Configuration Directives

The following chapters serve as reference to show all of the various configuration directives available in Xataface apps.

Conf.ini Directives

Overview

The conf.ini file is where most of the application-level configuration information is stored for a Xataface application. It contains information such as:

1. database connection information
2. which tables should appear in the tables menu.
3. preference settings
4. authentication settings
5. which add-on modules are to be used
6. output caching settings
7. history/undo settings
8. other misc settings.

TIP	This section documents some of the built-in configuration directives that Xataface supports, however, this file is extensible so you can add your own configuration directives as well (which you access in your PHP and Action definitions).

Sections

Every conf.ini file must contain at least the following sections:

_database

Contains database connection info.

Example `_database` section

```
[_database]
  name=spokenpage
  user=root
  password=password
  host=localhost
  driver=mysqli
```

TIP	It is recommended to place the `[database]` section in a separate file named `conf.db.ini.php` and include it in the `__includes__` directive to make your app more portable.

_tables

Contains a list of tables that are to be included in the navigation menu of the application.

Example `_tables` section

```
[_tables]
    people=People
    publications=Publications
```

The following optional sections may also be included:

_allowed_tables

Specifies tables that should be explicitly allowed to override disallowed tables listed or matched in the _disallowed_tables section. Since 0.7

_auth

Contains information about authentication. Since 0.6

_disallowed_tables

A list of tables or patterns that match tables that should be blocked from being accessed directly through the application. By default any table beginning with an underscore, 'dataface_', or ending in '__history' are blocked. This prevents unintended access to some of the automatically created tables in Xataface. Since 0.7

_feed

Configuration options for RSS feeds that are generated by the application. Since 1.0

_history

Settings pertaining to the history feature (e.g. whether it has been enabled). Since 0.7

_index

Settings for the full site search indexing. Since 1.0

_modules

A list of modules that are enabled for this application. Since 1.0

_output_cache

Output cache settings. Using output caching can dramatically improve performance for busier sites. Since 0.8

_themes

A list of the themes that are to be applied to the application. Since 0.8

table_labels

A list that defines friendly labels for displaying table names. Similar to the `[_tables]` section, but these tables do not appear in the application's navigation menu by default. This is also the only method to display friendly table names in the search index results as of Xataface 2.1 or prior. (See Editing Search Results >> How Do I change table names). Also see the label global directive in the fields.ini_file. Since always.

Stand-alone Attributes

Stand-alone attributes for an INI file must appear at the beginning of the INI file (before any of the sections). The conf.ini may contain the following stand-alone attributes.

cache_queries

Enables query caching. Enabling this feature can yield drastic performance improvements especially on busy sites with large databases.

Accepted Values: boolean (0 or 1)

Since 1.2

cache_queries_log

Enables logging of query caching to the file /tmp/querylog.log so that you can tell whether your queries are being cached, and which ones are being cached.

Accepted Values boolean (0 or 1)

Since 1.2

default_action

The default action to be performed if it is not explicitly specified in the query (e.g. 'list', 'find', 'edit').

Accepted Values string. Name of action.

Default Value 'list'.

Since 0.6

debug

If this is set to 1, then the application will run in debug mode which displays the available slots and blocks on the screen, along with some other debug information.

Accepted Values 0 or 1

Default Value 0

Since 0.6

default_browse_action

The default action to perform in the details tab. E.g. When you click on the "details" tab there are a number of sub-tabs including 'view', 'edit', etc... . The default value for this directive is 'view'. If you want to go directly to the edit form when clicking on a record in list view, you would set default_browse_action to 'edit'. string

Since 0.6

default_language

The default language to use. This is the 2-digit ISO language code. If this value is not specified it defaults to the first language listed in the [languages] section. string (2-digit ISO language code)

Since 0.6

default_limit

The default limit (i.e. the number of records to show per page) if none is explicitly specified in the query.

Accepted Values positive integer. E.g. 100

Default Value 30

Since 0.6

default_table

The default table to show if none is specified by the query.

Default Value: The first table listed in the `[_tables]` section.

Since 0.6

disable_session_ip_check

Default behaviour automatically tracks the IP address of the user when they log in. If a request is made for a session from a different IP then the session is automatically destroyed and the user is logged out.

Accepted Values boolean (0 or 1)

Since 1.3rc4

title

A title for the application (appears in the browser title bar).

Since 0.6

__include__

A comma-delimited list of configuration files that you wish to include.

This list can be used to separate your configuration into multiple files, or to provide different configurations for different host environments. It is common, for example, to factor your database connection information into a separate file named "conf.db.ini.php" which is not kept in version control to make the application more portable.

Example: Placing database configuration in separate file

conf.ini.php file

```
;<?php exit;

__include__=conf.db.ini.php

[_tables]
   table1=My First Table
   table2=My Second Table
```

conf.db.ini.php file

```
;<?php exit;

[_database]
   host=localhost
   name=mydb
   user=mydbuser
   password=dbpass
```

NOTE	For security it is recommended to add the ".php" extension to all of your INI files to prevent the web server from publishing them. The first line, then is always `;<?php exit;` as this will be ignored when parsing the file as an INI file, and it will cause execution to exit when parsing as a PHP file.

Placeholder Variables

Since version 3.0, you can use placeholder variables in your __include__ directive which allow you to specify a different path based on the environment. The following placeholders are supported:

`{host}`
: Will be replaced by the HTTP host name of the request. E.g. if the app is being accessed at `http://example.com`, then `{host}` placeholders will be replaced with "example.com".

`{port}`
: Will be replaced by the HTTP port for the request.

Example conf.ini.php using placeholders

```
;<?php exit;

__include__=conf.db.ini.php, hosts/{host}/{host}.conf.ini.php
```

In the above example, if the app is accessed at example.com, then it would include the conf file located at `hosts/example.com/example.com.conf.ini.php`, but if it is accessed at `localhost`, then it would load the config file at `hosts/localhost/localhost.conf.ini.php`.

Optional Includes

TLDR: Add `?` to the end of a file path to make it an optional include. E.g. `__include__=hosts/{host}/{host}.conf.ini.php?`

By default, if an include fails (because the included file doesn't exist), then an exception will be thrown when the app is loaded. In some cases you may want the include to be "optional" so that it just fails to load silently if the file can't be found. You can add `?` to the end of a file path to make it optional.

Fields.ini Directives

Overview

The fields.ini file is a configuration file which is associated with a single table of a database application. It provides metadata about the table's fields to help Xataface dictate how they should be included in the application. This includes metadata such as

1. **Widget type** - To specify the type of widget that should be used to edit content in the field (e.g. text, select, checkbox).
2. **Label** - The labels that can be used in column headers and on forms.
3. **Help text** - for forms to inform the user how data should be entered.
4. **Field Groupings**
5. **widget:atts** - To use javascripts in event handlers
6. and more

Although a table doesn't need to have an associated fields.ini file in order for the application to work, each table can have one; and it is always located in the "tables" directory. For example, the fields.ini file for the "people" table would be located at `tables/people/fields.ini` file.

TIP

All ini files can also contain the ".php" file extension. E.g. "fields.ini.php". Using a .php extension can be helpful for security as it allows you to easily prevent the contents of the INI file from being served by the web server by adding the following to the first line of the file:

```
;<?php exit;
```

If you do not use the ".php" extension, ensure that your .htaccess file blocks access to .ini files. A sample .htaccess file is bundled with Xataface here. The contents are:

```
<FilesMatch "\.ini$">
    # Apache 2.2
    <IfModule !mod_authz_core.c>
        Deny from all
    </IfModule>

    # Apache 2.4
    <IfModule mod_authz_core.c>
        Require all denied
    </IfModule>
</FilesMatch>
```

Syntax

The fields.ini file uses standard INI syntax (just like the php.ini file), where each section corresponds to a column in the table.

For example, consider a table "people" with columns "first_name", "last_name", and "age". The fields.ini file for the people table could then contain sections for each of its columns as follows:

```
[first_name]

[last_name]

[age]
```

In this example the sections are empty (i.e. they have no directives, but we could easily add some directives:

```
[first_name]
    widget:description="Please enter your first name"
    widget:label="Given Name"

...etc...
```

Here we have told Xataface that the first name field should include some help text (using the `widget:description` directive) on its edit form.

Example fields.ini file

```
;; Global directives applied to every field
[__global__]
    visibility:list=hidden

[isbn]
widget:label = ISBN
visibility:list=visible

[copyright_year]
widget:label = "Year"
widget:atts:size=4
visibility:list=visible

[categories]
widget:type=checkbox
vocabulary = book_categories

[media]
widget:type=checkbox
vocabulary = book_media
```

```
[borrower_id]
widget:type=select
vocabulary=users

[due_date]
widget:description = "The date that the book is due to be returned to the library"
visibility:list=visible

[cover_art_url_small]
visibility:browse=hidden

[cover_art_url_medium]
;visibility:browse=hidden

[cover_art_url_large]
visibility:browse=hidden
visibility:find=hidden

[amazon_description]
widget:label = Description

[amazon_reviews]

[amazon_url]

[amazon_refresh_timestamp]
widget:type=static

[date_created]
timestamp=insert
widget:type = static

[date_modified]
timestamp=update
widget:type=static

[created_by]
widget:type=static

[modified_by]
widget:type=static

[notes]
```

Field Directives

The following directives may be added to a field's section of the fields.ini file to customize the field's behavior. Some directives are not applicable to all fields.

actions

Optional actions category for actions which should be rendered next to the field on the edit form. See Adding Actions to Fields for a usage example.

Since 2.0

ajax_value

Make the field dynamically update whenever one or more other fields on the same form is changed. When a change is detected, the field will load new data from a JSON web service specified by the URL in the property. See Auto-Updating a Field When Other Fields are Changed for a usage example.

Since 3.0

ajax_preview

A URL to content that should be displayed just below the field. By default the content is updated whenever the field content is changed, but the `ajax_preview_event` directive can be used to specify a different event. See Displaying Field Preview using AJAX for example usage.

Since 3.0

ajax_preview_event

The event that triggers the `ajax_preview` content to be updated. Default is "change", but any valid Javascript event name may be used. The event is triggered by the field itself. E.g. set this to "input" to update the content as the user types into the field.

Since 3.0

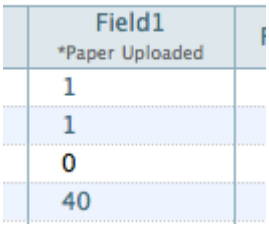
column:label

Specifies a custom label to use in list view for the column. If this is not specified, then the value of `widget:label` will be used.

Since 1.3

column:legend

Adds a small amount of help text to the column header for this field in list view. Default is blank. E.g.



In this photo it shows the text "*Paper Uploaded" set as the `column:legend` for "field 1".

Since 1.3

date_format

Specifies how the field should be formatted when displayed. Takes same parameters as PHP strftime function.

Since 2.0

display

Specifies the layout of the field on the edit form. Most fields have an implicit value of "inline" meaning the widget and its label appear on the same line. Textareas and htmlareas have an implicit value of "block" meaning that the label and widget appear in separate rows (label above the widget). You can set this value explicitly also to override the layout of a field.

Since 0.8

display_format

A pattern that can be used to define the display format of the field. This takes the same parameters as the PHP sprintf function.

Since 2.0

encryption

Primarily used with password fields, indicates the type of encryption that should be used to save the field. Supports "md5", "sha1", "encrypt", and "password". **Since 0.6**

event.date

For use by the Calendar Action. Indicates that the field stores the date of the record when interpreted as an event. Possible values "0" or "1".

Since 1.0

event.start

For use by the Calendar Action. Indicates that the field stores the start time of the record when interpreted as an event. Possible values "0" or "1".

Since 1.0

event.end

For use by the Calendar Action. Indicates that the field stores the end time of the record when interpreted as an event. Possible values "0" or "1".

Since 1.0

event.location

For use by the Calendar Action. Indicates that the field stores the location of a record when interpreted as an event. Possible values "0" or "1".

Since 1.0

filter

Boolean value (0 or 1) indicating whether this field should be filterable? in list view?.

Since 0.8

filter.type

The type of filter to use. Options include "text", "range", "min", "max", and "filter". See Filter Types.

Since 3.0

filter.label

The label to use for the filter. This defaults to the `widget:label` for the field.

Since 3.0

filter.icon

Icon to use in the text field when using the "text" filter type. This should be the name of a material icon. See Using Material Icons for details about material icons in Xataface.

Since 3.0

filter.min.icon

Optional icon to use inside the "min" field for min and range filters. The icon should be a valid material icon name. See Using Material Icons for details about material icons in Xataface.

Figure 54. **Example** `filter.max.icon=euro_symbol`

Since 3.0

filter.max.icon

Same as `filter.min.icon` except for the "min" field.

Since 3.0

filter.input.type

Specify the `type` attribute of the `<input>` tag used in the "text", "range", "min", and "max" filter types. This will be "text" by default in most fields. It will be date by default for date fields, and datetime-local for datetime fields.

Since 3.0

filter.sort

Used for the "filter" filter type. This specifies the column to use for sorting the options in the fitler.

Since 3.0

filter.placeholder

Placeholder text used for the "text" filter type. Placeholder text is only displayed when the field is empty.

Since 3.0

filter.min.placeholder

Placeholder text used the "min" field. Placeholder text is only displayed when the field is empty.

Since 3.0

filter.max.placeholder

Placeholder text used the "max" field. Placeholder text is only displayed when the field is empty.

Since 3.0

filter.input.*

Specify HTML attributes on the `<input>` element used in the "text" filter type. E.g.`filter.input.maxlength=5`

Since 3.0

filter.min.input.*

Specify HTML attributes on the `<input>` element used in the "min" field. E.g. `filter.min.input.maxlength=5`

Since 3.0

filter.max.input.*

Specify HTML attributes on the `<input>` element used in the "max" field. E.g. `filter.max.input.maxlength=5`

Since 3.0

filter.vocabulary

A valuelist that can be used to provide "common" search options. These are displayed before the text or range fields to allow the user to easily select common searches.

Since 3.0

frozen_description

The field description shown when the widget is frozen (i.e. uneditable). If this is not specified, no

field description is shown in this case.

Since 1.2

group

The name of the field group that this field belongs to. Fields with the same "group" value will be rendered in the same field group on the form.

Since 0.5

Key

If you are using a View for the table you need to explicitly mark the fields that comprise the primary key. E.g. Key=PRI

Since 0.6

label_link

An optional URL for the field label to link to. This would usually be some "help" page that explains what the field is for. The link will be a link in both the view and edit tabs.

Since 1.1.3

ignore

Boolean value (0 or 1) indicating whether this field should be ignored on the edit form. This is handy if the field is going to be constantly updated in the background (via a cron job perhaps) and you don't want the edit form to interfere.

Since 1.0

logo

Boolean value (0 or 1) to indicate if this field should be treated as a logo field. Logo fields are displayed in the upper left of the view tab for a record, and are assumed to contain an image. If no logo field is explicitly specified, Xataface will make a best guess as to which field should be used.

Since 0.7

money_format

For fields containing monetary amounts, this specifies the format. Takes same parameters as PHP money_format function.

Since 2.0

noLinkFromListView

Boolean value (0 or 1) to indicate if this field should be linked when in list view (or in a related list). Default value is 0 to indicate that the field IS linked. It is common to use this directive when using a custom xxx__renderCell() method that contains its own links.

Since 1.1

not_findable

A flag to indicate that this field can not be used as part of a query. This is helpful if you want a field to remain completely confidential to prevent people from finding records based on the value of this field. This flag is even necessary if the permissions for the field don't permit viewing the value of the field.

Since 1.1

number_format

For numeric fields, this indicates the number of decimal places to display when displaying this field. E.g. 2

Since 2.0

order

The order of the field when laid out on forms and lists. Can contain any floating point number or integer (e.g. 0, 10, -10, 235.4)

Since 0.6

prefs.key

The name of a preference to set with the value of this field in the currently logged-in user record. See [preferences-directives] for more information about preferences. See Allowing Users to Choose Their Own Color Scheme for an example using `prefs.key=user_stylesheet`.

Since 3.0

relationship

Used only with complex fields that involve editing related records (e.g. grid). This is the name of the relationship that the field should be edited.

Since 0.8

repeat

Boolean value (0 or 1) used in conjunction with a select widget to indicate whether to enable a multi-select.

section

The name of the section that this field should belong to in the view tab.

Since 0.7

secure

A boolean flag for use with container fields? to indicate that it should use secure URLs for the file downloads (i.e. it will obey the application permissions). Without this directives, uploaded files are served directly by apache and don't obey the Xataface permissions defined per record.

Since 1.3

sortable

A boolean flag that indicates whether a column is sortable. This does not affect permissions (i.e. the user can still sort on the column by including it in the `-sort` request parameter. This only affects whether the column is sortable in the UI. Currently this is only used for the mobile UI. On the desktop UI, all columns visible in list view are sortable.

NOTE	If no columns in the table define the `sortable` property, then all columns are treated as `sortable=1`. If at least one column in the table has `sortable` defined, then the remaining columns are assumed to be `sortable=0`. One way of thinking about this that you need to opt in to this behaviour to use it. Otherwise Xataface will just guess at which columns the usezr should be able to sort on.

Since 3.0

sortable+

A boolean flag that enables or disables sorting on this column in ascending order.

Since 3.0

sortable-

A boolean flag that enables or disables sorting on this column in descending order.

sort.label

The label that should be used for sorting on this field.

Since 3.0

sort+.label

The label that should be used for sorting on this field in ascending order.

Since 3.0

sort-.label

The label that should be used for sorting on this field in descending order.

Since 3.0

struct

A boolean (0 or 1) value indicating whether this field is considered a structure. A value of 1 indicates that this field is a structure and should not be truncated under any circumstances. Normally fields are truncated at 255 chars in list view. This is useful if the field contains XML or other structured data so that attempts to truncate it would destroy integrity.

Since 1.1.2

tab

If tabbed forms are enabled, then this specifies the name of the tab that this field belongs to on the edit form.

Since 0.8

timestamp

Indicates when a timestamp should be set in the field (only applicable for date and time fields). Possible values are "insert" and "update"

Since 0.7

title

Boolean value (0 or 1) indicating whether this field should be treated as a title field.

Since 0.7

transform

String defining rules for generating thumbnails for uploaded images. This directive is only used with Container fields.

Syntax

```
transform=name1 [op1:]w1xh1; ...;nameN [opN:]wNxhN
```

Where:

1. `name1` ... `nameN` are names of the thumbnail sizes you wish to resize images to.
2. `w1` ... `wN` are corresponding widths in pixels,
3. `h1` ... `hN` are corresponding heights in pixels, and
4. `op1` ... `opN` are the corresponding operations to perform for resizing. Currently the only operations supported are "fit" and "fill". "fit" will cause the image to be resized to "fit" completely inside the dimensions of the thumbnail size, and "fill" will cause the image to fill the thumbnail space completely, possibly cropping some off edges to make it fit.

Example

```
transform="itunes300 fill:300x300; itunes1400 fill:1400x1400"
```

Defines two thumbnail types "itunes300" and "itunes1400" with sizes 300x300 pixels and 1400x1400 pixels respectively. This means that images uploaded to this container field will automatically have thumbnails generated in those two sizes. Both of these thumbnail types use the "fill" operation so images will be resized to fill the space, and may have some cropped off the edges.

This directive is commonly used with `thumbnail.ACTIONNAME` directives which specify which thumbnail should be used in which action.

See Generating Thumbnails for a recipe on how to use this directive.

Since 3.0

transient

Boolean value (0 or 1) indicating whether this field is a transient field or not. A transient field is a field that is defined in the fields.ini file but not in the database. Hence the values that are input into this field on the edit form are not saved to the database.

Since 0.8

Type

The data type of the field (note the capital "T" as Xataface is case sensitive). This value is only overridden for container? fields, however its value can be accessed programmatically for any field.

Since 0.5

validators:VALIDATOR_NAME

A prefix for a validation type on the current field. (Replace "VALIDATOR_NAME" with the name of the validator to be used. e.g. required). There are many validators available to be used.

Since 0.5

validators:VALIDATOR_NAME:message

The message the should be displayed if the form fails to validator due to the "VALIDATION_NAME" validation rule.

Since 0.5

viewgroup

The name of the field grouping that this field will belong to in the view tab. If this is not present, then it will be grouped according to the group directive.

Since 1.0

visibility:browse

Indicates whether the field should be visible in browse mode (i.e. in the "view" tab). Possible values are "visible" and "hidden".

Since 0.6

visibility:csv

Indicates whether the field should be included in CSV exports. Possible values are "visible" and "hidden".

Since (1.0 beta 4) 1.0b4

visibility:find

Indicates whether the field should be visible in find mode. Possible values are "visible" and "hidden" + **Since 1.0**

visibility:list

Indicates whether the field should be visible in list view. Possible values are "visible" and "hidden". + **Since 0.6**

visibility:update

Indicates whether the field should be included in update and copy/replace forms. Possible values are "visible" and "hidden".

Since 1.3

vocabulary

The valuelist that should be used as the options to select. This is only applicable for fields that have options to select like a select list or a checkbox group.

Since 0.5

widget:atts

A namespace for attributes that should be added to the HTML widget. This allows you to specify things like javascript events, styles, widget size, etc..

Since 0.5

widget:columns

For checkbox groups, this specifies the number of columns to use for laying out the checkboxes.

Since 1.0

widget:description

Help text to give the user a hint about how to edit the field’s content.

Since 0.1

widget:editor

The type of HTML editor that should be used. This is used only when widget:type is set to htmlarea

Acceptable values include:

1. fckeditor (default)
2. tinymce (version 0.6 or higher)
3. nicedit (version 1.0 or higher)
4. all

widget:editvalues

Used with select lists to allow users to add values to the select list. E.g. widget:editvalues=1

Since 0.8

widget:focus

Sets default focus. 0 or 1. (Javascript focus in a form)

Since 0.6

widget:label

The label that should be used for the current field on edit forms, column headings, and other relevant locations.

Since 0.1

widget:question

Text displayed just before the widget. This is almost the same as widget:description except that this text is guaranteed to be displayed before the widget, whereas widget:description may be displayed below or beside the widget.

Since 0.1

widget:type

The type of widget that should be used (e.g. checkbox, select, text, etc..)

Since 0.1

xml

A flag for use with calculated fields (i.e. fields defined in the delegate class via the field__fieldname method) that will include the field in XML output produced by the export xml action. Default is 0, but setting this value to 1 wil cause the field to be included.

Since 1.2.7

Applying Directives to All fields (`__global__`)

Xataface 1.2.6 includes support for a `__global__` section that allows you to specify directives that should be applied to all fields. These directives can be overridden on a field by field basis. The `__global__` section can take all the same directives that a normal field section takes.

`widget:atts:class` Values

The `widget:atts:class` directive allows you to assign a CSS class to a field's widget. There are certain CSS classes that have meaning to Xataface and will cause additional functionality to automatically be added to the field. These built-in classes are listed below:

passwordTwice

Applicable only to password fields. If you set `widget:atts:class=passwordTwice`, then this will convert the password field into two fields whereby both fields need to match in order for submission to continue on the edit form. This operates as a password verification field.

Since 1.3rc2

Global Directives

The following directives can be added to the beginning of the fields.ini file (before any field sections) to customize field groups and the table as a whole.

__dependencies__

A comma-delimited list of tables that this table is dependent upon for caching purposes. E.g. if any table in this list is modified, then the query cache is cleared for queries on this table. See this blog article for more information about query caching.

Since 1.2

__isa__

The name of the parent table of the current table. This directive allows you to have a heirarchical structure amongst the tables in your application.

Since 0.8

__source_tables__

A comma-delimited list of tables that this table/view is derived from. This is used with the query caching feature and is necessary to use this directive if the table is actually a view. If this directive is not set, then any queries involving this view will not use the query cache because Xataface would have no way to discern the update time of the view. See this blog article for more information about query caching.

Since 1.2

__sql__

Defines a custom select query to override the default select query for the current table. (The default select query is generally "select * from tablename").

Since 0.7

__prefs__

Sets preferences for this table and its records. This directive is an array, so it must be enclosed in square brackets, i.e. `[__prefs__]`, unlike the other global directives listed above.

Since 1.0b4

table.default_sort

Sets the default sort column for the table. See Specifying Default Sorting.

Since 3.0

table.default_sort.RELATIONSHIPNAME

Sets the default sort column for the given relationship. E.g. `table.default_sort.posts=date posted desc`. See Setting Default Sort for Related Lists.

Since 3.0

table.label

Sets the friendly name for this table. This is the equivalent of using the [_tables] section in the conf.ini file, except without imposing the requirement that these tables appear in the application's primary navigation menu. E.g. label = "Table Name"

table.title

A string SQL select expression that is used to describe the title of records. This is the equivalent of the `titleColumn()` function used in Delegate_class_methods.

Field Groups

The "group" directive allows you to group multiple fields together so that they will be rendered in the same field group on forms. You can also configure these groups as a whole by defining a section named "[fieldgroup:GROUPNAME]" (where GROUPNAME is the name of the field group, corresponding to the group directive values for the fields) in the fields.ini file. This section provides a few basic directives to customize some aspects of the field group:

1. label
2. order
3. description
4. template
5. more...

The most common use of these sections is to customize the label or order of groups, especially when there are multiple field groups in the table. For example, suppose we have a table "people" with fields "first_name", "last_name", "phone", "fax", "email", "address", "city", and "country". Suppose these fields are grouped as follows:

1. "first_name" and "last_name"
2. "phone", "fax", and "email"
3. "address", "city", and "country"

so that the fields.ini file looks like:

```
[first_name]
    group=name

[last_name]
    group=name

[phone]
    group=contact

[fax]
    group=contact
[email]
    group=contact

[address]
    group=address

[city]
    group=address

[country]
    group=address
```

By default, the "name" group will appear first in the form, followed by "contact" and "address". If we want to place "address" first we could add the following section to our fields.ini file:

order

Specifies the order of the group with respect to other groups on the form. Accepts any numerical value (e.g. 0, 1, -1, 25.43), with lower values appearing first. Default value is 0.

Since 0.6

hidden

A value of "1" causes the field group to be hidden by default. Hidden groups will have a button placed along the bottom of the form which can be used to reveal the field group. If this directive is used, the `materialIcon` directive must also be used to provide the icon that is used in this button.

Figure 55. Form with 3 hidden field groups. Users can click on the corresponding buttons at the bottom of the form to reveal a field group.

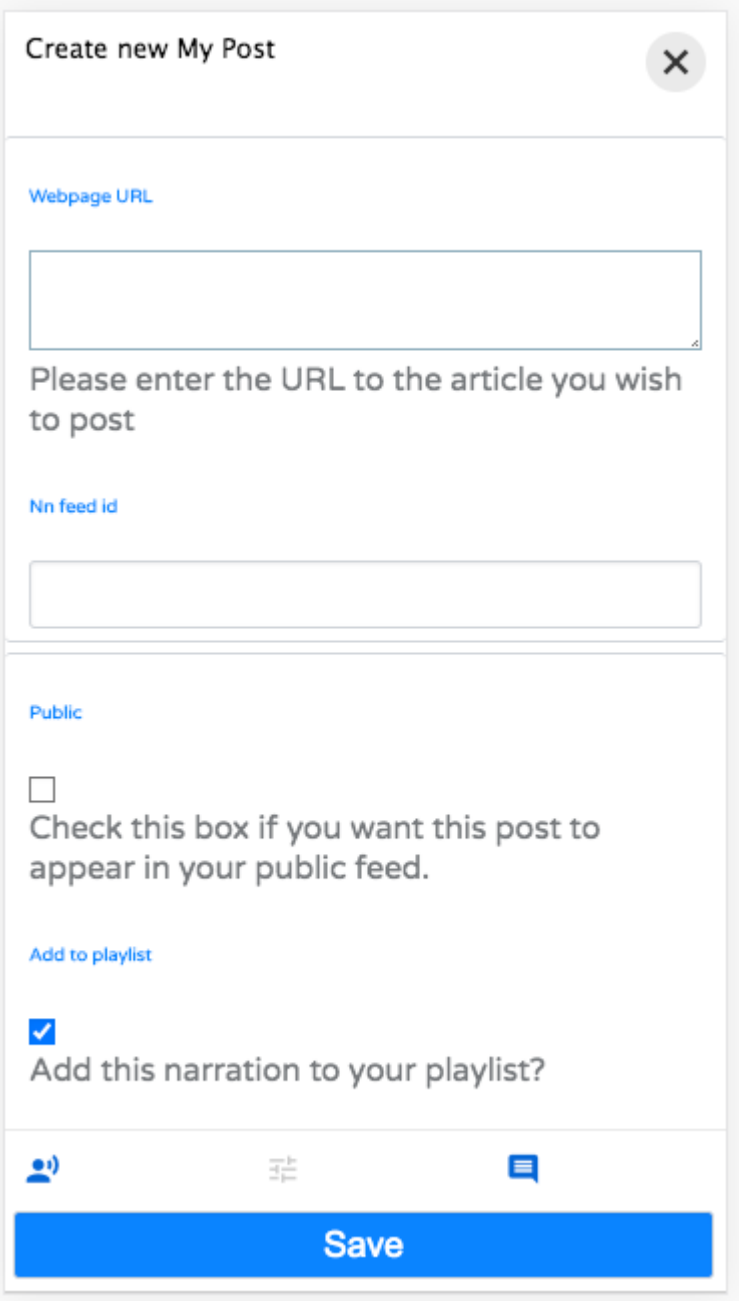


Figure 56. After user clicks on a field group's button, it will be shown on the form, and the button will become grayed out.

Since 3.0

label

Specifies the label that should be used for the field group.

Since 0.6

label_link

Specifies a URL that the field group label should link to.

Since 1.1.3

materialIcon

A material icon to use for the field group's button when the group is hidden via the `hidden`

directive. See Using Material Icons for more information about material icons. See `hidden` directive docs for information about the hidden directive.

Since 3.0

noheader

A value of "1" hides the usual collapsible header for the field group so that the fields are just rendered directly on the form.

Since 3.0

template

The path to a custom template that should be used to render the fields of the field group.

Since 1.0

collapsed

Boolean value (0 or 1) indicating whether the field group should be collapsed by default (user can expand it).

Since 1.0

Actions.ini Directives

The actions.ini file stores information about the various action?s that can be performed by your application. An action may be manifested in two ways:

1. As a web page
2. As a menu item

And there is no reason why an action cannot serve in both capacities simultaneously. All menu items and functions that Xataface performs are defined in the Xataface actions.ini file (in the root of the Xataface installation dirctory). You can also create an actions.ini file in your application's root directory to override existing Xataface actions, or to create your own.

TIP

This section refers to "actions.ini" file, Xataface supports adding a .php extension to all .ini files to increase security. I.e. Instead of actions.ini, you can name your file actions.ini.php. The benefit of the .php extension is that you can have a line at the beginning of the file:

```
;<?php exit;
```

which will be ignored by Xataface's INI file parser, but will result in the web server not serving the file - so the malicious snoopers can't access the file directly.

If you want to modify an existing action instead of overriding it, you can use this syntax:

```
[browse > browse]
label = Browse
```

The > symbol simply means to inherit from the existing browse action. All the attributes are the same, and we just override the label to Browse (originally was Details)

Syntax

As with the fields.ini file and the valuelists.ini file, the actions.ini file uses the simple INI file syntax to define its actions. Each action is defined in its own section, and can have a number of directives to specify the action's behavior.

Here is a snippet from the Xataface actions.ini file to give you an idea:

```
;; Show the details of the current record
[browse]
label = Details
category = table_tabs
url = "{$this->url('-action=view')}"
accessKey = "b"
mode = browse
permission = view
order=0

;; Show a list of the records in the current found set
[list]
label = List
category = table_tabs
url = "{$this->url('-action=list')}"
accessKey = "l"
mode = list
template = Dataface_List_View.html
permission = list
order=0.5

;; Show a "Find Record Form"
[find]
label = Find
category = table_tabs
url = "{$this->url('-action=find')}"
accessKey = "f"
mode = find
permission = find
template = Dataface_Find_View.html
order=0.75
```

This snippet shows the definition of the browse, list, and find actions - three of the most central actions in a Xataface application. Notice how each action has its own section (according to INI file syntax?) with a number of directives which specify how the action behaves. For instance, each action has a "category" value of "table_tabs", which tells Xataface to display the actions as part of the table tabs in the user interface.

Directives

ajax

Indicates this this is an ajax action. See Action to Trigger AJAX Request.

allow_override

An optional directive to indicate that this action can be overridden by more specific directives in another ini file. Currently there is only support for a value of "relationships.ini" indicating that the settings can be overridden in the relationships.ini file. In order for this to work, related=1 must also be set.

Since 1.3rc4

label

The label to display if the action is used as a menu item.

category

The name of the action's category which can be used to group this action together with other similar actions to be used in a menu in the user interface.

url

If the action appears as a menu item, this is the URL that the menu item points to. This may contain PHP expressions inside curly braces.

onclick

A javascript snippet to call when the user clicks on the action. This can be used as an alternative to the `url` directive. See Triggering Javascript Function with Action.

Since 2.0

accessKey

The key code to automatically select this action if it is included as a menu item. I.e. ALT+accessKey calls the action.

materialIcon

The name of a material Icon to use for the action menu item. See Using Material Icons

Since 3.0

mode

This indicates which tab of the table tabs (find, details, list, etc...) that this action should appear to be part of when the action is viewed as a web page. If this is left undefined, or it does not match any existing visible action in the table tabs, then no tab will appear to be selected.

permission

The name of a permission required to both see the action as part of a menu and to access the action as a web page.

visible

A boolean value indicating whether the action should be visible as a menu item.

condition

A boolean value or a PHP expression evaluating to a boolean value to indicate whether the action should be visible as a menu item.

url_condition

A PHP expression evaluating to a boolean value to indicate whether the URL directive should be evaluated. This basically checks to make sure that its OK to evaluate the "url" expression, just in case the current state of affairs would cause it to throw a fatal error.

order

A numeric value indicating the order in which the action should be displayed as part of a menu. Low numbers result in higher placement in the menu.

icon

The path to an icon that should be used when the action appears as a menu item. If possible, prefer the `materialIcon` directive to this one as they are far mor flexible with respect to styling.

template

The path to the template that should be used when the action is displayed as a web page.

description

Mouseover text for the action (when displayed as a menu item).

PHP Expression Context

Notice that the `url`, `condition`, and `url_condition` directives allow you to use a PHP expression for their values. In order for this to be helpful, you should know a little bit about the context and environment in which these expressions will be executed. All expressions are evaluated immediately prior to being rendered, so the same action can be displayed multiple times in the same page, but have very different resulting values for their urls and conditions.

These expressions are all executed within the context of the `Dataface_Application::parseString()` method, with the following variables loaded in the local symbol table (i.e. you can use the following variables in your expressions).

$site_url

The URL to the current application's directory (not including "index.php")

$site_href

The URL to the current application including "index.php"

$dataface_url

The URL to the xataface installation directory.

$table

The name of the current table (i.e. the value of the "-table" request parameter"

$tableObj

The `Dataface_Table` object for the current table.

$query

An associative array of the current query variables.

$app

A reference to the current `Dataface_Application` object. Alias of `$this`

$authTool

A reference to the `Dataface_AuthenticationTool` instance.

$relationship

If the action is being rendered in the context of a related record or a relationship request, this will be the corresponding `Dataface_Relationship` object.

$resultSet

A reference to the `Dataface_QueryTool` object for the current query.

$record

A reference to the current `Dataface_Record` object.

$context

An associative array of context variables that are passed to the action from the context in which the action is called.

TIP

If your action expression contains any fatal errors, you may find yourself in a position where your app won't load at all (e.g. the white screen of death). The error log may provide no clues because Xataface suppresses warnings and errors when evaluating the PHP expressions.

You can debug these issues by adding the `debug=1` directive to the beginning of your conf.ini file. That will cause the action expressions to be evaluated "noisily", and you should see the the error either in your PHP error log or in the browser window when you reload the app.

Preferences Directives

How to Set Preferences

Xataface preferences can be defined in 4 ways:

1. In the `[_prefs]` section of the conf.ini file for global static preferences.
2. Implementing the `getPreferences()` method in the Application Delegate Class
3. In the `prefs` section of the fields.ini file for a table for static preferences on that table. (Limited to only certain preferences).
4. Using the `prefs.key` fields.ini directive on fields of the users table to specify that the value of that field should be used as a preference for the currently logged in user.

Example [_prefs] section in the conf.ini

```
[_prefs]
    hide_updated=1
    hide_posted_by=1
```

Example getPreferences? method in the Application Delegate Class:

```
function getPreferences(){
    return array('hide_update'=>1, 'hide_posted_by'=>1);

}
```

Available Preferences

Table 1. Available Preferences

Preference	Description	Default	Version
show_result_stats	Show the result statistics (e.g. found x of y records in table z)	1	0.6
show_jump_menu	Show he drop-down menu that allows you to "jump" to any record in the found set.	1	0.6
show_result_controller	Show Next, previous, page number .. links...	1	0.6
show_table_tabs	Show Details, List, Find, etc... tabs.	1	0.6

Preference	Description	Default	Version
show_actions_menu	Show New record, Show all, delete, etc..	1	0.6
show_logo	Show logo at top of app	1	0.6
show_tables_menu	Show the tabs to select a table.	1	0.6
show_search	Show search field in upper right.	1	0.6
show_record_actions	Show actions related to particular record	1	0.6
show_bread_crumbs	Show bread crumbs at top of page to show where you are.	1	0.6
show_record_tabs	View, Edit, Translate, History, etc…	1	0.6
show_record_tree	Show tree to navigate the relationships of this record.	1	0.6
list_view_scroll_horizontal	Whether to scroll list horizontal if it exceeds page width	1	0.6
list_view_scroll_vertical	Whether to scroll list vertical if it exceeds page height.	1	0.6
hide_posted_by	Whether to hide the posted by text in glance lists (e.g. in the view tab, the related records are shown in the left column. This hides the posted by text next to each related record.	0	1.0b4
hide_updated	Whether to hide the updated text in the glance lists (e.g. in the view tab, the related records are shown in the left column. This hides the updated text next to each related record.	0	1.0b4

Preference	Description	Default	Version
SummaryList_logo_width	The width of the logo to be used as the preview image in summary lists.	null	0.7
SummaryList_hideSort	Hides the sort control for a summary list (the box that allows users to sort by column).	0	0.7
hide_user_status	Hides the user's status (e.g. "You are logged in as ..."	0	0.7
hide_personal_tools	Hides the personal tool links in upper right. This includes likes such as "Control Panel" and "My Profile"	0	0.7
hide_resultlist_controller	Hides the controller for a result list (E.g. next/back/results per page etc...).	0	0.7
hide_related_sections	Hides the sections of the view tab that show the related records. These are the sortable section boxes. Not the related tabs.	0	1.3
hide_record_search	Hides the record search form that appears in the view tab. Not to be confused with the find tab.	0	1.3
show_resultlist_controller_only_when_needed	Sets the resultlist controller (e.g. back/next/results per page/etc...) to only show up if paging is required (i.e. if there are more records than can be shown on one page (according to the '-limit' parameter).	0	1.0

Preference	Description	Default	Version
hide_record_view_logo	Hides the logo for a record that appears in the upper left of the view tab for each record.	0	0.7
horizontal_tables_menu	Whether to force the tables menu to appear as tabs along the top of the page (alternative is as a menu on the left). If there are 10 or fewer allowed tables, then the default is 1, otherwise the default is set to 0.	1	0.6
hide_result_filters	In list view, setting this value to 1 will cause the column filters to be hidden (the select lists to filter the results).	0	0.7
show_filter_counts	A value of 0 will hide the result filter counts.	1	3.0
disable_select_rows	A value of 1 causes the checkboxes in each row of the list view to be hidden.	0	0.7
result_list_use_geturl	Use the getURL() method to link to records in the list view rather than the default (which uses the -cursor parameter).	0	0.7
disable_ajax_record_details	Whether to disable the ajax record details (the '+' sign beside each record in list view that expands to show the record details.	1	0.7

Preference	Description	Default	Version
use_old_resultlist_controller	As of Xataface 1.1, a new style result list controller is used that resembles facebook. It is more slimmed down and is easier to manage. If you prefer the old controller, set this preference to 1.	0	1.1
user_stylesheet	The name of a CSS file that should be used to define custom styles for the current user request. Xataface will look for a stylesheet by this name inside the app's `css` directory, or the `xataface/css` directory. See Using Preferences to Override Color Scheme	None	3.0
mobile_app_menu_position	Specifies the position of the "app menu" in the mobile theme. Supported values are "ne" (for northeast) and "se" for south east.	"ne"	3.0
mobile_app_menu_sheet_position	For the mobile theme, this specifies the value that is supplied to the "sheet" in which the app menu opens. If the "mobile_app_menu_position" is "ne", then this will default to "right". Otherwise it defaults to "fill"	Depends	3.0

Inverse Preferences

The following preferences perform the inverse of some of the options above. When these options are set to 1, their respective option is set to 0.

Table 2. Inverse Preferences

Name	Inverse
hide_nav_menu	show_tables_menu
hide_view_tabs	show_table_tabs
hide_result_controller	show_result_controller
hide_table_result_stats	show_result_stats
hide_search	show_search

RSS Configuration Directives

This section describes the configuration directives and delegate methods that can be used to configure RSS feeds. See RSS Feeds for an introduction to Xataface's RSS feed support.

Table 3. RSS Delegate Class Methods

Name	Description	Version
`getFeedItem`	For RSS Feeds, overrides the defaults and returns an associative array with feed elements for a particular record	1.0
`getFeed`	For RSS feeds, overrides the default feed for a query, returning an array of feed items.	1.0
`getFeedSource`	Overrides the default feed source parameter for an RSS feed.	1.0
`getRSSDescription`	Overrides the default generated RSS description for a record.	1.0
`getSingleRecordSearchFeed`	Overrides the default feed for a subsearch within a record. This works identically to the getFeed method except that it takes 2 parameters: one for the current record, and a second parameter for the query.	1.2.3
`getEnclosureField`	Returns the name of the field that contains an "enclosure" which can be used for podcasting.	3.0

`getFeed()` Delegate Method

Synopsis

The `getFeed()` method of a table delegate class or application delegate class returns an associative array of parameters to configure the RSS feed for a particular table . An RSS feed consists of the following components:

1. `title` - The title of the RSS feed as it should appear in the subscribers' feed list.
2. `description` - Describes the RSS feed.
3. `link` - A link to the RSS feed

4. `syndicationURL` - The URL to this RSS feed's site.

Parameters

1. `array $query` - The HTTP query. Contains information like the current table, current action, and search parameters. This allows you to customize your RSS feed depending on the user's query parameters.
2. Return Value

   The `getFeed()` method returns an associative array with the components of the RSS feed. This array does not need to contain all possible keys, or even any keys. Any keys that are omitted will simply use default values in the RSS feed. The array may contain the following keys:

Name	Description	Version
`title`	The title for the RSS feed. If this omitted, it will try to use the title directive of the `[_feed]` section of the conf.ini file. Failing that, it will try to generate an appropriate title for the feed depending on the current query.	1.0
`description`	A Description for this RSS feed. If this is omitted, it will try to use the description directive of the [_feed] section of the conf.ini file.	1.0
`link`	A link to the source page of the RSS feed. If this is omitted, it will try to use the link directive of the [_feed] section of the conf.ini file.	1.0
`syndicationURL`	A link to the source page of the RSS feed. If this is omitted, it will try to use the syndicationURL directive of the [_feed] section of the conf.ini file.	1.0

Example

```
function getFeed(&$query){
    return array(
        'title' => "RSS feed for the ".$query['-table']." table.",
        'description' => "News and updates for automobiles",
        'link' => df_absolute_url(DATAFACE_SITE_HREF),
        'syndicationURL' => df_absolute_url(DATAFACE_SITE_HREF)
    );
}
```

NOTE	RSS feeds will work perfectly well without defining this method. This just allows you to customize one or more parameters of the RSS feed.

`getFeedItem()` Delegate Method

Synopsis

The `getFeedItem()` method of a table delegate class returns an associative array of parameters for a record as it should appear as part of an RSS feed. An RSS feed item consists of the following components:

1. `title` - The title of the record as it appears in the RSS feed.
2. `description` - The description of the record for the RSS feed. This is really the body of the RSS feed item.
3. `link` - The linkback URL if users want to know more about the record.
4. `date` - The date that the record was posted/modified.
5. `author` - The name of the person who posted this record.
6. `source` - URL to the site where record originated from.

Parameters

1. `Dataface_Record &$record` - The record that is being represented in an RSS feed.

Return Value

The `getFeedItem()` method returns an associative array with the components of the RSS feed. This array does not need to contain all possible keys, or even any keys. Any keys that are omitted will simply use default values in the RSS feed. The array may contain the following keys:

Name	Description	Version
`title`	The record title as it appears in RSS feeds. If this is omitted, the RSS feed will simply use the output of Dataface_Record's getTitle() method.	1.0

Name	Description	Version
`description`	The record description. This is used in the main body of the RSS feed. If this is omitted, the RSS feed will use an HTML table that shows all of the field data in the record. This value can also be overridden using the getRSSDescription? method of the delegate class.	1.0
`link`	The URL to this record. If this is omitted it just points to the view tab for this record. However you can direct it anywhere you like. When the user clicks on the "More Info" link in his RSS reader it will direct him to this link.	1.0
`date`	The date that this record was posted or last modified. This is the date that an RSS reader will use to decide if it has already loaded the record yet. If this is omitted it will try the Dataface_Record's getLastModified() method to obtain the last modified date of the record. Failing that, it will use Dataface_Record's getCreated() method to try to obtain the creation date of the record. This date should be a unix timestamp.	1.0
`author`	The name of the user who posted this record. If this is omitted, then it will try to use `Dataface_Record's getCreator()` method. Failing that, it will use the value of the default_author parameter in the [_feed] section of the conf.ini file. If that is not defined, then it simply uses the string "Site Administrator".	1.0

Name	Description	Version
`source`	The source URL where the feed is to have originated. If none is specified, then it will use the value of the source parameter in the [_feed] section of the conf.ini file. Failing that, it will simply use the URL to the application. **Note that you can alternatively define this value using the `getFeedSource` method.**	1.0
`enclosure`	An associative array with keys `url`, `type`, and `length` describing audio or video content that will be used by podcasting apps.	3.0

Example

```
function getFeedItem(&$record){
    return array(
        'title' => "News Item: ".$record->getTitle(),
        'description' => $record->display('News Body'),
        'link' => $record->getPublicLink(),
        'date' => strtotime($record->val('last_modified')),
        'author' => $record->val('posted_by'),
        'source' => 'http://www.example.com',
        'enclosure' => array(
            'url' => 'http://www.example.com/path/to/mypodcast.mp3',
            'length' => 123456, // in bytes
            'type' => 'audio/mp3'
        )
    );
}
```

NOTE RSS feeds will work perfectly well without defining this method. This just allows you to customize one or more parameters of the RSS feed.

Thumbnail Handling

Overview

Xataface 3.0 includes automatic thumbnail generation for Container fields. See the Generating Thumbnails recipe for an example of how to use this feature. You can also refer to the Fields.ini Directives section to see the syntax of the `transform` and `thumbnail.ACTIONAME` directives.

This section describes the PHP and HTTP APIs for Xataface's thumbnail feature.

How it works

If you add the `transform` directive to your container field, Xataface will automatically generate thumbnails for images that are uploaded to that field, at the time that they are uploaded.

e.g.

```
transform="itunes300 fill:300x300; itunes1400 fill:1400x1400"
```

The first thumbnail (in this case itunes300) will be displayed by default whenever displaying this field's image. You can configure a specific thumbnail to be used for a given action using the `thumbnail.ACTIONNAME` directive. E.g. If you wanted to use the "itunes1400" thumbnail for the "list" action you would add:

```
thumbnail.list=itunes1400
```

When using `Dataface_Record::display($fieldname)` and `Dataface_Record::htmlValue($fieldname)` it will respect these directives. E.g. If you call `$record->display('myimage')` it will return the URL for the "itunes300" thumbnail when called inside a request for most actions, but it will return the URL for the "itunes1400" thumbnail when called inside a request for the "list" action.

If you look at the resulting URL generated by the `display()` method, you'll see something like:

`index.php?-action=getBlob&···&-thumb=itunes300`

It is the "-thumb" query parameter at the end that specifies the thumbnail. If you remove that parameter, it will just return the full-sized image.

PHP API

The `Dataface_Record` and `Datafae_Table` classes include a few methods for dealing with thumbnails. Some of these methods include:

`Dataface_Record::thumbnail($fieldname, $thumbnailType) : String `

Returns the URL for a thumbnail of the given type of thumbnail.

Example:

Getting thumbnail of type itunes1400 for the "logo" field in the record.

```
$imageUrl = $record->thumbnail('logo', 'itunes1400');
echo $imageUrl;
```

Output:

Output shows that the "-thumb" GET parameter is set to "itunes1400", which is caused by the 2nd parameter of the above `thumbnail()` call.

```
http://example.com/index.php?-action=getBlob&...&-thumb=itunes1400
```

`Dataface_Record::getThumbnailForAction($fieldname, $actionName) : String`

Returns the URL for the thumbnail that should be used for the specified action name. This is configured via the `thumbnail.$actionName` directive in the fields.ini file.

Example:

fields.ini file definition for the logo field.

```
[logo]
Type=container
transform="itunes300 fill:300x300; itunes1400 fill:1400x1400"
thumbnail.list=itunes1400
```

PHP code getting URL for the "logo" field in three different ways.

```
echo $record->display('logo') ."\n";
echo $record->getThumbnailForAction('logo', 'list')."\n";
echo $record->getThumbnailForAction('logo', 'view');
```

Output when request was for the "list" action.

```
http://example.com/index.php?-action=getBlob&...&-thumb=itunes1400 ①
http://example.com/index.php?-action=getBlob&...&-thumb=itunes1400 ②
http://example.com/index.php?-action=getBlob&...&-thumb=itunes300 ③
```

① `display()` returns URL with `-thumb=itunes1400` because of the "thumbnail.list=itunes1400" in the fields.ini file, and because the current request is for the "list" action.

② `getThumbnailForAction('logo', 'list')` returns "itunes1400" because of the "thumbnail.list" directive in the fields.ini file.

③ `getThumbnailForAction('logo', 'view')` returns "itunes300" because there is no explicit "thumbnail.view" directive in the fields.ini file so it defaults to the first thumbnail type defined in the "transform" directive.

Output when request is for the "view" action.

```
http://example.com/index.php?-action=getBlob&...&-thumb=itunes300 ①
http://example.com/index.php?-action=getBlob&...&-thumb=itunes1400
http://example.com/index.php?-action=getBlob&...&-thumb=itunes300
```

① Notice that the output of `display()` is different when it is executed as part of the "view" action. In this case it adds the "-thumb=300" GET parameter because that is the effective thumbnail type for this action - no `thumbnail.view` directive is defined, so it falls back to the first thumbnail type defined in the `transform` directive.

`Dataface_Record::getThumbnailTypeForAction($fieldname, $actionName) : String`

Returns the thumbnail type for the given action. If there is an explicit directive for `thumbnail.$actionName` in the fields.ini file, then its value will be used. Otherwise it will return the first thumbnail type defined in the `transform` directive.

Example:

fields.ini file definition for the logo field.

```
[logo]
Type=container
transform="itunes300 fill:300x300; itunes1400 fill:1400x1400"
thumbnail.list=itunes1400
```

Sample PHP code

```
echo $record->getThumbnailTypeForAction('logo', 'list')."\n";
echo $record->getThumbnailForTypeAction('logo', 'view');
```

Sample Output

```
itunes1400 ①
itunes300 ②
```

① When `$actionName` is 'list' it outputs "itunes1400" because of the `thumbnail.list=itunes1400` directive in the fields.ini file.

② When `$actionName` is 'view' it outputs "itunes300" because there is no `thumbnail.view` directive defined in the fields.ini file so it falls back to the first thumbnail type defined in the `transform` directive.

`Dataface_Record::hasThumbnail($fieldname, $thumbName) : boolean`

Checks if a record has a thumbnail of the given type for the specified field. If the `transform` directive defines a thumbnail of the given `$thumbName` but the current record doesn't actually have a thumbnail stored of that type, then this will return `false`. It only returns true if the record actually has a thumbnail of this type that can be displayed. E.g. if the field is empty (has no image), then this also returns `false`.

Example:

```
if ($record->hasThumbnail('logo', 'itunes1400')) {
    // The record has a thumbnail of itunes1400 type.
    $thumbUrl = $record->thumbnail('logo', 'itunes1400');
    // ..
}
```

`Dataface_Record::getThumbnailTypes($fieldname) : string[]`

Returns a list of the thumbnails that are currently available for this record. This only includes thumbnail types that actually exist. It isn't sufficient for them to be listed in the `transform` directive.

Example:

PHP Source

```
$types = $record->getThumbnailTypes('logo');
print_r($types);
```

Output

```
array(
    0 => itunes300,
    1 => itunes1400
)
```

Appendix 2: Delegate Class Methods

Appendix 3: Javascript Environment

Xataface defines a small set of Javascript events to notify subscribers of lifecycle events.

Javascript Components

Xataface includes a set of Javascript components that can be reused in many different contexts. This section lists some of theme.

TODO: Add documentation on javascript components

window.xataface

The `window.xataface` object includes a number of utility classes and functions. Some functions are always available. Others require you to explicitly to load a script in order for them to be available.

Properties

viewport

The current display viewport dimensions. If the mobile footer and header are visible, then this viewport will be the bounds not covered by the header or footer. Properties include `top`, `left`, `right`, `bottom`, `width`, and `height`.

Example Using viewport to position an element

```
var viewport = xataface.viewport;
if (viewport) {
    // Position the settings wrapper 10 pixels above the footer
    settingsWrapper.style.bottom = (viewport.bottom + 10) + 'px';
}
```

xataface.InfiniteScroll

A component that supports infinite scrolling. This is used by default in the mobile theme's list view.

Since 3.0

Bootstrapping

Loading Script in PHP

```
xf_script('xataface/components/InfiniteScroll.js');
```

Loading Script in Javascript using `require`

```
//require <xataface/components/InfiniteScroll.js>
```

Properties

scrollEl

HTMLElement to which the scroll listener should be added. Defaults to `<body>`

parentEl

HTMLElement that should have elements added to it. Defaults to the `.mobile-listing` div, which is the result list in mobile view.

action

The Xataface action to use for fetching new rows.

pageSize

The number of records to load each time. Default is 30.

Methods

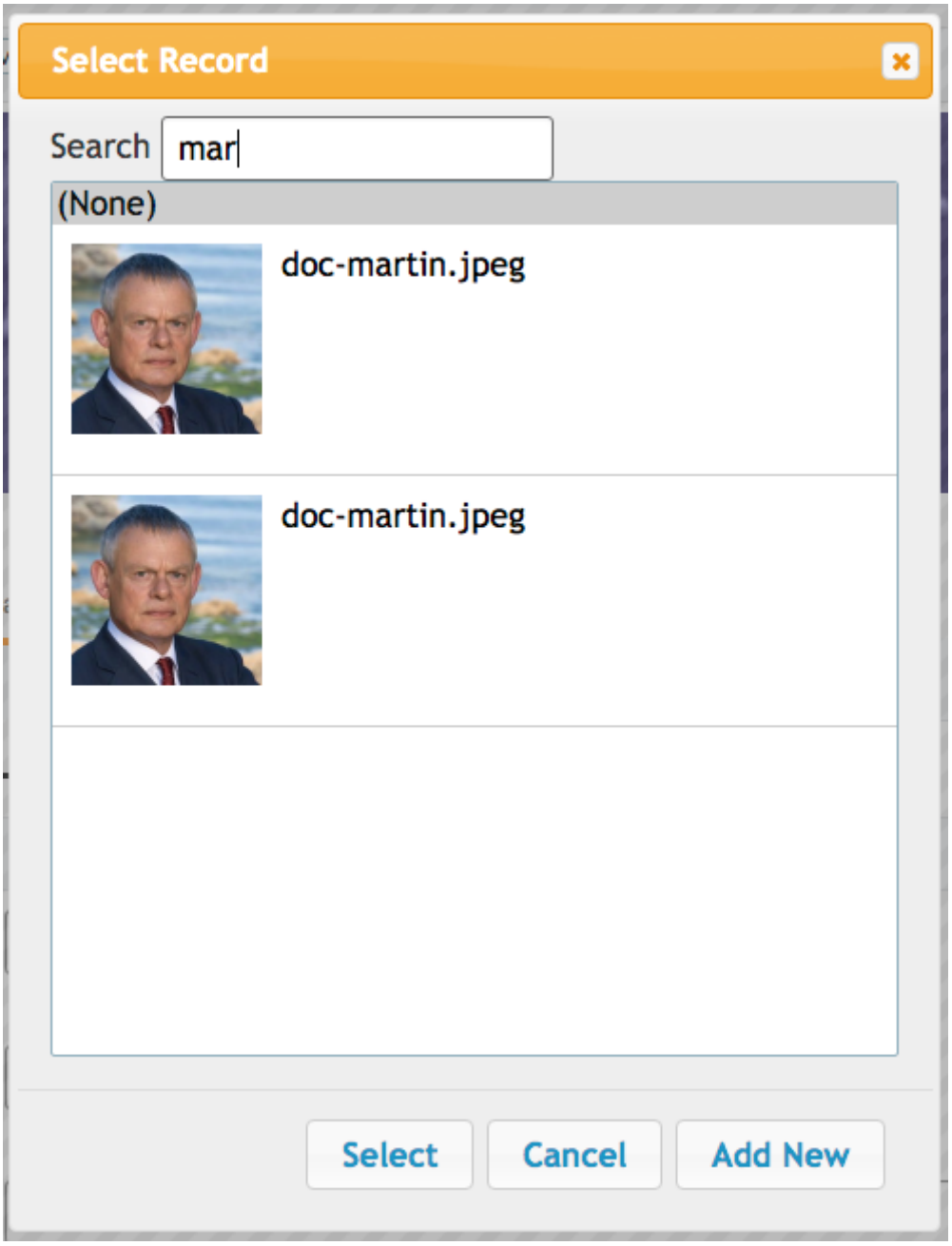
loadMore()

Loads the next page of results. If either no rows are loaded, or there is a problem loading rows (due to a network error), the InfiniteScroll's `reachedEnd` flag is set, which will prevent it from attempting to load any more records.

Usage Example

```
new xataface.InfiniteScroll({
   scrollEl : $('body').get(0),
   parentEl : $('.mobile-listing').get(0)
});
```

xataface.RecordBrowser



A component for selecting a record from the database. This is used by the lookup widget for selecting records, but can be used directly via its Javascript API.

Since 1.0

Bootstrapping

Loading Script in PHP

```
xf_script('RecordBrowser/RecordBrowser.js)');
```

Loading Script in Javascript using `require`

```
//require <RecordBrowser/RecordBrowser.js>
```

Initialization Options

Use `new RecordBrowser(options)` to create a new dialog, and display it with the `display()` method. The options are:

table

The name of the table from which to select records.

value

The name of the column to use for the value in the select list. Set this value to `__id__` to use the record ID. Default, if left blank: If primary key of table is a single column then it will use the primary key column. If the table has a compound primary key, then it uses `__id__` as the default.

You can use the optional `display:` prefix for the value to use the result of `Dataface_Record::display()` for the field rather than simply `Dataface_Record::val()`. E.g.

```
new xataface.RecordBrowser({
    value : 'display:file'
    //...
});
```

text

The name of the column to use for the text/label in the select list. Set this value to `__title__` to use the record title. This is the default, if left blank.

image

Optional column containing an image. If you set this value, then each row in the select list will also display an image.

imageWidth

Optional image width in pixels.

imageHeight

Optional image height in pixels.

filters

Dictionary if filters to add to the AJAX requests. You can use Xataface's URL conventions here.

callback

Callback function that is called when the user selects a record from the record browser. It will receive an Object with key/value pairs of the selected records, where the "keys" are the values and the values are the text.

editParams

Dictionary of GET parameters to pass to the edit form for editing records in the record browser.

newParams

Dictionary of GET parameters to pass to the new record form for adding new records.

allowAddNew

boolean value indicating whether the record browser supports adding new records. Default is `true`. If true, then an "Add New" button is included in the dialog. When the user clicks on it, it will open a New Record Form inside a `RecordDialog` component.

Methods

display()

Displays the dialog.

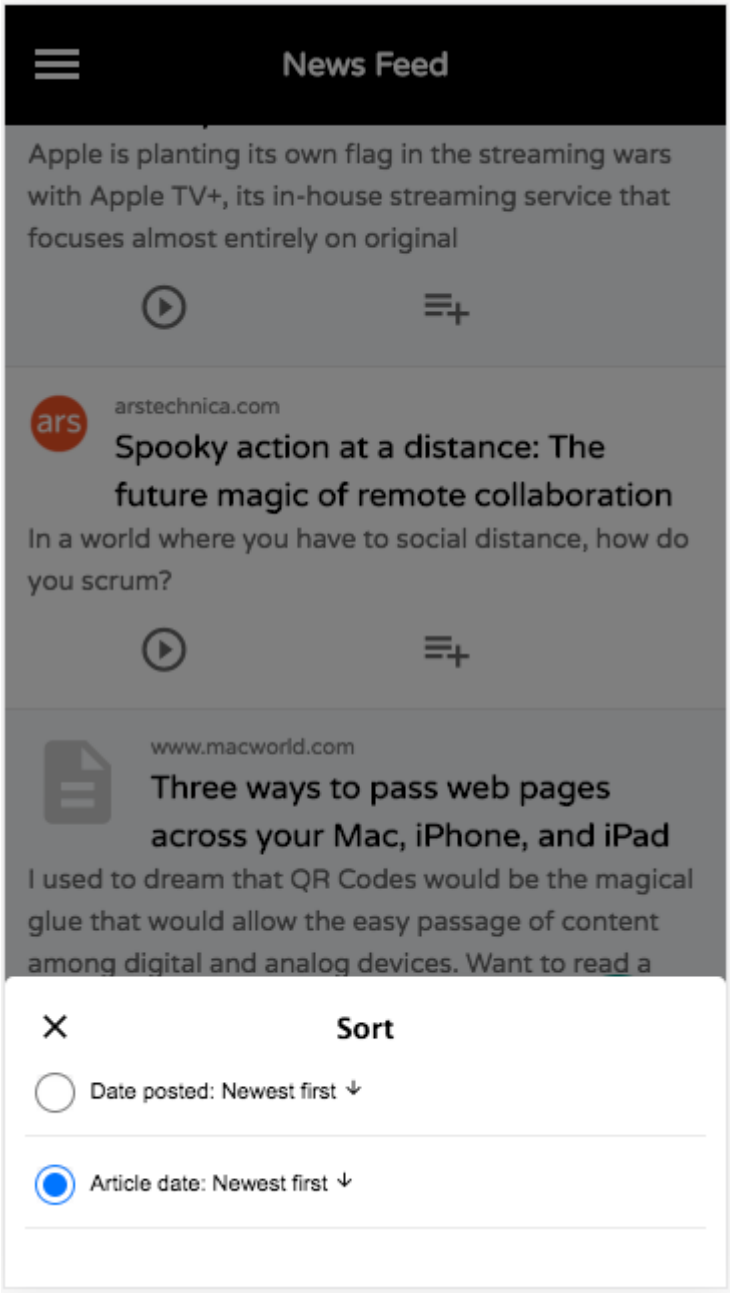
Usage Example

A simple example implementing function, `uploadCoverArt()` which can be triggered to allow the user to select records from the `nn_media` table.

```
//require <jquery.packed.js>
//require <RecordBrowser/RecordBrowser.js>
(function() {
    var $ = jQuery;
    window.uploadCoverArt = function(button) {

        // Callback function that will be called with the user
        // selects a record.
        function callback(data) {
            // the data will contain something like:
            // {'admin.php?-action=getBlob&...&-thumb=itunes300' : 'doc-martin.jpeg'}

            // Find the parent div with the "field" class.
            var fieldDiv = $(button).parents('.field');

            // Find the text input in this field.
            var textInput = fieldDiv.find('input[type=text]');

            for (var url in data) {
                // We put this in a for loop, but really
                // data should only contain one value.
                textInput.val(url);
            }
        }

        // Create a new record browser.
        new xataface.RecordBrowser({
            // Browse only records in the nn_media table
            table : 'nn_media',

            // The "file" column contains an image for the record.
            // use that in the browser.
            image : 'file',

            // The value column (which we are interested in) is the
            // file column.  We use the `display` operation to get the result of
            // $record->display('file') instead of just $record->val('file')
            value : 'display:file',

            // The callback to call when the user selects a record.
            callback : callback

        }).display();

    }
})();
```

NOTE	In the above example, we called this `uploadCoverArt()` by adding `onclick=window.uploadCoverArt(this)` to an action. See Adding Actions to Fields for more details on this specific example.

xataface.Sheet



A component for displaying content in a Sheet. Sheets can be displayed from the bottom, left, top, or right positions, and they transition in over top of the existing page content.

Since 3.0

Bootstrapping

Loading Script in PHP

```
xf_script('xataface/components/Sheet.js');
```

Loading Script in Javascript using `require`

```
//require <xataface/components/Sheet.js>
```

Initialization Options

Use `new Sheet(options)` to create a new sheet. The following options are allowed:

position

The position where the sheet should be displayed. `top`, `left`, `right`, `bottom`.

url

The URL to load in the sheet. **String**

Properties

installed

A read-only property indicating whether the sheet is currently installed in the document.

position

The position where the sheet should be displayed in the window. One of 'top', 'bottom', 'left', 'right', or 'fill'.

Methods

load(url:string)

Load the given URL inside the Sheet. This will be loaded inside an iframe.

show()

Show the sheet.

close()

Close the sheeet

Usage Example

Function that opens the sort options dialog inside a sheet.

```
//require <xataface/actions/Sheet.js>

// ...

function openSortDialog() {
    var qStr = window.location.search;
    if (qStr.indexOf('-action=') !== -1) {
        qStr = qStr.replace(/-action=[^&]*/, '-action=mobile_sort_dialog');
    } else {
        qStr += '&-action=mobile_sort_dialog';
    }
    var sheet = new xataface.Sheet({
        url : qStr
    });
    sheet.show();
}
```

TIP

A simple way to open a link inside a sheet is to add the `data-xf-sheet-position` attribute to an `<a>` tag in your HTML. E.g.

```
<a href="https://xataface.com" data-xf-sheet-position="fill">Open Xataface
Site in Sheet</a>
```

All positions supported by the `Sheet.position` property are supported by the `data-xf-sheet-position` attribute.

Javascript Events

xf-mobileenter

Triggered on the `window` object when transitioning from "desktop" mode to "mobile" mode. See Responsive UI for more information about mobile mode.

```
window.addEventListener('xf-mobileenter', function() {
    // Entering mobile mode
});
```

xf-mobileexit

Triggered on the `window` object when transitioning from "mobile" mode to "desktop" mode. See Responsive UI for more information about mobile mode.

```
window.addEventListener('xf-mobileexit', function() {
    // Exiting mobile mode
});
```

xf-viewport-changed

Triggered in mobile mode when the viewport area is changed. The viewport is considered the area below the **mobile-header** and **mobile-footer** blocks, which are positioned "fixed" at the top and bottom of the screen respectively. This event will allow you to reposition components whose position should depend on the size of the view port.

One example use of this event is the FAB button that needs to be positioned in the bottom-right corner of the viewport. The following Javascript code will reposition the FAB whenever the viewport size is changed.

```
function updatePosition() {
    var zoom = document.querySelector('.zoom');

    if (zoom) {
        var footer = document.querySelector('.mobile-footer');
        if (footer) {
            zoom.style.bottom = (footer.offsetHeight + 10) + "px";
        }
    }
}
window.addEventListener('xf-viewport-changed', updatePosition);
```

Appendix 4: URL Conventions

Xataface adheres to a few simple URL conventions for all of its actions. When you understand how Xataface URLs work you begin to get far more out of your applications. By specifying the appropriate query parameters to can jump directly to any point in your application, or produce a specific result set.

For example, the URL `index.php?-table=people` will take you to the people table (and since the default action for a Xataface application is list, it will take you to the list view.

You could be more explicit by specifying the action in the URL directly:

```
index.php?-table=people&-action=list
```

This would take you to the same screen. From this example, you see that you can specify such things as the table and action via GET parameters. Xataface accepts many more GET parameters also, as you'll see in the next section.

Available GET Parameters

-action

Specifies the action to perform. E.g. browse, list, find, edit, new, ... etc.. Default value is "list".

Since 0.1

-table

The name of the table to use as the context table. Defaults to the first table in the `[_tables]` section of your conf.ini file.

Since 0.1

-skip

Skip a certain number of results in the current found set to display. E.g. If there are 100 records in the table and you want to start browsing from the 30th record, you would set `-skip=29`.

> **TIP** Not to be confused with the `-cursor` parameter which is used to specify which record to view in the "details" tab.

Default value: 0

Since 0.1

-limit

The maximum number of records in the found set to display. Default value: 30

Since 0.1

-cursor

The index of the record in the current found set that is treated as the "current" record. This is used in the details tab to identify which record to act on. E.g. which record to view or edit. Default value is 0

Since 0.1

-sort

A comma-delimited list of columns to sort the result set on. Optionally specify descending or descending by adding " asc" or " desc" to the column. E.g. `-sort=first_name+asc,height+desc`. If no sort is specified, it will not sort the results.

Since 0.1

-relationship

If we are browsing related records, this specifies the name of the relationship.

Since 0.1

-related:start

If we are browsing related records, this is the first record in the relationship to show. Defaults value: 0

Since 0.1

-related:limit

If we are browsing related records, this is the number of records to show per page. Default value:30

Since 0.1

-search

A keyword search term to filter the found set on. Any row containing any field that matches the query will be returned.

Since 0.1

--no-query=1

A flag to indicate that xataface should not query the database by default. This flag is used in the new record form to prevent the form parameters from being interpreted as query parameters to search in the database. If you set this flag, it likely result in a message saying "No records found". Generally you would only use this in a custom action where you are not relying on Xataface's default found set.

Since 1.3

There are many other GET parameters that are used in various contexts but the above parameters are available throughout the entire application.

Finding Records using the URL

Notice that all of the GET parameters mentioned in the previous section begin with a hyphen (i.e. '-'). This is a convention Xataface uses to distinguish directives from search queries. All parameters that do not begin with '-' are treated as a query to filter the found set.

For example, `first_name=bob` used as a GET parameter would cause the found set to be filtered so that only records where the first_name column contains the phrase "bob" are returned. Putting this all together, suppose we wanted to show the list tab for the people table, but only wanted to show the people with first names containing "bob":

```
index.php?-action=list&-table=people&first_name=bob
```

Exact, Range, and Pattern Matching

By default, queries on text columns look for partial matches. I.e. if you search for "bob" it will match "bob", "bobby", "rubob", and any other text that contains "bob". If you are only interested in finding records that match exactly "bob", then you can prepend an "=" to the query. E.g. first_name==bob, or the full URL:

```
index.php?-action=list&-table=people&first_name==bob
```

This should show the list tab for the people table with only records with first name exactly "bob".

There are a number of modifiers that you can prepend to your query to modify how it is executed. They are as follows:

Table 4. Search operators

Prefix	Usage Example	Description
>	age=>10	Match records greater than search parameter.
<	age=<10	Match records less than search parameter.
>=	age=>=10	Match records greater than or equal to the search parameter.
<=	age=<=10	Match records less than or equal to the search parameter.
..	age=10..20	Match records in a given range.
=	first_name==bob	Match records that exactly match the search parameter (if there is no prefix then it will search for partial matches on text/varchar/char fields.).

Prefix	Usage Example	Description
~	first_name=~a%	Exact match, but you can include wildcards such as '%' and '?' in your search.
!=	first_name=!=bob	Match records that do NOT match the search parameter. (Same as <>)
<>	first_name=<>bob	Match records that do NOT match the search parameter. (Same as !=)

Search Examples

Given the following data set:

first_name	age
Bob	10
Cindy	12
Julie	6
Jake	8
Kabob	16

Here are some example queries on this data set and their results:

Query	Matches
age=>10	match records where age is greater than 10. This includes Cindy and Kabob.
age=<10	match records where age is less than 10. This includes Julie and Jake
age=>=10	match records where age is greater or equal to 10. This includes Bob, Cindy, and Kabob.
age=<=10	match records where age is less than or equal to 10. This includes Bob, Julie, and Jake.
age=8..10	match records where age is between 8 and 10. This includes Bob and Jake.
first_name=bob	Matches records where first_name contains "bob". This includes Bob and Kabob.
first_name==bob	Matches records where first_name is exactly "bob". This includes Bob only.
first_name=~J%	Matches records that begin with "J". This includes Jake and Julie

Matching on Related Records

It is also possible to match records based on their related data (i.e. data that is not physically stored in the record itself, but in related records via a relationship). For example if we want to find authors who have written about a particular topic, we would normally have to first find all of the articles that contain a topic, and then cross-reference that result against the authors table. With Xataface we can perform this query directly from the authors table using something like the following query:

```
index.php?-table=authors&articles/title=sports
```

This assumes that the authors table has a relationship named articles that contains all of the articles that an author has written. So the above query returns precisely those authors who have written at least one article whose title field contains the phrase "sports".

Anatomy of a Related Query

```
%relationship%/%field%=%query%
```

This matches all records in the current table such that at least one record in its `<relationship>` relationship matches the query: `%field%=%query%`.

Using the "OR" Operator

Xataface allows you to search for more than one value at a time using the OR operator. E.g.

```
first_name=bob+OR+steve
```

Would match all records with first_name containing "bob" or "steve".

```
first_name=bob+OR+=steve
```

Would match all records with first_name containing "bob" or exactly matching "steve"

```
age=<10+OR+>20
```

Would match all records with age less than 10 or greater than 20.

Combining Multiple Queries in One Request

Xataface allows you to filter on more than one field at a time. If you combine multiple queries in the same request it has the effect of strengthening the filter, matching only those rows that match both queries. E.g.

```
age=>10&first_name=bob
```

would match all records where age is greater than 10 AND that have first_name containing "bob".

Examples of Combined Queries

Given the same data set as the previous set of examples:

first_name	age
Bob	10
Cindy	12
Julie	6
Jake	8
Kabob	16

```
first_name=bob&age=11
```

would return no matches because there are no records that contain both first_name "bob" and age 11.

However

```
first_name=bob&age=10
```

would return only "Bob" and

```
first_name=bob&age=16
```

would return only "Kabob".

Special Common Queries

Search For Null or Blank Value

Searching for a null value or a blank value is an exact match for "". Therefore you can simply search for "=". E.g. To find records with a null or blank first_name you would use the query first_name==. Or the full query:

```
index.php?-table=people&first_name==
```

Search for Non-blank Value

Searching for a non-blank value is the same as searching for a value greater than "". Therefore you can simply search for ">". E.g. if you wanted to find records with a first_name, you would use the query "first_name=>". Or the full query:

```
index.php?-table=people&first_name=>
```

Preserved vs Non-preserved Parameters

As mentioned above any parameters that are prefixed by a hyphen (i.e. "=") are treated as directives rather than search filters. Hence if you want to use your own GET parameters you should always prefix them with a "-" to ensure that Xataface does not attempt to apply it as a search filter. In order to keep a consistent context for users, all browsing within the same table preserves both search queries and directives. Hence if you go to the URL:

```
index.php?-table=people&-action=list&first_name=bob
```

It will show you the list tab of the people table with only those records with first_name "bob". Now if you click on the details tab it will preserve your query "first_name". The query will become something like:

```
index.php?-table=people&-action=details&first_name=bob&···etc··· more parameters
```

(Although the parameters may appear in a different order). This allows you to navigate forward and back to previous and next records and stay within the same found set. It also ensures that if you click on the list tab to return to the list view, it will retain your place in the list.

Note that navigating within the same table it will also preserve your directives. E.g. If you specify the "-limit" directive to show 100 records per page:

```
index.php?-table=people&-action=list&-limit=100
```

And then you click on the details tab, it will retain your "-limit" parameter. Of course the "-limit" parameter is not actually used by the details action because it works on only one record at a time (it uses the "-cursor" parameter instead), when you click back on the list tab it will still show you 100 records per page.

Because of this, we call the "-limit" parameter a preserved parameter. It is retained when navigating within the same table. Note: parameters are retained in the HTTP Query string, not in sessions or cookies. This ensures that there are no surprises when you enter a URL to your Xataface application.

Unpreserved Parameters

If you don't want Xataface to preserve one of your parameters, you should prefix two hyphens to the parameter name. I.e. "--". One example of an unpreserved parameters throughout Xataface applications is the --msg parameter. The value of this parameter will be displayed on the page as an info message to the user. Clearly you don't want this parameter preserved across requests, as you only want the user to see a message once. E.g.

```
index.php?--msg=Record+Successfully+saved
```

Would display the mesage "Record Successfully Saved" at the top of the page. If you click on any link in the application, it will not retain the --msg parameter so you will not see the message on subsequent requests.

This parameter is useful if you want to give feedback to the user about an action that has been carried out.

Summary

Parameter Type	Prefix	Examples	Description
Preserved	`-`	`-limit`, `-skip`, `-cursor`, `-action`, `-table`	Parameter value is preserved when user navigates away from the page (within the same table).

Parameter Type	Prefix	Examples	Description
Unpreserved Parameters	`--`	`--msg`	Parameter is NOT retrained with the user navigates away from the page.

Appendix: Performance

This section includes documentation for Xataface features related to performance tuning.

Output Cache

TLDR: Enable the output cache by adding the following to your conf.ini.php file.

```
[_output_cache]
   enabled=1
```

Xataface does quite a bit of heavy lifting on each page request. If your application is getting a lot of traffic that is slowing your server down, you may want to look at enabling the Xataface output cache.

Features

1. Improve speed of application dramatically - especially for seldom updated sites.
2. Supports multiple languages.
3. Supports multiple users (each user has own cache).
4. Provides GZIP compression for improved performance.

How it works?

When you receive a request, Xataface will return a cached version of the page if the page has been accessed before. If the page doesn't yet exist in the cache it generates the page, saves it to the cache and outputs it to the user transparently. The cache is completely transparent to your users.

FAQ

Where is the cache stored?

Xataface creates a table called `__output_cache` that stores all of the cached content for your application. This table stores both a GZIPed and regular version of each page. If the user's browser supports GZIP compression, Xataface will automatically return the GZIP version. This results in further performance improvements.

What if I make changes to the database?

Xataface records which tables were in use when a page is cached. If any of those tables are modified after the page is cached, Xataface will mark that cached page as out of date and regenerate it the next time that it is requested.

What if I make changes to my configuration files and templates?

The output cache will have to be manually cleared if you make any changes to your source files (e.g. PHP, templates, and INI files). Clearing the cache is as easy as deleting or emptying the

`__output_cache` table.

How do I enable the Cache?

Add the following to your conf.ini file:

```
[_output_cache]
  enabled=1
```

How do I disable the Cache?

Simply comment out or remove the [_output_cache] section of your conf.ini file. E.g.

```
;[_output_cache]
;   enabled=1
```

Configuration Options

The following directives can be added to the `[_output_cache]` section of your conf.ini file to customize how your output cache works.

lifeTime

Number of seconds before cached page is considered out of date.

Since 0.7

tableName

The name of the table to store the cached pages. Default '__output_cache'.

Since 0.7

ignoredTables

A comma-delimited list of tables that don't affect the output cache (i.e. these tables can be changed without causing the output cache to be refreshed.

Since 0.7

observedTables

A comma-delimited list of tables that should affect the status of the output cache for every page (whether the table is explicitly used by the page or not). This is a useful way to tell Xataface to refresh your cache.

Since 0.7

exemptActions

A comma-delimited list of actions that are exempt from the output cache (and thus should not be cached).

Since 0.7

PHP Opcache

PHP 7 comes with shiny, new, built-in opcache that can drastically improve your performance. All you need to do is enable it in your php.ini file.

Simply activating the opcache on your server should reduce application latency noticeably.

TIP

You can enable your opcache by opening your php.ini file, and look for the following line:

```
;zend_extension=opcache.so
```

Uncomment this line and restart your web server.

See Where is my php.ini located? if you don't know where your php.ini file is located.

Getting More Out of Opcache

When you enable the opcache you will get a performance boost due to PHP being able to cache compiled versions your app's PHP files in RAM. However, you can crank even more performance out of opcache by instructing Xataface to cache its configuration information in the opcache as well.

Add the following to the beginning of your app's index.php file in order to enable the opcache for caching Xataface configuration:

```
define('XF_USE_OPCACHE', function_exists('opcache_reset'));
```

Xataface will look for this `XF_USE_OPCACHE` constant and, if defined, and `true`, it will use the opcache to cache its configuration data.

WARNING

If `XF_USE_OPCACHE` is defined and `true`, changes that you make to your PHP files, database structure, and configuration files may not be reflected until you clear your cache, or increment your application version in `version.txt`. **This includes disabling the `XF_USE_OPCACHE` directive because the PHP file may be cached in the opcache.

Refreshing the Opcache

If you make changes to your app's PHP or INI files, or make changes to the database structure (e.g. adding or removing columns), then you will need to refresh the opcache for the changes to be picked up.

There are two ways to refresh the opcache:

1. Use the `clear_cache` action. E.g. `index.php?-action=clear_cache`, when logged in as someone with

the "manage" permission. You can also access this action in the "Control Panel".

2. Increment the version number in your version.txt file.