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DBCacheContrib

Reusable code that caches Foswiki topics, and provides fast searches of the content.

Summary of Contents

This module supports fast structured queries over topics in an arbitrarily-sized web. It uses a database to cache topic data to deliver much more scaleable search performance. Different back-end techologies can be used to implement the cache, to allow simple tradeoffs between scaling and raw performance.

Historically this module was designed to be used with a companion plugin, such as or , which support queries and the display of query results. When used this way, the DBCacheContrib supports queries made using a simple query language.

The module can also be used in "standard schema mode" to support plugins that accelerate core functions, such as the QueryAcceleratorPlugin.

Features

- Perform efficient structured queries on data in forms

Using the built-in query language

The query language supported by DBCacheContrib is very similar to the query language used with %SEARCH, which was derived from it. The contrib can be used in two modes; compatible schema mode (as used by FormQueryPlugin? and DBCachePlugin) and standard schema mode (as described in QuerySearch).

In standard schema mode the schema of the DB is as described in QuerySearch. In compatible schema mode, the underlying schema is somewhat different, to support the extended requirements of the plugins that use it.

The Compatible Schema

You can think of the database as an map of all the topics in a web. Each entry is itself a map (or hash, in perl terms) that maps a set of field names to values.

Each topic in the web automatically gets a number of standard fields, generated by reading the metadata from the topic (see MetaData)

- `name` - name of the topic
- `parent` - **name** of parent topic
- `_up` - *reference* to the Map of the parent topic, if it exists
- `attachments` - array of Maps, each of which contains:
    - `_up` - *reference* to the Map for the topic
    - `name` - attachment name
    - `attr` - e.g hidden
    - `comment` - attachment comment

    - ♦ `path` - client path used to upload attachment
    - ♦ `size` - size in Kb
    - ♦ `user` - who uploaded the attachment
    - ♦ `version` - e.g. 1.3
- `info` - Map containing:
    - ♦ `_up` - reference to the Map for the topic
    - ♦ `author` - most recent author
    - ♦ `date` - date of last change
    - ♦ `format` - topic format version
    - ♦ `version` - topic version number
- `moved` - Map containing:
    - ♦ `_up` - reference to the Map for the topic
    - ♦ `by` - who moved it
    - ♦ `date` - when they moved it
    - ♦ `from` - where they moved it from
    - ♦ `to` - where they moved it to
- `form` - form type
- *form name* - e.g. if a "MyForm" is attached, this will be `MyForm`. This is a reference to a Map containing a key for each field in the form. Each key maps to the value in the form data for that key. The Map will also have an `_up` reference to the Map for the topic.
- `text` - raw text of the topic)

The sub-maps created for `info`, *form name*, `moved`, and each row in `attachments` also have a *reference* back to the topic Map, called `_up`.

Other fields may be added by subclasses. Refer to the documentation for the plugin that is using the DBCache for more details.

Query operators

Fields are given by name, and values by strings or numbers. Strings should always be surrounded by 'single-quotes'. Strings which are regular expressions (RHS of =, != =~ operators) use 'perl' regular expression syntax (google for `perlre` for help). Numbers can be signed integers or decimals. Single quotes in values may be escaped using backslash (\).

The following operators are available:

Operator	Result	Meaning
=	Boolean	LHS exactly matches the regular expression on the RHS. The expression must match the whole string.
!=	Boolean	Inverse of =
=~	Boolean	LHS contains RHS i.e. the RHS is found somewhere in the field value.
<	Boolean	Numeric <
>	Boolean	Numeric >
>=	Boolean	Numeric >=
<=	Boolean	Numeric <=
lc	String	Unary lower case
uc	String	Unary UPPER CASE
IS_DATE	Boolean	Compare two dates e.g. '1 Apr 2003' IS_DATE '1 Apr 2004'
EARLIER_THAN	Boolean	Date is earlier than the given date
EARLIER_THAN_OR_ON	Boolean	Date is earlier than, or on, the given date
LATER_THAN	Boolean	LHS is later than the given date

Operator	Result	Meaning
`LATER_THAN_OR_ON`	Boolean	LHS is later than the given date
`WITHIN_DAYS`	Boolean	Date (which must be in the future) is within n *working* days of todays date
`!`	Boolean	Unary NOT
`AND`	Boolean	AND
`OR`	Boolean	OR
`()`	any	Bracketed subexpression

Dates for the date operators (`IS_DATE`, `EARLIER_THAN` etc) must be dates in the format expected by `Time::ParseDate` (like the). `WITHIN_DAYS` works out the number of *working* days assuming a 5 day week (i.e. excluding Saturday and Sunday). Apologies in advance if your weekend is offset ± a day! Integers will automatically be converted to dates, by assuming they represent a number of seconds since midnight GMT on 1st January 1970. You can also use the `d2n` operator to convert a date string to such an integer.

The cache

To achieve best perfomance the plugin caches the data read from topics in a database. The database is stored in the work area for the DBCacheContrib (see `{WorkAreaDir}` in `configure`). If any topic changes in the web, this cache is automatically rebuilt (subject to configuration options). The cache can be deleted at any point with no ill effects.

Detailed Documentation

Clients use the DBCache by defining a subclass of the `Foswiki::Contrib::DBCacheContrib` class. Implementors are stongly recommended to read the POD documentation in the code:

Installation Instructions

You do not need to install anything in the browser to use this extension. The following instructions are for the administrator who installs the extension on the server.

Open configure, and open the "Extensions" section. Use "Find More Extensions" to get a list of available extensions. Select "Install".

If you have any problems, or if the extension isn't available in `configure`, then you can still install manually from the command-line. See http://foswiki.org/Support/ManuallyInstallingExtensions for more help.

Contrib Info

Author:	Foswiki:Main/CrawfordCurrie http://c-dot.co.uk
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Release:	17 Nov 2009
Version:	5538 (2009-11-17)
Change History:	
17 Nov 2009	Foswikitask:Item8327: series of robustness fixes (MD)
30 Jun 2009	Foswikitask:Item8153: make dirs for path to cache; Foswikitask:Item8194: incoporated patch from Foswiki:Main.MichaelDaum Foswikitask:Item8195: extract and cache permissions settings
18 Jun 2009	Foswikitask:Item8183: fixed problem with Scalar::Util::weaken that was causing DBCachePlugin problems
6 Jun 2009	Foswikitask:Item1691: changes to support Foswiki:Extensions.QueryAcceleratorPlugin
7 Apr 2009	Foswikitask:Item5440: fixed negative values in SUMFIELD Foswikitask:Item8106: add back in the Map methods to the main class, as they are used by subclasses Foswikitask:Item8063: fix the accidental encoding of field values in the cache
28 Jan 2009	Foswikitask:Item453: Foswiki version; added Berkeley DB support, dropped plain-file support. Added Michael Daum's EARLIER_THAN_OR_ON and LATER_THAN_OR_ON ops. Fixed a number of bugs.
12346	fixing uptodate() for Andrew File Systems; fixed memory leak on persistent perl
16347	remove META data from text hash; include META data in all hash. Foswiki:Main.MichaelDaum
16346	caching all topic elements to an `all` field to allow th search in all of the text and the formfields like the normal grep-based SEARCH does. Foswiki:Main.MichaelDaum
15868	fixed WITHIN_DAYS and EARLIER_THAN. Foswiki:Main.MichaelDaum
15583	made query parser pluggable so that other plugins can implement their own predicates. Foswiki:Main.MichaelDaum
15019	added {DBCache}{AlwaysUpdateCache} to remove the updateCache from every operation. Foswiki:Main.SvenDowideit
13562	Bugs:Item3985 - fixed failures with hierarchical webs
13527	Moved the cache into the extensions work areas, instead of the web directory
12943	Bugs:Item3659: added automatic conversion of integers to dates
12923	added REF operator; added link to web object to hashes; fixed parent relation to end in WebHome; added "web" property to topic hashes; caching META:PREFERENCES now
11537	Added lc and uc operators for case-insensitive searches
9303	TWikibug:Item1844 - don't die on broken symlinks
8682	TWikibug:Item1580 - one-char fix that makes the difference
8110	TWikibug:Item663 - formatting and text fixes
7552	TWikibug:Item997 - test update
7274	TWikibug:Item719 - onReload() is not a static method.
7262	TWikibug:Item719 - Foswiki:Main.MichaelDaum's patch (almost) to correct parameters to onReload
7260	TWikibug:Item727 - made it clean the form name using normaliseWebTopicName
6353	TWikibug:Item380 - do as the man says; make all $/ local
5720	Updated tests
5719	Fix for correct handling of parent relations
5229	Small improvement to the way it handles errors from Storable and Archive
5223	Documentation fixes, adding gifs.
5048	Cairo readiness
5036	Split from SharedCode
5031	Moving to new name
5030	About to rename

5019	Improved topic data model, cleaned up tests
5008	Added extended access syntax, [?], [*] etc.
5006	Doc fixes
5005	Poddified documentation
5003	Initial version
8 Jul 2004	Initial version, split out from FormQueryPlugin

Dependencies:	Name	Version	Description
	Time::ParseDate	>=2003.0211	Required. Available from CPAN.
	Storable	>=2.07	Required. available from CPAN
	BerkeleyDB	>=0	Recommended for sites with many topics. Available from CPAN

Perl Version:	5.0
Home:	http://foswiki.org/Extensions/DBCacheContrib
Support:	http://foswiki.org/Support/DBCacheContrib

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Topic revision: r2 - 02 Jul 2009 - 10:12:39 - ProjectContributor

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