Dive into Drupal 7 Views | July 13, 2018
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Drupal Views Training - Assumptions

This document aims to teach you Views for Drupal 7 and mirrors the script of a class presented on Friday, July 13, 2018 and UNT in Chilton Hall.

1. We assume you can log in as an administrative user on your site.
2. You have some experience working as a Drupal site administrator. At a bare minimum you can author content using the Rich Text Editor, can save, edit, etc. A history of creating/configuring content types, users accounts, or taxonomy terms is a plus.
3. The "Administration menu" is installed/active. If no black bar at the top of the screen when logged in as an admin user, go to /admin/modules#administration and turn it on.
4. Views Module is turned on. admin toolbar -> modules
5. This is just my preference, but I find the "Overlay" module distracting, especially when working with views. If you want a little more screen real estate while working in any Admin Screen, slide that to off and save.

Basics of A Database-Driven Site

Drupal stores data in a relational database and hides a lot of the complexity of working with it behind a web-based interface. Here are a couple of short 5-minute videos that explain the basics behind relational databases.

- https://www.youtube.com/watch?v=gfT7EGibry0 (the basics)
- https://www.youtube.com/watch?v=NvrpuBAMddw (explains relations between tables)

What is the Views Module for?

A tool that lets you query the site's database and filter, sort, and display/format information in ways that are helpful to your users. It is very powerful but hides a lot of the underlying complexity from you.

Drupal Database Organization

For our purposes, the information we want to work with is stored in the database under one of three big buckets of information called "Entities" in Drupal speak:
- Content. sometimes called "Nodes" in the system, and often "Content Types"
- Taxonomies. or Vocabularies.
- Users. Or "People" (actual database records tied to logins)

Note: there are other "Entity" types, but we aren't super concerned with those usually.

Content / Nodes / Content Types

Most of the information our users interact with is content. We can use the site admin tools to create/configure logical groupings that silo/separate content based on specific functions/needs on the site into "content types".
Example/Hypothetical content types:
- News
- Events
- FAQs
- Physical Objects (Books, Buildings, gym or lab equipment, etc.)
- Concepts/Ideas (HR Data, Policies, Organization/Department Data, etc.)
- People, Animals, etc.
- Whatever you want really, endless possibilities

Once organized into types that make sense for your site:
- You typically assign special "fields" or "attributes" for each one (more later) to make data entry easier and to help with sorting/filtering/searching later.
- You or your staff with editing permissions create individual instances of these items
  - News item 1, news item 2, etc.
  - Book 1, book 2, etc.
  - And each individual item you create will get a unique title, URL, words, etc.

You are likely to have several content types and then dozens/hundreds/thousands of individual content entries of each type as time goes on. Some items will get edited/revised, some may never get touched again once 1st created.

Taxonomies

Taxonomy are vocabularies that are used to categorize content/nodes (usually). They can be short or long, organized or chaotic on their own. A list of taxonomy terms typically gets attached to content through some kind of selection "field" (more below) but are independent things and your site can have multiple taxonomies based on function.
Example taxonomies:

- Tags/Categories (for blogs, news/events, FAQs, etc.)
- Scientific Classifications
- Anything else you want that groups things together ex:
    - Policy types, Building names

Once you've set up a few taxonomies:
- You can set a content type form to use one (or more) of those taxonomies to classify/group similar pieces of content.
- For each vocabulary you can stipulate:
    - Is the vocabulary controlled or are editors free to add new terms as they see fit?
    - Are terms flat or is there a hierarchy to them?
    - Can the individual terms have relationships to other terms?
    - Can the individual terms have fields much like content does?
- Taxonomies and their terms are very useful in organizing content and filtering/displaying it with Views.

Users

Users are the last kind of entity you might configure and use with views, though probably more rarely.
- A 'user' is a person who has logged into the site and has an account/database record associated with them.
- Users, like content and taxonomy terms can have fields associated with them if need be.
- Users can have roles and permissions, and at UNT, can be tied to the LDAP tree.
- Drupal automatically stores the relationship between users and the content they create/edit, making it possible to use views to create (sometimes) useful or interesting displays.

Fields

Think of fields as "attributes" on an entity (content item, taxonomy term, or user). Each field is entered by assigning/filling in a form field on the entity's data entry form.

So, if we had a content type representing a policy, we might have the following fields that describe some aspect of them:

- Title
- Policy Text
- Date of Acceptance
- Policy Categories (Keywords, Audiences, etc.)
- Policy ID

A Building might have:

- Address
- Floor Maps
- Etc.

Notes about fields:

- Arbitrary: You can add as many or as few to an entity as you want/need.
- Fields can be optional or required.
- Fields can take a variety of data entry methods, depending on what data you need to collect:
  - Plain Text – single or multi-line
  - HTML (with a rich text editor)
  - Date Entry
  - A link/URL
  - A Number
  - Yes/No checkbox
  - A select/option picker
  - A "reference" field that points at other content, taxonomy terms, or users.
  - More...

Built in Fields and Other Metadata:

Each entity type has a few fields that are always present and can often be useful in displaying/filtering information in views. Other "metadata" (information about the item) is also present, sometimes automatically generated, and can be helpful too:

Content:
- Published: Yes/No
- Promoted to Front Page: Yes/No
- "Sticky" to the top of lists: Yes/No
- Title
- Post Date & Updated Date
- Node ID

Taxonomy:
- Term ID
- Parent Term(s)
- Vocabulary the term comes from
- The "Weight" (position) in the vocabulary hierarchy

User:
- Active/Blocked
- Creation Date
- Get info about the current logged in user
- LDAP properties
- User ID
- Permissions and Roles of the User
- A User Picture

Content Types, Taxonomies, Users, and Fields as Source Data for Views

With these concepts in mind, you can then allow views to do interesting things with your data. Some examples views:

- Display a bulleted list of only FAQs titles
- Display a list Policies titles, summaries, and a link to the full display, sorting them by Title
- Display the titles, dates, and picture fields of Events, but only those with a date field that occurs in the future.
- Make a table of names, phone numbers, email addresses and photos of "People," but make sure to only show those who have a taxonomy term of "Faculty", sort them by a field "department", then last name, but put the department heads at the beginning of each grouping.
- Show a list of blog post titles, limit it to those by a single user, as is passed in from the url or data on that person's profile page. Display them in chronological order of their post-date, and if there are going to be more than 10 per page, add pagination.
- Show a link-list of taxonomy terms from the "tags" vocabulary and display the count of posts that reference those individual terms. Each link should then point to another view that shows a blog-like view of posts with just those tags selected, listed in order of their post-date.
- Many, many more possibilities.

Live Examples

We are going to live build some example content and views on your sites. So that we don't interfere with real content, we need to take some special precautions along the way, so follow along closely.

In most cases I will be prepending important text names with "training" this is to protect your data/ keep it clear what is tutorial content vs. your already existing real data, as it is likely your site may already have some information stored in the database, sometimes with similar names to what we will be using. If for whatever reason your site already uses "training" in the names of many things, you may wish to substitute "Example" or "Drupal" or some other marker that is easy to identify later when you want to delete things. In real life, you would not need to prepend your text values with any such thing.

Why FAQs are a good example for learning

Let's learn views by building a few differing FAQ listings. FAQs are interesting because different sites have different numbers of potential questions, ways of grouping them, and they may evolve with time. The site designer may want to have:

- a simple bulleted list of just questions/answers
- a really complex one with headings/categories, crossing linking, etc.
- It may be so long it needs to span several pages, sections, etc.
- It might be wise to be searchable

Create a Vocabulary to use in our Content Types

Click in the Admin Toolbar -> structure - > taxonomy -> add vocabulary and you will arrive at:
/admin/structure/taxonomy/add or go to the URL: admin/structure/taxonomy and click + add vocabulary

Add a Vocabulary and terms:
1. Training FAQ Category
2. Back at /admin/structure/taxonomy/ Click "Add term" to Training FAQ Category:

3. Type in the Name Field (hitting enter after each one to refresh the screen with a new form for the next entry):
    a. Courses
    b. Orientation
    c. Extra-Curricular Activities
    d. Research Areas

Create a Content Types

Click in the Admin Toolbar -> structure - > content types -> add content type and you will arrive at: /admin/structure/types/add or go to the url: admin/structure/types and click: + Add content type

1. Create a "Training FAQ" type
    a. Name: Training FAQ
    b. Change "Title field label" to "Question"
    c. Publishing options: Untick "Promoted to front page"
    d. Save Content Type

Adding Fields to our FAQs

Click in the Admin Toolbar -> structure - > content types -> training faq-> manage fields

1. Click "Edit" to the right of "Body"
   a. Change Label to "Answer
   b. Uncheck "Summary Input"
   c. Leave remaining configurations alone
   d. Save.
2. Add a new Field:
   a. Label: "Training FAQ Categories"
   b. Field Type: "Term Reference"
   c. Keep Widget type as "Select list"
   d. Save
   e. On New Screen, ensure: "Training FAQ Category" is selected from the Vocabulary selector.
   f. Click "Save field settings"
   g. Check "Required Field"
   h. Scroll down to near the bottom: "Number of Values": Change to Unlimited.
   i. Save.

Creating Content

We need some example content for your tutorial.

Click in the Admin Toolbar -> content- > add content -> training faq or go to: /node/add/training-faq

- Add 7-15 example FAQ items
- Quick tip: after saving an item, hit the back button to go back to the "Add screen" and change/update the form with new questions/answers/categories and repeat to make things go faster.
- Make sure to put FAQs in:
  o a few different categories,
  o that you have a few questions in the same categories,
  o some of your questions have multiple categories (CTRL + click).
- Some special cases for later experiments:
  o Give at least 1 item a title, and category, but no "Answer"
  o Start 1 question with something like "The bathroom..." (a leading article that would effect sorting in a list)
  o Choose 1 item that has a title with something like "Where is..." Or "What is..." (A high letter in the alphabet), and under "Publishing options", *check* 'Sticky to the top of lists'
  o Choose a different item, in the Publishing options, *uncheck* "Published"

Getting Started with Views

Click in the Admin Toolbar -> structure - > views or go to /admin/structure/views
This is the listing of all views in the system. Note:

1. Top: You Can "+ Add a New View"

2. Top: You Can "+ Add a view from a template"
3. List/Settings Tabs at the top-right of the screen
4. The list of existing views is a table, showing:
   a. View system name
   b. View system description
   c. "Tag" (not the same thing as our vocabulary of "tags")
   d. Paths (live URLs to render-able views)
   e. Edit/Operations (click the arrow and you can edit/delete/disable/export/clone (copy) your views.
5. Note that if you scroll down some views are greyed out. These are "disabled" (above). Even if they have paths, users won't see anything if they go there.
6. Click the "Settings tab"
   a. Check "Show filters on the list of views"
   b. Uncheck "Show advanced help warning"
   c. Check "Always show the master display"
   d. Check "Always show advanced display settings"
   e. For the Live Preview settings:
      i. Check "Automatically update preview on changes"
      ii. Check Show information and stats "Above the preview"
      iii. Check Show performance stats.
   f. Save configuration.
   g. Note back on List you now have some additional filters for easier viewing when you have lots of views. The "all tags" and "all types" select options are very helpful when you have lots of different views.

Add a New View

This page sets up some initial configuration options for the next screen. Think of it as a shortcut to some of the operations you can do within the main view editing screen we will see in a second. For this example, we are going to be pretty minimal in what we set from the start, but in your future views work setting options up front can save you a bit of time later.

- View name: Training Views: FAQs
- Show: Content of type "Training FAQ" sorted by "unsorted"
- Uncheck "Create a page"
- Save and Exit. Note our view appears in the table, but without description or path
- Click edit next to it, this will take you to that view's main editing screen, or the same spot if you had hit "continue and edit" before

Orienting to the Main Views Editing Screen

We see a "master" display of a view (top-left). Nothing will currently display to the user, but we've set up some basic filtering in the previous step. Note the many things on the screen:

1. "Displays bar" (grey)
   a. Think of this as a workspace switcher if/when we add variant displays to our view.
      i. "Master" is the default database queries/display settings we just set. These settings can/will persist if we make variant views.
      ii. The add buttons lets us add those variants
      iii. A button "Edit view name/description" let's you give more information on the listing table from the previous screen.
         1. Click it and add 'training' to 'tags' and
         2. "Listings of FAQ content" to the 'description'
      iv. The dropdown arrow gives you other options to export, clone/copy, reorder variants.
2. Details Section (3 columns). This is where you do most of your work. Each column is broken into sections with headings. Clicking any link or button in here will bring up a popup / modal window that lets you do some sort of work.
   a. TITLE / FORMAT / FIELDS / FILTER CRITERIA / SORT
   b. (SETTINGS) - says "Access" on Master / HEADER / FOOTER / PAGER
   c. Advanced ᵛ: CONTEXTUAL FILTERS / RELATIONSHIPS / NO RESULTS BEHAVIOR / EXPOSED FORM / OTHER
3. Downward Arrows: You will notice some upwards/downward facing triangles at various points in views screens. Click these to show/hide information/more options.
4. A Preview Section: The bottom 1/3 of the screen shows you a live preview of your view query. As you make changes to the view, it updates.

Add A New "Page" View Display:

"Pages" are views that live at a public URL.

1. Click page from the + Add dropdown.
2. Note message at top "All changes temporarily stored."
3. Note Alert at bottom "Display page uses path but the path is undefined."
4. Under "Page Details" Display Name: Change from "Page" to "Simple FAQ Page" and apply.
5. In the Middle column: Set a URL by clicking "No path is set"
    a. In the popup-choose a distinct URL not used elsewhere: training/faqs-simple
    b. Best practices: all lowercase, no spaces, use dashes to separate words.
    c. Click apply, then save in the upper-right.
    d. Visit the new url by clicking the path down in the preview area.

Adding A New "Block" View Display

"Block" Views are ones that are output as Drupal "blocks." Think of those as (usually) small page includes. A block typically be useful when you want to include a views list in some other page's sidebar, or feature column, rather than have it be the main content for the page.

1. + Add a Block
    a. Click the "display name" and change to "FAQ block," and add a brief description of its purpose "a listing of FAQs"
    b. Save in upper-right.
2. In the breadcrumbs click "views" and look for our new view in the list.
3. Note we now have a new "block" available for embedding anywhere on the site:
    a. Admin bar -> structure -> blocks.
    b. Scroll down or CTRL + F and look for FAQ
    c. If desired, you could set this block to appear in a sidebar or other region of your site based on URL path or content type or role or for certain user types.

Basics of View Titles, Formatting and "Inheritance"

Let's do some basic configuration of the views by changing titles and big-picture formatting. We'll also learn how different display can inherit (or not) from the Master display.

1. Master:
   a. Set the Title from None to "FAQs.
   b. Note the asterisk data is temp saved, "Master" has changed, other haven't
   c. Note if I click a different display the title is now updated their too.
   d. Hit save and preview our page again. It inherited the title.
2. Go back and click onto "Simple FAQ Page" in the grey bar.
   a. Click under TITLE: title: "FAQs"
   b. If I change the title now it changes on other displays, like the block.
   c. Unless...
   d. Change For: "For All Displays" to "This Page (override)" above the title.
   e. Notice the "Apply (All Displays)" button changes to "Apply (this display)"
   f. Change the title to "Frequently Asked Questions" and apply. Changes now only appear on this page, not the master or block.
3. Click on our "FAQ Block"
   a. Under FORMAT click "unformatted list"
   b. Change to HTML List
   c. Again, DON"T Apply to all displays, switch it to just this one top: [For: This block (override)].
   d. New Options appear. Leave everything alone but note all the options you could change.
   e. Apply and view the preview below (now a bulleted list).
   f. Click Settings next to Format HTML List to get back to that same spot.
   g. Change to Ordered list. Apply/Save.
4. Go to "Simple FAQ Page" Display again.
   a. Note, preview doesn't show bulleted list. This display is independent.
   b. Under FORMAT,
      i. "Show" change "Fields" to "Content" and choose "Teaser"
      ii. Make sure to apply your changes only to the current display.
      iii. Apply and look at preview. You get some formatting and not just the titles anymore.
      iv. Change "Teaser" to "Full Content", apply and preview the difference.
      v. Change Show "Content" back to "Fields" and Save.

* Note: We will end up toggling this values dozens of times in this tutorial. Get used to it.
* Note 2: "For: "For All Displays" to "This Page (override)" is set for each of the Sections "TITLE, FORMAT, FIELDS, and all the linked options underneath them in the display. In other words, if you override the title, this has no effect on the global settings for Fields, unless you change those too.

Working with Fields

Typically, the Fields format will give you the most freedom to display content in the order, shape, sizes you want.

1. Adding/Showing only certain fields
   a. Still on our simple page display, beside "FIELDS" click "Add
   b. In the pop up, search for "answer" Note there are two choices "content: body" or "content: answer". They are the same since we just renamed body for FAQs. You can choose either one.
   c. Check one and "Apply this display only".
      i. Uncheck "Create a label" and leave everything else as is.
      ii. Apply this display.
      iii. We now have a question (title) followed by the answers (body).
   d. Click "Add" again and search for FAQ categories.
      i. Check "Content: Training FAQ categories" (NOT the option that includes "*Delta*")
      ii. Note that your changes will now only apply to this page (no need to do it again)
      iii. Change the label value to something prettier: "Categories"
      iv. Apply.
2. Basic styling for our fields
   a. Under "FIELDS", click "Content: Title"
      i. Open "Style Settings"
      ii. Click "Customize Field HTML"
      iii. Change HTML Element from "Use Default" to H4
      iv. Apply and preview.
   b. Under "FIELDS", click "Content: Training FAQ Categories (Categories)
      i. Open Style Settings
      ii. Check Customize field HTML"
      iii. Change to "span" or "none"
      iv. Check "Customize label HTML"
      v. Change to "strong"
   c. Note about "Deleting Fields" and canceling changes
      i. You can delete a field from the view display here as well, a "remove" button is at the bottom, next to 'cancel' which drops your working changes to the field.
3. Add several fields as the same time:
   a. Beside "FIELDS," click "Add" and search for "Link"
      i. Add checks next to:
         1. "Content: Delete Link"
         2. "Content: Edit Link"
         3. "Content: Link"
         4. "Global: Contextual Links
      ii. Click Apply (this display)
   b. You can now configure each in rapid succession. For each Edit/Delete/Link, each:
      i. Uncheck "create a label"
      ii. Check "Exclude from Display"
      iii. Fill in "text to display" as "delete, edit, or link"
      iv. Apply (this display)
   c. For Contextual Links:
      i. Remove label text and uncheck "Create a label"
      ii. In the Fields Box choose the 3 link types: Delete, Edit, Link
      iii. Retain "include destination"

- iv. Apply (this display).
- v. Save and view on front end.
4. Custom Text Fields and Rewriting
   a. Add another field for later use. Search for "custom text"
      - i. No label
      - ii. Type "Howdy" in text.
      - iii. Apply to this display and preview: "Howdy" appears in every view.
      - iv. Re-edit and remove "Howdy". We'll Leave "Text" blank for now and come back to it.
      - v. Open the "More" section at the bottom, change the administrative title to: "Formatted text" and apply. If you don't the views admin display will say "custom text" which can be confusing sometimes if you have multiple custom texts
      - vi. Apply and (shouldn't see evidence for this field in the preview since the text is blank)
   b. Add Another Field and "rewrite" the content to be useful, but hidden
      - i. Click to add a new field and search for "content: Nid"
         1. This is the database ID for the individual FAQ item. We will use it soon, but don't want the user to actually see it.
         2. On the configure screen:
            - a. Uncheck create a label
            - b. Open "REWRITE RESULTS"
            - c. Check Rewrite the output of this field
            - d. Add this HTML to the Text:

               `<span id="[nid]"></span>`

            - e. Apply this display
5. Rearranging Fields
   a. Click the arrow next to the FIELDS Add button and click rearrange
   b. Drag/Drop to reorder, apply and preview.
   c. After playing around, rearrange to:
      - i. NID
      - ii. Title
      - iii. Body
      - iv. Formatted Text
      - v. Categories
      - vi. All the rest of the links

      Note: You can also "remove" fields from the view here as well. Helpful if you want to mass delete fields from your display. Try removing the "content: link" field
   d. Apply.
6. No results behavior for a field
   a. For the "content: body" field:
      - i. Open "NO RESULTS BEHAVIOR"
      - ii. Add text wrapped in paragraph tags:

         `<p>This question doesn't have an answer yet.</p>`

7. Rewrite & Combine Fields
   a. Let's also hide our Title and Body, previously created.
      - i. For both "Content: Title" and "Content: body", exclude from display and apply.
   b. Click on our "Formatted Text" Field
      - i. Open the "Replacement Patterns" block

ii. Fields that appear above this one show up with brackets around their names.
Note: The current field is only aware of fields that are listed above it in the fields list and is unaware of those that come afterwards/below in the list

Note 2: as we saw earlier you can re-write any field. Your rewrite will be retained if you include them in other fields like we are doing here.

Note 3: BUT if you include one field into another, other settings you may have set do not show up. there is no label, no html wrapping as we have seen, etc. The one exception is that if the field was a link, it will remain so.

iii. In the Text Box, type or copy/paste from the rewrite section on 2 lines:

[title]
[body]

iv. Apply to this display.
v. Notes:
1. Title and body are back
2. Title has lost its formatting.
vi. Re-edit Formatted text, wrap the title in HTML.
<h4>[title]</h4>
[body]
vii. Play with a few of the other options in the rewrite results section as you see fit. You can shorten the body, strip html, all sorts of things.

Sorting your Content

You typically want your content to display in some sort of order. Sorting to the rescue. You can sort by virtually any field available in your view, by dates associated with your content, etc.

1. Sorting by a single criteria:
   a. Under SORT CRITERIA: "Add"
   b. Search for "Content: title" and check it.
   c. Apply ALL Displays!
   d. Choose Ascending, or Natural Ascending if you have "views natural sort" module installed (this ignores leading articles)
   e. Save and look at the live URL.
2. Adding multiple criteria:
   a. Go back to editing our page (or master) view
   b. Add a new sort criteria: "content: sticky"
   c. Sort it descending (if you want sticky at the top of the list, ascending if at bottom).
   d. Click the arrow next to "Add" to set the order of evaluation for sorting criteria so that in this case, sticky appear 1st.
   e. Apply.

Cloning Existing Displays

Sometimes it's helpful to copy an existing display. Maybe you want to test an alternative but not interfere with what users are currently seeing. The only real issue to watch out for here, is that you can't clone a display and transform it from a "page" to a "block" or some other type.

1. Click arrow next to view Simple FAQ Page
2. Click "clone Simple FAQ Page"
3. New Display with same name appears.
   a. Update Display name: "Grouped FAQ Page"
   b. Give our new page a different URL:
      i. Page Settings: Path: /training/faqs-grouped
   c. Save (we now have two different pages that look the same.

Grouping Content by Fields

Sometimes when your content has repeating data it might be wise to group like content together in the display, rather than repeat it over and over for each row.

1. Under FIELDS:
    a. Click "Content: Training FAQ Categories (Categories)
    b. Uncheck "Create a label"
    c. Open "Multiple Field Settings" and experiment with other display types:
        i. Try an unordered list or a | instead of the comma separator
        ii. After previewing the differences...
        iii. Uncheck "Display all values in the same row"
            1. Any questions with two categories are now duplicated in the list!
    d. Check "Exclude from display" to hide the categories completely
    e. Change "Formatter" from "Link" to "Plain Text"
    f. Open the "Style Settings"
        i. Change "Customize Field HTML" (1ˢᵗ option) from none to H3
        ii. Uncheck the "Customize label html
        iii. Apply this display
        iv. We won't see anything just yet, except our categories have disappeared from the preview.
2. Under FORMAT:
    a. Click "Settings" next to Unformatted List.
    b. Grouping Field Nr. 1:
        i. Change to "Categories"
        ii. Ensure "Use rendered output to group rows" is checked.
        iii. Other options are fine as is. Apply this display.
        iv. Click the categories and:
            1. Uncheck the Create a Label option
            2. Check "exclude it from the display"
            3. Change the Formatter to "Plain Text"
            4. Multiple Field Settings
                a. Uncheck "Display all values in the same row"
            5. Style setting:
                a. Change the Customize Field HTML to H3
                b. Uncheck "customize label html"
                c. Apply.
                d. All that work is now "hidden"
        v. Up above Fields group, click the settings next to "Format: Unformatted list"
            1. Change Grouping Field Nr. 1 from None to Categories
            2. Ensure "Use rendered output to group rows" is checked.
            3. Other options are fine, apply.

Views Headers and Footers

Sometimes you want to insert a block of text above/below a whole view. Perhaps to describe its function, or maybe you want to provide a summary of what the user can expect from it. To add a Page Header:

1. Middle Column: HEADER

    a. Click Add

    b. Choose "Global: Text Area"

    c. Apply This Display

    d. Write some text. "This page contains frequently asked questions for our college."

    e. Apply, save, view the live URL.

2. Try adding a "Global: Results summary to the header.
3. Experiment with rearranging the header elements (arrow down next to "add".)
4. Middle Column FOOTER

    a. Gives you the same sorts of options as the header. Operates the same except whatever you enter shows below the view list.

Pager and Number of Results to Show

Since we are retrieving records from a database, it's often advantageous to only show a limited number of records on a single screen at a time. You may wish to do so for performance reasons or to make it easier for your users to digest your content.

1. Middle Column: "PAGER"
2. Click "Paged, 10 items.

    a. Review options, change # of items per page to less than the number you have.

    b. Most of the remaining settings you will rarely want to change.

3. Click Use Pager: Full

    a. Change to Display All items.

    b. Apply to all displays.

4. Experiment with the mini pager or a specific number of items if you wish.

Note: For pagers: As you design your views, consider how much content you are going to have in the list, and the performance implications. 10 20, 50 things on a single page may not be a problem. What if you have 1000s?

Attaching Multiple View Displays Together

In some cases, you want to have several related views showing up above/below one another. In the case of an FAQ, a common design pattern is to list all the questions at the top of the page, each linking further down the page.

We'll re-use our "Simple FAQ Page as the bottom/Main Question/Answer section.

1. At the top grey bar, under displays, +Add and "attachment"
   a. This simply extends our master
   b. "Attachment views" are similar to blocks in that they have no URL, but they are not available anywhere else but in the Views admin area.
   c. Change the Display Name to "Jump Menu"
2. Let's change FORTMAT: Unformatted list to and Ordered List Type (this display only)
3. Under ATTACHMENT SETTINGS (Middle column)
   a. Attach to: Choose "Simple FAQ Page"
   b. Leave Attachment Position to "Before" though we could put it below in a different circumstance.
   c. Leave other options alone too.
   d. Apply.
4. Preview or View the simple FAQ.
   a. Note there is a problem. Clicking an attachment title/link will go to the individual object, not jump you down the page...
   b. Edit the attachment again...
   c. Under FIELDS: Add: Search for NID and add the "content: NID" to this display only. Exclude it from the display, don't label it.
   d. Rearrange the Title and NID so the NID is listed first.
   e. Edit the Content: Title
      i. Uncheck "Link this field to the original piece of content"
      ii. Open "REWRITE RESULTS"
      iii. Check "Output this field as a link
      iv. In the Link path box enter:

         #[nid]

      v. Apply (this display)
      vi. Save and View the Live site.

Attaching Displays from Different "Views" Together.

We saw that you can make an attachment view display that can be added to any other view in the current "View". What if you had several different views (so like our FAQs and their current 5 displays, and a hypothetical view that listed tutorials and had 3 displays of its own.) Could we "attach" those together? Yup.

1. Click on any of our FAQ Block Display.
2. Middle Column: FOOTER:
3. Add and look for "Global: View Area"
4. Apply (This display)
5. The most important element on this popup is the "View to insert" select. If you open it, you see a full list of all the views and all the displays configured on your site. At this point you probably don't have anything meaningful to attach/insert, but you could select anything here and if it produced results, you would have those things appear in the footer of your current view. Most of the other options are self-explanatory, except for "Inherit contextual filters" which we get to shortly.
6. Click "Remove" to not insert this bit of code to your view.

Working with Filters

A filter is used to limit the database query so that you only pull a subset of the entire database records. When we initially set up this view we said we only wanted "FAQs" and it automatically also added criteria for those that were "published" What else could we do?

1. Go to the Master Display
2. Under FILTER CRITERIA: Click "Published (Yes)"
3. Toggle to "No" and would only see hidden items.
4. Remove the criteria.
5. Add a new filter and type "Published" and check "Content: Published or admin" and apply.
   a. This is a smart filter that allows you to see everything, published or not, while hiding unpublished items from regular users. Your hidden records are now visible (to you).
6. Click on "Content Type (= Training FAQ)
   a. You can see a list of all 'content types' defined on your site.
   b. Ignore "Expose this filter..." For now.
   c. Operator allows you to include or negate your chose to the right.
   d. If you have other content types, you could include them here to see the results...
      NOTE: When you include multiple content types, be aware of what this will do to your display. Ex: you have 2 content types 1 with categories, 1 without. You have your view display configured to sort on those categories. What will happen? Nothing will display or get sorted, or whatever you want to happen... unless... for that field you have set "NO RESULTS BEVAVIOR" to some sort of default.

Exposing Filters to the User

In some cases, you will want to let the user decide how the list should be filtered. In some cases, you can use this feature to make a rudimentary search engine as well.

1. Go to "Master" Display:
2. Under FILTER CRITERIA: Add, and search for "title"

- a. Check "Content: title" and Apply to this display only
- b. Check "Expose this filter to visitors, to allow them to change it"
- c. Change the Operator from "is equal to" to "contains"
- d. Keep Everything else as is and apply.
3. Click "Content: Type" again.
   - a. Expose the filter
   - b. Require it
   - c. Play with the label if you wish
   - d. Put checks next to Training FAQ and some other type in your list, probably "page"
   - e. Check "Allow multiple selections"
   - f. Check "limit list to selected items"
4. Save.
5. Switch Display over to "Jump Menu" attachment.
6. Middle Column: ATTACHMENT SETTINGS
   - a. Inherit exposed filters: No.
   - b. Change to Yes and apply.
7. Save and go look at /training/faqs-simple

Note: The Apply Button sizing vs the text entry box looks ugly. Contact CWS and ask them to update your theme after looking at your URL, as some CSS/theme work needs to happen from their end.
Note 2: Install the "Better Exposed Filters" module and in the 3rd column under "Exposed Form style" you can improve the display quite a bit.

Dealing with "No Results"

If a user types something into our exposed filter for the title that doesn't exist, what do we expect will happen? Nothing shows up. Maybe we want to provide a friendly message to that effect or perform some other action.

1. On Master Display:
2. Click Add next to NO RESULTS BEHAVIOR
3. Choose "Global: Text Area"
4. Type:
   <p>No results found, try again.</p>
5. Apply and try typing some nonsense into the Exposed filter down in the preview area.
6. Save.

Making Filtering and Pagination "Faster"

Filters and pagination effectively let you add search query parameters to the page, but in order to work, the user has to submit a form that causes the page to refresh and new information to be queries/built into the browser. You can make things feel faster by employing "AJAX" or "asynchronous" loading of content where there is no page refresh. How?

1. Go to Master Display
2. FILTER CRITERIA:
   a. Content Type (exposed)
   b. Uncheck "Expose this filter" and make sure only "Training FAQ" is selected
   c. Apply all displays.
3. PAGER: Display all items,
   a. Change to one of the "Paged output..." Options.
   b. Choose a smaller number of items per page than you have total items so you see the pager controls.
   c. Apply.
4. 3rd Column. EXPOSED FORM: Settings
   a. Check "Auto submit"
   b. Check "Hide submit button"
   c. Apply
5. 3rd Column. OTHER:
   a. Use AJAX: No
   b. Toggle to Yes.
   c. Apply
6. Save and view live site.
7. Start typing a word from a FAQ title and pause, the page will auto-update.

Advanced Features – Contextual Filters

Sometimes you want to filter your list based off of some sort of rule that just "depends" on the context. In the case of our FAQs we've so far shown them all in a single list, and grouped them together by category, but what if we wanted a different URL for each category? Well, that's what contextual filters are for.
1. Add a New Page Display (+Add) in the grey bar.
2. Display Name: Filtered FAQs.
3. Change: PAGE SETTINGS: Path: No path is set to /training/faqs/%

      a. Notice the % symbol. This is a placeholder for an "argument"

4. Beside CONTEXTUAL FILTERS: Click the Add button
   a. Search for "Category"
   b. Choose: "Content: Training FAQ Categories (field_training_faq_categories)" (1st option, *not the one that includes "delta"*
   c. Leave 1st Radio button "Display all results for the specified value" under "WHEN THE FILTER VALUE IS NOT IN THE URL
   d. Check "Override Title"
      i. In the text box type: FAQs: %1
         This is saying "When there is an argument present in the URL, change the page title to be FAQ: Whatever that argument is

   e. Check "Specify validation criteria"

      Here we are trying to validate what happens when the argument is passed to us. We want to make sure that we only do actions off of real categories, since a user might type in something weird to the URL.
      i. Validator: "Taxonomy Term"
         1. Choose: "Training FAQ Category"
      ii. Filter value type
         1. Choose: "Term name converted to Term ID"
      iii. Check "Transform dashes in URL to spaces in term name filter values"
      iv. Change "Action to take if filter value does not validate" to
         1. "Display contents of "No results found"
      v. Apply to this display
      vi. Save.
      vii. In the preview section below, type a category name into the "Preview with contextual filters" text box and "update field"
         1. If you terms have spaces in them make sure to replace with dashes, so: ex: "Research Areas" becomes research-areas
      viii. Try looking at the live url and update the urls similarly:
         1. /training/faqs/research-areas, /training/faqs/courses etc

==Note: We only have time for passing contextual filters through the URL in this tutorial, but you can pass them to a view display in other ways too. Notably, you can tell the view to:==
- == get the argument for the filter from the current logged in user (aka you/whoever is viewing the site). In effect, tailor the views list results to 1 person.==
- ==Get the argument from the Node ID or Taxonomy ID of a page that the user is viewing (thus you don't need to have anything special in the URL) . typically this might mean the page was created as a special content type with a field that is then used as the key to look up values on.==
- ==If you have special page-building modules that help with layout, such as "Display Suite" or "Panels" and/or use the "Context" module, these have ways of passing arguments to a view.==

Advanced Features – Relationships

Once your site's content organization gets complicated it can be nice to sometimes show fields from different content types, or more information about your user or taxonomy terms in your views.

Examples:
1. You have a view of blog posts and want to show information about the author. By default, all you have access to is the Author's ID. If you set up a RELATIONSHIP to pivot on that ID, then you can access all the fields/information about the author too.
2. If you are showing a list of Buildings and each building has a "reference field" that points to the IDS of occupants, which are themselves a different content type. You can then show a list of those people, and attributes about them, such as their names, etc.

We'll experiment by adding user info to the FAQ, though in reality we would never really do this.

1. Add a New Page Display and change it's display name to FAQ: Author Info.
2. Update the PAGE SETTING Path: to . /training/faqs-author
3. Try adding a new Field: Search for User, you will only see 1 option: Content: Author uid. Remember this!
4. Choose it, the label and other properties don't matter right now.
5. Apply only to this display and look at the preview. The Number is your Database ID.
6. Under RELATIONSHIPS in the Advanced column:
   a. Add: Search for "user" again.
   b. Choose "Content: Author" just as we did before.
   c. Apply to this display only.
   d. Don't change anything on the next popup, apply this display.
   e. Hidden in the background, the database has now established another connection between database rows.
   f. Go back to your FIELDS add, again and search for "user" again. There are a whole lot more options. Everythng starting with "User: ___" are fields/info coming from the user object. continue typing "user email"
   g. For now you can leave the label and all other options. Apply this display and save.

   Note: It's likely that you don't have any 'pretty' fields defined on your Users, but just like content types, you can add fields to your users (if you must). If you go to admin/config/people/accounts/fields or admin toolbar -> configuration -> people -> account settings -> manage fields. You can add them there. What to add here?
   - First/Last Name
   - Office Info
   - Etc.

   BUT: Don't just add lots of fields and expect to user users to make a super-awesome staff directory. To do so you would also have to require all your staff to login to your website and fill in their profiles. You might be better served for such a case to create a specialized content type "person" and manage it yourself.

Advanced – Caching Your views.

As we've seen, you might end up making pretty complex database queries, particularly if you are using relationships, have lots of fields to rewrite/display, and are using various contextual filters. In these cases, you may want to put a

time-based cache on your view, particularly, if the content itself, doesn't change very often. The cache will store your view results for a specific period and use that as a source if/when the view is requested by a user, rather than to go through all the complexities of looking up the information in the database, over and over again. To set this up:

1. Advanced: OTHER: Caching: None
2. Change None to Time-based (typically this display only)
3. Set values into the future of how long the query should be remembered.

Special Cases

For the remaining examples we won't have time to cover them well in class because it takes extra content type setup, but you've now got the basics and should be able to figure them out on your own to some degree.

For this demo I have a special content type developed: Training Announcement. It has the following fields:

- Title
- Body
- Date
- Image Field
  - Can only have 1. User uploads 1 image and Drupal will create derivative smaller sizes.
- File Attachment
  - Can upload multiple files per content type as needed.
- A Location
  - A Term reference to a Vocabulary with Building/Space information stored in it.

Special Cases – Images and File Fields

Fields: Adding Image Fields – Note:

- Sizing options,
- Linking options
- For Files: Listing options (table, filename, etc.)

Special Cases - Dates and Standard Lists

- Fields:
  - Customizing How dates display
    - Drupal Date Formats
    - Custom (see: https://codex.wordpress.org/Formatting_Date_and_Time for string documentation.)
  - Dealing with Multiple values
  - Showing repeat rules.
  - Multiple Field Settings
- Filtering by Dates
  - Start/end date
  - Granularity
  - Greater than/less than specific or relative dates.
- Sorting Dates:
  - Ascending (dates closets to us) vs descending (dates farthest out)

Special Cases – Calendars.

Tip: Just use the "Calendar Template"

- Add a New View from Template
- Choose "A calendar view of the 'field_whatever_your_date_field_name_is" in the ____ base table
- "add"
- Magic.
- Most options are pretty normal. You'll likely need to change some URL paths, suggested to rename the displays, especially 'block'
- Suggested that if you want to show only times on monthly calendar days you need to:
    1. Hide the existing date field from the display (not remove it completely)
    2. Add another of the date fields. Do a custom display of g:I a (hour:minute AM/PM)
    3. And do other configs as necessary based on how your date is set up for repeats, etc.

Special Cases – Aggregation

Use aggregation when you want to transform your view display from a list of content items, to an aggregate list of shared/summed values on fields that the filtered criteria.

In my example case, the events happen in buildings. Some events happen in the same building. If, instead of being interested in listing each of the events, I want to list the buildings, themselves, without repeating, and then get a count of the total number of events in each (or the sum, or average, etc.) then I can use aggregation.

This one's pretty advanced/rare to use, and you can use it to group things together in ways that display a parent/child relationship, but you will often result in lots of duplicate values. watch some videos is my advice.

Aggregation is Set under the Advanced section under OTHER and adds new links besides fields, filter criteria, etc. That say "Aggregation settings"

Other Advanced Views Settings

There are a handful of other views settings to look out for:

1. Under OTHER
    a. Machine Name: you can likely always leave alone.
    b. Comment: You can document what your view display is for, for future content maintainers, or for yourself.
    c. Hide attachments in summary and Hide contextual links: likely always leave this alone.
    d. Use Aggregation (See above)
    e. Query Settings: In advanced views, you may find some repeating or odd behaviors you don't want. There are a few SQL settings in here you could try. Again, probably a rare case when you will need to set anything here.
    f. Field language, ignore.
    g. Caching: (see above)
    h. CSS class, ignore unless CWS tells you otherwise.
    i. Theme: will tell you the names of PHP templates you could write and add to the filesystem if you wanted to override what various parts of the HTML were being written. You won't use this unless you are an advanced developer.

Suggested Modules (For Future Development):

Depending on your future development needs, you may need additional modules to aid views in displaying content. Below are some of the most well-known/helpful. You will need to submit a ServiceNow ticket to request CWS install them for you. Not suggested that you grab them all, once you have a problem, see if one of these will solve it.

- Various "Field" Modules that make sense for your site: such as:
  - Entity Reference: https://codex.wordpress.org/Formatting_Date_and_Time
  - Link: https://www.drupal.org/project/link
  - Here's the list of available add on modules (add a search term to further filter)
- Date: https://www.drupal.org/project/date (and various related projects)
- Calendar: https://www.drupal.org/project/calendar
- Better Exposed Filters: https://www.drupal.org/project/better_exposed_filters
- Views Natural Sort: https://www.drupal.org/project/views_natural_sort
- Views Bulk Operations: https://www.drupal.org/project/views_bulk_operations (be careful!)
- Views Calc: https://www.drupal.org/project/views_calc
- Views Data Export: https://www.drupal.org/project/views_data_export
- Views Field View: https://www.drupal.org/project/views_field_view
- Views Distinct: https://www.drupal.org/project/views_distinct

Suggested Resources for Learning More:

Books:
1. eBook: *Drupal 7 Views cookbook: over 50 recipes to master the creation of views using the Drupal Views 3 module.* @ UNT Library: https://iii.library.unt.edu/record=b5857833~S12
2. eBook: *The definitive guide to Drupal 7* @ UNT Library: https://iii.library.unt.edu/record=b5016776~S12
3. eBook: Drupal 7 bible: @ UNT Library: https://iii.library.unt.edu/record=b4109980~S12

Official Docs:
- https://www.drupal.org/docs/7/modules/views

Stack Exchange/Overflow:
- Go to https://stackoverflow.com/
- Construct a search query with the following "Tags" in your search parameters:
  - [drupal-7]
  - [drupal-views]
  - And make sure to include drupal-speak in your query: "Field" "relationship" "format" etc.
- Go to Either: https://drupal.stackexchange.com/
- Construct a search query with the following "Tags" in your search parameters:
  - [7]
  - [views]
  - [views-filters]
  - And make sure to include Drupal-speak in your query: "Field" "relationship" "format" etc.

YouTube:
- Search for "Drupal 7 tutorials views" and/or with your Drupal-speak terms (fields, filters, etc.)