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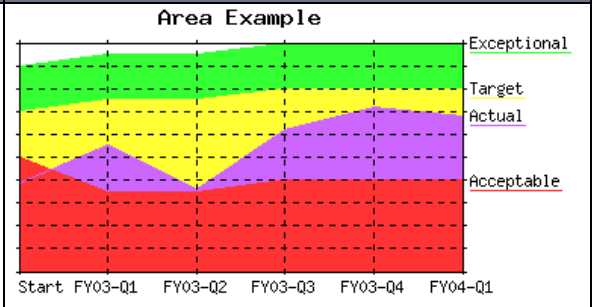
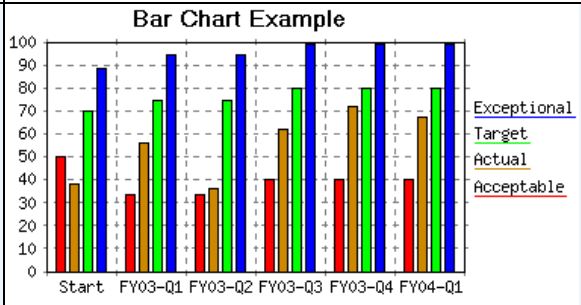
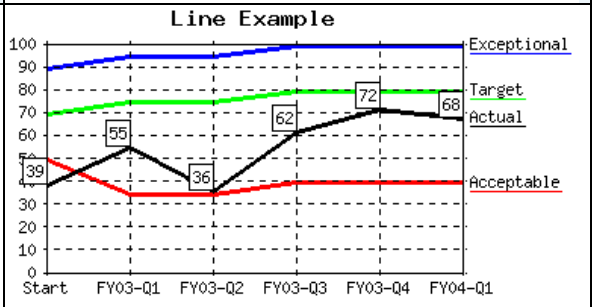
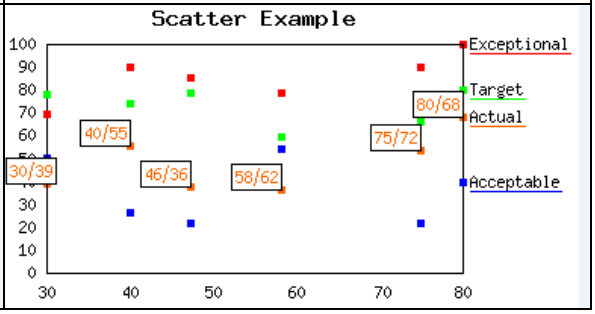
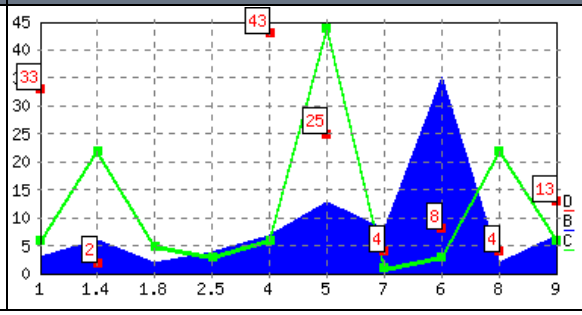
Chart Plugin

Create PNG or GIF charts to visualize Foswiki tables

This plugin helps you visualize data in Foswiki tables as charts, using a default linear scale or an optional semilogarithmic scale.

Five types of charts, *line*, *area*, *bar*, *scatter* and *combo*, are currently available:

Type of Chart	Name	What it Does	Example
Area	`area`	Shows a chart using areas under a line to represent the data	
Bar	`bar`	Shows a chart using bars to represent the data	
Line	`line`	Shows a chart using simple lines, points only, or lines with points to represent the data. ***Note:*** Any areas that fall behind already drawn areas are drawn as lines to make them visible	
Scatter	`scatter`	Shows a scatter chart (XY data points) and allows mixing `area` or `bar` with `line`, `point`, and `pline`	

Type of Chart	Name	What it Does	Example
Combo	`combo`	Shows a chart combining the features from `area` or `bar` with `line`, `point`, and `pline` ***Note:*** Formally known as `arealine` which is still supported	

The `%CHART{...}%` variable gets expanded to an image representing the chart. Parameters and global settings determine the type of chart, dimensions, and values.

ChartPlugin Global Settings

Plugin settings are stored as preferences variables. To reference a plugin setting write **`%<plugin>_<setting>%`**, for example, **`%CHARTPLUGIN_TYPE%`**

- Set DEBUG to 1 to get debug messages in `data/debug.txt`. Default: `0`
  - Set DEBUG = 0

- Default chart used: `area`, `line`, `bar`, `scatter` or `combo`. Default: `line`
  - Set TYPE = line

- Default dimensions, scale and colors for a chart. See details in the syntax rules.
  - Set WIDTH = 400
  - Set HEIGHT = 250
  - Set AREA_COLORS = #FF3333, #FFFF33, #33FF33, #CC66FF, #99FFFF, #FFCC00, #008000, #FF8080, #3366CC, #800080
  - Set LINE_COLORS = #FF0000, #FFCC00, #00CC00, #FF00FF, #33CCCC, #FF8000, #009900, #FF6666, #3333FF, #800080
  - Set BGCOLOR = #FFFFFF, #FFFFFF

- Define the grid color. When xgrid/ygrid = "on", then just use the first color when drawing grid lines. When their value is "dot", then use the full specification for drawing the grid lines ("transparent" can be used to introduce holes in the line).
  - Set GRIDCOLOR = #808080, #808080, #808080, transparent, transparent, transparent
  - Set NUMYGRIDS = 9

- Define what to do when an empty table cell is found. "none" means assume no default value. A value of "10" would mean empty cells would be assumed to have a value of 10
  - Set DEFAULTDATA = none

- Define the default scale: linear or semilog
  - Set SCALE = linear

- Define the number of pixels wide lines are drawn with
    - Set LINEWIDTH = 3

- Define the number of pixels (in both the X and Y directions) to use when drawing a point
    - Set POINTSIZE = 5

- Define bar chart specific parameters. BARSPACE defines the space (in pixels) between bars. BARLEADINGSPACE defines the leading space (in pixels) before the first bar. BARTRAILINGSPACE defines the trailing space (in pixels) after the last bar
    - Set BARLEADINGSPACE = 6
    - Set BARTRAILINGSPACE = 6
    - Set BARSPACE = 5

Syntax Rules

The `%CHART{...}%` variable gets expanded to an image representing the chart.

- Some parameters expect a range of table cells, using **extended** SpreadSheetPlugin syntax:
    - A single table cell can be addressed as **`R1:C1`**. Cell addresses:

`R1:C1`	**`R1:C2`**	**`R1:C3`**	**`R1:C4`**
`R2:C1`	**`R2:C2`**	**`R2:C3`**	**`R2:C4`**

- A range of table cells is defined by two cell addresses separated by **`..`**. For example, "row 1-20, column 3" is: **`R1:C3..R20:C3`** and "row 15-5, column 2" is: **`R15:C2..R5:C2`**
- Ranges can be discontinuous. Discontinous ranges are joined using **`+`**. For example: **`R4:C1..R5:C2+R9:C1..R15:C2`**.
- When you are specifying datasets, you specify the range so that you have one data set per row (column). You can also specify multiple data sets using discontinuous blocks of cells; for example, **`R4:C1..R5:C2,R9:C1..R10:C2`** specifies **4** data sets: R4:C1..R4:C2, R5:C1..R5:C2, R9:C1..R9:C15 and R10:C1..R10:C2
- **+** has higher precedence than **,**

%CHART% Parameter	Comment	Default
`type`	The type of chart to create. One of `"area"`, `"bar"`, `"line"`, `"scatter"`, `"combo"`	Global `TYPE` setting
`subtype`	Sub type of chart. Supported values depend on chart type:	
	- for `type="area"` = subtype="area"	`"area"`
	- for `type="bar"` = subtype="bar"	`"bar"`
	- for `type="line"` = subtype="line, point, pline" (point line)	`"line"`
	- for `type="scatter"` subtype="area, bar, line, point, pline" Note: you cannot mix `area` and `bar` on the same chart. Note: It is not recommended using showing a `bar` on a `scatter` chart as the X axis placement is skewed with `bar` and will not exactly line up with drawn X axis values which will defeat the purpose of using `scatter` in the first place.	`"point"`

%CHART% Parameter	Comment	Default
	- for `type="combo"` subtype="area, bar, line, point, pline" (note: you can not mix `area` and `bar` on the same chart)	All but the last data set are drawn as `"area"` and the last is drawn as `"line"`
	You can use a comma delimited list of values to set a specific subtype for each data set. For example `"area, area, point, line"` would say that the first two data sets are areas, the third is point and the last one is a line	
`scale`	The scale to use when creating the chart. `"linear"` or `"semilog"`	Global `SCALE` setting
`name`	Name to uniquely identify the chart file that is auto-created.	None; is required for all charts
`web`	The web in which to find `topic` (specified below) in which to find the Foswiki tables	The current web
`topic`	The topic in which to find the Foswiki tables	The current topic
`table`	Foswiki table used to build the chart. A numerical value refers to the table number, where "1" is the first table seen in a topic. Any other non-numeric string refers to a named table defined by the `TABLE` variable with a `name` parameter. For example, table="trends" refers to the table that is preceded by `%TABLE{ name="trends" }%`.	`"1"`
`title`	The title placed at the top of the chart	None
`xlabel`	The label placed under the X axis describing the X values	None
`ylabel`	The label placed to the left of the Y axis describing the Y values	None
`data`	The source data to build the chart, defined as a range of table cells. For example for `type="line"`, a `data="R2:C3..R999:C6"` would say that four lines were to be drawn with first line being rows 2-999 column 3 and last line being rows 2-999 column 6.	None; is required for all charts
`defaultdata`	If there is sparse data, then use the value specified by `defaultdata` to fill in the missing data. A value of `"none"` means only draw actual data points.	Global `DEFAULTDATA` setting
`xaxis`	X-Axis labels: The values are defined as a range of table cells. In case of scatter graph, `xaxis` represents the actual X values. The range also defines the orientation -- row or column oriented (if specified). For example `"R2:C2..R999:C2"` would take all of column 2 starting at row 2 and going through row 999. It would also denote that all remaining data is oriented columnar.	None. Is required for `type="scatter"`. If not specified, then no X axis labels shown and data assumed to be in columnar format.
`xaxisangle`	Angle the X-Axis labels are drawn. Only two angles are supported at this time, `"0"` draws horizontal labels, other numbers draw vertical labels	`"0"`
`yaxis`	Y-Axis labels: `"on"` to show the labels, `"off"` for no labels.	`"off"`
`ymin`	Minimum value drawn on the Y axis	The minimum value specified by `data`
`ymax`	Maximum value drawn on the Y axis	The maximum value specified by `data`
`xgrid`	Grid shown for X axis: `"on"` for solid grid lines, `"dot"` for dotted grid lines, `"off"` for none.	`"dot"`
`ygrid`	Grid shown for Y axis: `"on"` for solid grid lines, `"dot"` for dotted grid lines, `"off"` for none.	`"dot"`
`numygrids`	Number of Y axis grids drawn	Global `NUMYGRIDS` setting

%CHART% Parameter	Comment	Default
ytics	Number of tic marks to draw between Y axis grid lines.	If scale="semilog", then ytics="10", else defaults to "0"
numxgrids	Number of X axis grids drawn. This can be used if there are a large number of X axis data points such that the X axis labels overlap.	Draw all X-Axis labels
datalabel	Show data labels: "on" for labels, "box" for label in a box, "off" for none. It can also be a list like "off, off, off, box" to show values in a box for the fourth set of data points only.	"off"
legend	Legend shown to the right of the chart. For example "R1:C3..R1:C6" would take all of row 1 starting at column 3 and going through column 6 as the name/legend of each set of data points	None; no legend if not specified
width	Defines the overall width of the chart in pixels.	Global WIDTH setting
height	Defines the overall height of the chart in pixels.	Global HEIGHT setting
alt	Alternate text for chart image	Empty alt tag
colors	A list of colors defining the color of each set of data points.	Global LINE_COLORS setting for lines; global AREA_COLORS setting for area
bgcolor	Background color of the area surrounding the chart. For example, "#E7E7E7" sets a light gray background. Optionally specify a second values for the chart background itself. For example, "#E7E7E7, #FFFFC0" defines a chart with a light yellow background on a light gray surrounding.	Global BGCOLOR setting
gridcolor	Colors/style of the grid (if any). If xgrid or ygrid = "on" then use the first gridcolor for drawing solid grid lines. If xgrid or ygrid = "dot", then use the full set of colors to define the line style for drawing the grid lines ("transparent" can be used to introduce holes in the line)"	Global GRIDCOLOR setting
linewidth	Width of data lines in pixel	Global LINEWIDTH setting
pointsize	Size of data points in pixel	Global POINTSIZE setting
(other parameters)	Other parameters are passed on to the img tag. Useful to add additional image parameters like align="right"	None

Note: To support legacy syntax, datatype maps to subtype, arealine maps to combo.

Examples

Assuming the following three Foswiki tables. The first shows the data oriented in columns while the seconds shows the data oriented in rows

Table 1:

Year	Actual
1998	9
1999	14
2000	19

Table 2:

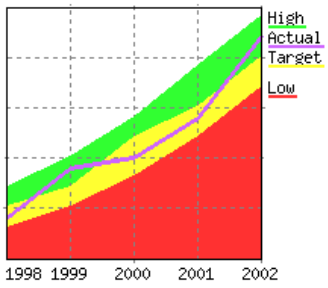
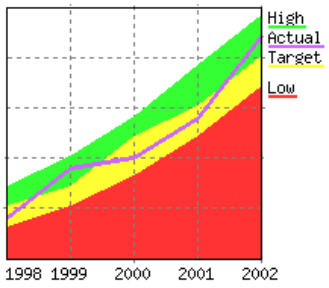
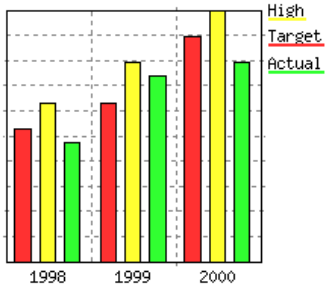
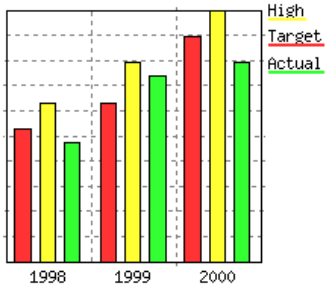
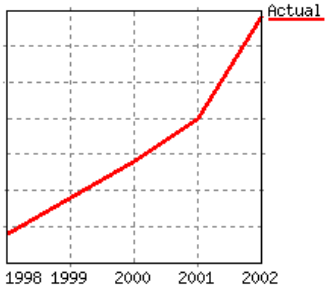
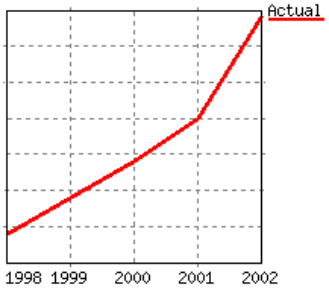
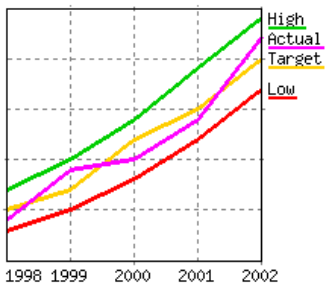
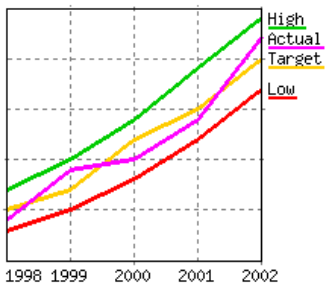
Year	1998	1999	2000	2001	2002
Low	8	10	13	17	22
Target	10	12	17	20	25
High	12	15	19	24	29

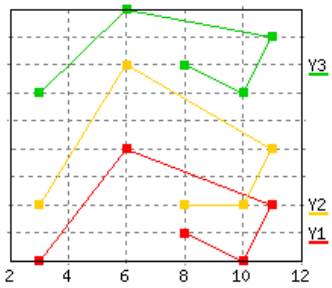
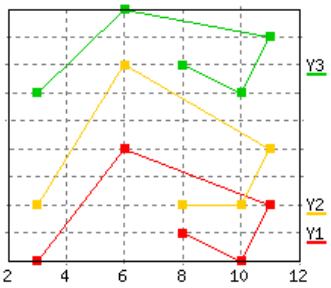
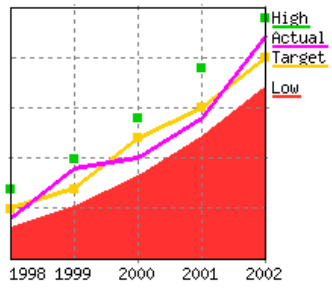
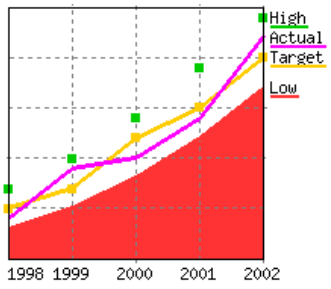
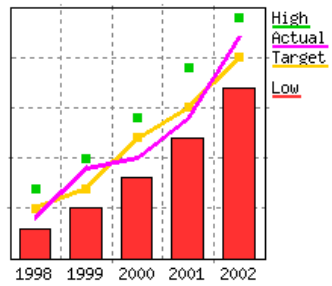
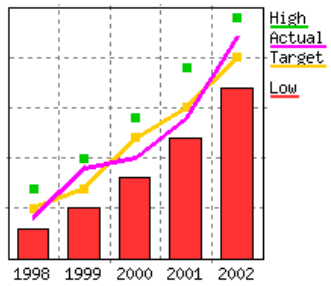
Table 3:

X	Y1	Y2	Y3
3	1	3	7
6	5	8	10
11	3	5	9

Year	Actual
2001	25
2002	39

Year	1998	1999	2000	2001	2002	X	Y1	Y2	Y3
Actual	9	14	15	19	27	10	1	3	7
						8	2	3	8

Type of chart	You type	You should get...	...if installed
area	Multiple area `%CHART{ type="area" name="area1" table="exampleTable2" data="R2:C2..R5:C6" xaxis="R1:C2..R1:C6" legend="R2:C1..R5:C1" width="225" height="200" }%`		
bar	Multiple bars `%CHART{ type="bar" name="bar1" table="exampleTable2" data="R3:C2..R5:C4" xaxis="R1:C2..R1:C4" legend="R3:C1..R5:C1" ymin="0" width="225" height="200" }%`		
line	Simple line `%CHART{ type="line" name="line1" table="exampleTable1" data="R2:C2..R6:C2" xaxis="R2:C1..R6:C1" legend="R1:C2..R1:C2" width="225" height="200" }%`		
line	Multiple lines `%CHART{ type="line" name="line2" table="exampleTable2" data="R2:C2..R5:C6" xaxis="R1:C2..R1:C6" legend="R2:C1..R5:C1" width="225" height="200" }%`		
scatter	Multiple scatter `%CHART{ type="scatter" subtype="pline" name="scatter1" table="exampleTable3" data="R2:C2..R6:C4" xaxis="R2:C1..R6:C1"`		

Type of chart	You type	You should get...	...if installed
	`legend="R1:C2..R1:C4" numxgrids="4" linewidth="1" width="225" height="200" }%`		
combo	Combo with area, pline, point, & line `%CHART{ type="combo" subtype="area, pline, point, line" name="combo1" table="exampleTable2" data="R2:C2..R5:C6" xaxis="R1:C2..R1:C6" legend="R2:C1..R5:C1" width="225" height="200" }%`		
combo	Combo with bar, pline, point, & line `%CHART{ type="combo" subtype="bar, pline, point, line" name="combo2" table="exampleTable2" data="R2:C2..R5:C6" xaxis="R1:C2..R1:C6" legend="R2:C1..R5:C1" width="225" height="200" }%`		

The "if installed" column shows images instead of variables in case the plugin is installed correctly.

Output

- A graphics file in PNG or GIF format is created containing the chart results. The file is placed in `%PUBURLPATH%/%WEB%/%TOPIC%/_ChartPlugin_<type>_<name>.png` or `.gif` (GIF for GD version 1.19 or older)
- `%CHART{...}%` gets expanded to an `<img ... />` image tag.

Error Handling

If the required parameters are not defined, then an error message is returned or an image tag is returned pointing to a graphic containing the error message.

Plugin 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.

- Check above examples if the "if installed" column shows images instead of variables.
- Check ChartPluginTests for some more tests

Plugin Info

Plugin Author:	Current maintainer Foswiki:Main.KennethLavrsen, original authors from old project: TWiki:Main.PeterThoeny, TWiki:Main.TaitCyrus
Copyright ©:	2004-2006, TWiki:Main.PeterThoeny, TWiki:Main.TaitCyrus; 2008 Kenneth Lavrsen and Foswiki Contributors
License:	GPL (GNU General Public License)
Release:	13 Mar 2010
Version:	6743 (2010-03-14)
Change History:	
13 Mar 2010:	Foswiki:Main.WillNorris: work around "insecure dependency" error with certain perl/gd/cpan combinations (Foswikitask:Item1322)
07 Jan 2010:	Foswiki:Main.AndrewJones, Foswiki:Main.SvenDowideit: Add dependencies (Foswikitask:Item8381)
13 Oct 2009:	Kenneth Lavrsen: Fixed problem where the plugin could not chart the contents of a table if the table is at the end of a topic
08 Dec 2008:	Kenneth Lavrsen: Changed the author to myself. TWiki:Main.TaitCyrus is the original author but has not been maintaining this since and is not registered user on fork. So now I officially take the task as maintainer. Plugin is changed to Foswiki namespace and tested and works under Foswiki 1.0.0
18 May 2007:	Added discontinuous ranges - Foswiki:Main.CrawfordCurrie
16 Nov 2004:	V1.401 - Added benchmarks (no code changes)
30 Aug 2004:	V1.400 - Added support for `subtype="bar"` (includes various global bar settings), updated `gridcolor` to not only define the grid color but allowing the user to define the line style (for drawing user defined dotted lines), add a global for how wide lines are drawn instead of a hard coded value, change the order of how things are drawn so now the order is: areas, grid lines and X/Y axis labels, bars, lines/points/plines, rectangle around chart, data point labels, chart title/X/Y labels, and finally the legends.
13 May 2004:	V1.300 - Added support for `type="scatter"`; renamed `type="arealine"` to `"combo"` (arealine is undocumented); renamed `datatype` to `subtype` (datatype is undocumented); added `subtype` options `"point"` and `"pline"`, added new settings `GRIDCOLOR`, `DEFAULTDATA`, `POINTSIZE`; fixed bug with how the number of grids were drawn
17 Oct 2003:	V1.201 - Fix boundary cases with `semilog` scale

16 Oct 2003:	V1.200 - Add new options of *scale* and *ytics*.
16 Jun 2003:	V1.100 - Add support for reversed tables (R999..R1), add new options of *xaxisangle*, *numxgrids*, and *defaultdata*, and allow sparse data.
7 Oct 2002:	V1.003 - Improved performance, fixed bugs with color allocation, auto-legend placement and parsing of numbers in tables. Also bumped the upper value when numbers switch from decimal format to engineering format
13 Sept 2002:	V1.002 - Add support for better placement of legends so they don't overlap, add auto ymin/ymax determination if not specified, add `bgcolor` and `numygrids` options
27 Jun 2002:	V1.001 - Data range specified is clipped to actual table size; more forgiving data parsing by extracting first numeral from a table cell, e.g. extract `25` from `<u>25%</u>`
20 Jun 2002:	Initial version (V1.000)
Dependencies:	**Name** / **Version** / **Description** gd / >0 / Required. GD / >=0.01 / Required. POSIX / >0 / Required.
Plugin Home:	http://foswiki.org/Extensions/ChartPlugin
Support:	http://foswiki.org/Support/ChartPlugin

Related Topics: DefaultPreferences, SitePreferences, Plugins

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Topic revision: r0 - 17 Nov 2004 - 07:56:37 - ProjectContributor

- . System
- Log In

- **Toolbox**
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- **User Reference**
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- FormattedSearch
- QuerySearch
- DocumentGraphics
- SkinBrowser
- InstalledPlugins

- **Admin Maintenance**
- Reference Manual
- AdminToolsCategory
- InterWikis
- ManagingWebs
- SiteTools
- DefaultPreferences
- WebPreferences

- **Categories**
- Admin Documentation
- Admin Tools
- Developer Doc
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