

# MARKDOWN

packetlife.net

Headers		Blockquotes	
# Text	<h1>Text</h1>	> Lorem ipsum > dolor sit amet	<blockquote> <p>Lorem ipsum dolor sit amet</p> </blockquote>
## Text	<h2>Text</h2>		
### Text	<h3>Text</h3>	> Lorem ipsum dolor sit amet	<blockquote> <p>Lorem ipsum dolor sit amet</p> </blockquote>
#### Text	<h4>Text</h4>		
##### Text	<h5>Text</h5>	> Level one > > > Level two > > > > > Level three	<blockquote><p>Level one</p> <blockquote><p>Level two</p> <blockquote><p>Level three</p> </blockquote> </blockquote> </blockquote>
##### Text	<h6>Text</h6>		
Lists		Inline Code	
* Sizes * Shapes * Colors * Blue * Green	<ul> <li>Sizes</li> <li>Shapes</li> <li>Colors</li> <ul> <li>Blue</li> <li>Green</li> </ul> </ul>	Use `<div>` tags	Use <code>&lt;div&gt;</code> tags
1. First 2. Second 3. Third 1. Alpha 2. Bravo	<ol> <li>First</li> <li>Second</li> <li>Third</li> <ol> <li>Alpha</li> <li>Bravo</li> </ol> </ol>	<code>echo `uname -a`</code>	<code>echo `uname -a`</code>
Code Blocks		Horizontal Rules	
Normal text	<p>Normal text</p> #include <stdio.h>	* * * ***	<pre><code> #include &lt;stdio.h&gt; </code></pre>  <hr />      - - -      <hr /> <hr />      ---      <hr />
Emphasis		Escapable Characters	
*Emphasis*	<em>Emphasis</em>	\ Backslash	( ) Parantheses
_Emphasis_	<em>Emphasis</em>	` Backtick	# Hash mark
**Strong**	<strong>Strong</strong>	* Asterisk	+ Plus sign
__Strong__	<strong>Strong</strong>	_ Underscore	- Hyphen
*Super*emphasis	<em>Super</em>emphasis	{ } Curly braces	. Period
**Super**strong	<strong>Super</strong>strong	[ ] Square brackets	! Exclamation
Links		Images	
[Google](http://google.com/)	<a href="http://google.com/">Google</a>	![Alt text](/path/to/img.jpg)	
[Google](http://google.com/ "Search")	<a href="http://google.com/" title="Search">Google</a>	![Alt text](/path/to/img.jpg "Title")	
[google]: http://google.com/ "Search"	<a href="http://google.com/" title="Search">Google</a>	[img1]: /path/to/img.jpg "Title"	
[Google][google]		![Alt text][img1]	
<http://google.com>	<a href="http://google.com/">http://google.com</a>		
Images			
![Alt text](/path/to/img.jpg)			
![Alt text](/path/to/img.jpg "Title")			
[img1]: /path/to/img.jpg "Title"			
![Alt text][img1]			

Markdown is available at <http://daringfireball.net/projects/markdown/>



# R Markdown Reference Guide

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Learn more about Interactive Docs at [shiny.rstudio.com/articles](http://shiny.rstudio.com/articles)

Contents:

1. Markdown Syntax
2. Knitr chunk options
3. Pandoc options

## Syntax

Plain text

End a line with two spaces  
to start a new paragraph.

*\*italics\** and *\_italics\_*

**\*\*bold\*\*** and **\_\_bold\_\_**

superscript<sup>^2^</sup>

~~~~strikethrough~~~~

[link]([www.rstudio.com](http://www.rstudio.com))

# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

##### Header 6

endash: --

emdash: ---

ellipsis: ...

inline equation:  $A = \pi * r^2$

image: 

horizontal rule (or slide break):

\*\*\*

> block quote

\* unordered list

\* item 2  
+ sub-item 1  
+ sub-item 2

1. ordered list

2. item 2  
+ sub-item 1  
+ sub-item 2

| Table Header | Second Header |
|--------------|---------------|
| Table Cell   | Cell 2        |
| Cell 3       | Cell 4        |

## Becomes

Plain text

End a line with two spaces to start a new paragraph.

*italics* and *italics*

**bold** and **bold**

superscript<sup>2</sup>

~~strikethrough~~

[link](http://www.rstudio.com)

# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

###### Header 6

endash: --

emdash: ---

ellipsis: ...

inline equation:  $A = \pi * r^2$

image: 

horizontal rule (or slide break):

block quote

- unordered list
- item 2
  - sub-item 1
  - sub-item 2

1. ordered list

2. item 2

- sub-item 1
- sub-item 2

| Table Header | Second Header |
|--------------|---------------|
| Table Cell   | Cell 2        |
| Cell 3       | Cell 4        |



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1. Markdown Syntax
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## Syntax

Make a code chunk with three back ticks followed by an `r` in braces. End the chunk with three back ticks:

```
```${r}
paste("Hello", "World!")
```
```

Place code inline with a single back ticks. The first back tick must be followed by an `R`, like this ``r paste("Hello", "World!")``.

Add chunk options within braces. For example, ``echo=FALSE`` will prevent source code from being displayed:

```
```${r eval=TRUE, echo=FALSE}
paste("Hello", "World!")
```
```

Learn more about chunk options at <http://yihui.name/knitr/options>

## Becomes

Make a code chunk with three back ticks followed by an `r` in braces. End the chunk with three back ticks:

```
paste("Hello", "World!")
```

```
## [1] "Hello World!"
```

Place code inline with a single back ticks. The first back tick must be followed by an `R`, like this `Hello World!`.

Add chunk options within braces. For example, `echo=FALSE` will prevent source code from being displayed:

```
## [1] "Hello World!"
```

## Chunk options

| option                 | default value | description                                                                                                                                                                                                                                                                                                               |
|------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Code evaluation</b> |               |                                                                                                                                                                                                                                                                                                                           |
| <b>child</b>           | NULL          | A character vector of filenames. Knitr will knit the files and place them into the main document.                                                                                                                                                                                                                         |
| <b>code</b>            | NULL          | Set to R code. Knitr will replace the code in the chunk with the code in the code option.                                                                                                                                                                                                                                 |
| <b>engine</b>          | 'R'           | Knitr will evaluate the chunk in the named language, e.g. <code>engine = 'python'</code> . Run <code>names(knitr::knit_engines\$get())</code> to see supported languages.                                                                                                                                                 |
| <b>eval</b>            | TRUE          | If <code>FALSE</code> , knitr will not run the code in the code chunk.                                                                                                                                                                                                                                                    |
| <b>include</b>         | TRUE          | If <code>FALSE</code> , knitr will run the chunk but not include the chunk in the final document.                                                                                                                                                                                                                         |
| <b>purl</b>            | TRUE          | If <code>FALSE</code> , knitr will not include the chunk when running <code>purl()</code> to extract the source code.                                                                                                                                                                                                     |
| <b>Results</b>         |               |                                                                                                                                                                                                                                                                                                                           |
| <b>collapse</b>        | FALSE         | If <code>TRUE</code> , knitr will collapse all the source and output blocks created by the chunk into a single block.                                                                                                                                                                                                     |
| <b>echo</b>            | TRUE          | If <code>FALSE</code> , knitr will not display the code in the code chunk above it's results in the final document.                                                                                                                                                                                                       |
| <b>results</b>         | 'markup'      | If <code>'hide'</code> , knitr will not display the code's results in the final document. If <code>'hold'</code> , knitr will delay displaying all output pieces until the end of the chunk. If <code>'asis'</code> , knitr will pass through results without reformatting them (useful if results return raw HTML, etc.) |
| <b>error</b>           | TRUE          | If <code>FALSE</code> , knitr will not display any error messages generated by the code.                                                                                                                                                                                                                                  |
| <b>message</b>         | TRUE          | If <code>FALSE</code> , knitr will not display any messages generated by the code.                                                                                                                                                                                                                                        |
| <b>warning</b>         | TRUE          | If <code>FALSE</code> , knitr will not display any warning messages generated by the code.                                                                                                                                                                                                                                |
| <b>Code Decoration</b> |               |                                                                                                                                                                                                                                                                                                                           |
| <b>comment</b>         | '##'          | A character string. Knitr will append the string to the start of each line of results in the final document.                                                                                                                                                                                                              |
| <b>highlight</b>       | TRUE          | If <code>TRUE</code> , knitr will highlight the source code in the final output.                                                                                                                                                                                                                                          |
| <b>prompt</b>          | FALSE         | If <code>TRUE</code> , knitr will add <code>&gt;</code> to the start of each line of code displayed in the final document.                                                                                                                                                                                                |
| <b>strip.white</b>     | TRUE          | If <code>TRUE</code> , knitr will remove white spaces that appear at the beginning or end of a code chunk.                                                                                                                                                                                                                |
| <b>tidy</b>            | FALSE         | If <code>TRUE</code> , knitr will tidy code chunks for display with the <code>tidy_source()</code> function in the <code>formatR</code> package.                                                                                                                                                                          |



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## Chunk options (Continued)

| option                             | default value   | description                                                                                                                                                                                                                                                                                                                          |
|------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chunks</b>                      |                 |                                                                                                                                                                                                                                                                                                                                      |
| <b>opts.label</b>                  | NULL            | The label of options set in <code>knitr::opts_template()</code> to use with the chunk.                                                                                                                                                                                                                                               |
| <b>R.options</b>                   | NULL            | Local R options to use with the chunk. Options are set with <code>options()</code> at start of chunk. Defaults are restored at end.                                                                                                                                                                                                  |
| <b>ref.label</b>                   | NULL            | A character vector of labels of the chunks from which the code of the current chunk is inherited.                                                                                                                                                                                                                                    |
| <b>Cache</b>                       |                 |                                                                                                                                                                                                                                                                                                                                      |
| <b>autodep</b>                     | FALSE           | If <b>TRUE</b> , knitr will attempt to figure out dependencies between chunks automatically by analyzing object names.                                                                                                                                                                                                               |
| <b>cache</b>                       | FALSE           | If <b>TRUE</b> , knitr will cache the results to reuse in future knits. Knitr will reuse the results until the code chunk is altered.                                                                                                                                                                                                |
| <b>cache.comments</b>              | NULL            | If <b>FALSE</b> , knitr will not rerun the chunk if only a code comment has changed.                                                                                                                                                                                                                                                 |
| <b>cache.lazy</b>                  | TRUE            | If <b>TRUE</b> , knitr will use <code>lazyload()</code> to load objects in chunk. If <b>FALSE</b> , knitr will use <code>load()</code> to load objects in chunk.                                                                                                                                                                     |
| <b>cache.path</b>                  | 'cache/'        | A file path to the directory to store cached results in. Path should begin in the directory that the .Rmd file is saved in.                                                                                                                                                                                                          |
| <b>cache.vars</b>                  | NULL            | A character vector of object names to cache if you do not wish to cache each object in the chunk.                                                                                                                                                                                                                                    |
| <b>dependson</b>                   | NULL            | A character vector of chunk labels to specify which other chunks a chunk depends on. Knitr will update a cached chunk if its dependencies change.                                                                                                                                                                                    |
| <b>Animation</b>                   |                 |                                                                                                                                                                                                                                                                                                                                      |
| <b>anipots</b>                     | 'controls,loop' | Extra options for animations (see the <code>animate</code> package).                                                                                                                                                                                                                                                                 |
| <b>interval</b>                    | 1               | The number of seconds to pause between animation frames.                                                                                                                                                                                                                                                                             |
| <b>Plots</b>                       |                 |                                                                                                                                                                                                                                                                                                                                      |
| <b>dev</b>                         | 'png'           | The R function name that will be used as a graphical device to record plots, e.g. <code>dev='CairoPDF'</code> .                                                                                                                                                                                                                      |
| <b>dev.args</b>                    | NULL            | Arguments to be passed to the device, e.g. <code>dev.args=list(bg='yellow', pointsize=10)</code> .                                                                                                                                                                                                                                   |
| <b>dpi</b>                         | 72              | A number for knitr to use as the dots per inch (dpi) in graphics (when applicable).                                                                                                                                                                                                                                                  |
| <b>external</b>                    | TRUE            | If <b>TRUE</b> , knitr will externalize tikz graphics to save LaTeX compilation time (only for the <code>tikzDevice::tikz()</code> device).                                                                                                                                                                                          |
| <b>fig.align</b>                   | 'default'       | How to align graphics in the final document. One of 'left', 'right', or 'center'.                                                                                                                                                                                                                                                    |
| <b>fig.cap</b>                     | NULL            | A character string to be used as a figure caption in LaTeX.                                                                                                                                                                                                                                                                          |
| <b>fig.env</b>                     | 'figure'        | The Latex environment for figures.                                                                                                                                                                                                                                                                                                   |
| <b>fig.ext</b>                     | NULL            | The file extension for figure output, e.g. <code>fig.ext='png'</code> .                                                                                                                                                                                                                                                              |
| <b>fig.height, fig.width</b>       | 7               | The width and height to use in R for plots created by the chunk (in inches).                                                                                                                                                                                                                                                         |
| <b>fig.keep</b>                    | 'high'          | If <b>'high'</b> , knitr will merge low-level changes into high level plots. If <b>'all'</b> , knitr will keep all plots (low-level changes may produce new plots). If <b>'first'</b> , knitr will keep the first plot only. If <b>'last'</b> , knitr will keep the last plot only. If <b>'none'</b> , knitr will discard all plots. |
| <b>fig.lp</b>                      | 'fig:'          | A prefix to be used for figure labels in latex.                                                                                                                                                                                                                                                                                      |
| <b>fig.path</b>                    | 'figure/'       | A file path to the directory where knitr should store the graphics files created by the chunk.                                                                                                                                                                                                                                       |
| <b>fig.pos</b>                     | "               | A character string to be used as the figure position arrangement in LaTeX.                                                                                                                                                                                                                                                           |
| <b>fig.process</b>                 | NULL            | A function to post-process a figure file. Should take a filename and return a filename of a new figure source.                                                                                                                                                                                                                       |
| <b>fig.retina</b>                  | 1               | Dpi multiplier for displaying HTML output on retina screens.                                                                                                                                                                                                                                                                         |
| <b>fig.scap</b>                    | NULL            | A character string to be used as a short figure caption.                                                                                                                                                                                                                                                                             |
| <b>fig.subcap</b>                  | NULL            | A character string to be used as captions in sub-figures in LaTeX.                                                                                                                                                                                                                                                                   |
| <b>fig.show</b>                    | 'asis'          | If <b>'hide'</b> , knitr will generate the plots created in the chunk, but not include them in the final document. If <b>'hold'</b> , knitr will delay displaying the plots created by the chunk until the end of the chunk. If <b>'animate'</b> , knitr will combine all of the plots created by the chunk into an animation.       |
| <b>fig.showtext</b>                | NULL            | If <b>TRUE</b> , knitr will call <code>showtext::showtext.begin()</code> before drawing plots.                                                                                                                                                                                                                                       |
| <b>out.extra</b>                   | NULL            | A character string of extra options for figures to be passed to LaTeX or HTML.                                                                                                                                                                                                                                                       |
| <b>out.height, out.width</b>       | NULL            | The width and height to scale plots to in the final output. Can be in units recognized by output, e.g. <code>8\\linewidth, 50px</code>                                                                                                                                                                                               |
| <b>resize.height, resize.width</b> | NULL            | The width and height to resize tike graphics in LaTeX, passed to <code>\resizebox{ }{ }</code> .                                                                                                                                                                                                                                     |
| <b>sanitize</b>                    | FALSE           | If <b>TRUE</b> , knitr will sanitize tike graphics for LaTeX.                                                                                                                                                                                                                                                                        |



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| Templates             | Basic YAML          | Template options  | Latex options        | Interactive Docs    |
|-----------------------|---------------------|-------------------|----------------------|---------------------|
| html_document         | ---                 | ---               | ---                  | ---                 |
| pdf_document          | title: "A Web Doc"  | title: "Chapters" | title: "My PDF"      | title: "Slides"     |
| word_document         | author: "John Doe"  | output:           | output: pdf_document | output:             |
| md_document           | date: "May 1, 2015" | html_document:    | fontsize: 11pt       | slidy_presentation: |
| ioslides_presentation | output: md_document | toc: true         | geometry: margin=1in | incremental: true   |
| slidy_presentation    | ---                 | toc_depth: 2      | ---                  | runtime: shiny      |
| beamer_presentation   | ---                 | ---               | ---                  | ---                 |

## Syntax for slide formats (ioslides, slidy, beamer)

# Dividing slides 1

Pandoc will start a new slide at each first level header

## Header 2

... as well as each second level header

\*\*\*

You can start a new slide with a horizontal rule`\*\*\*` if you do not want a header.

## Bullets

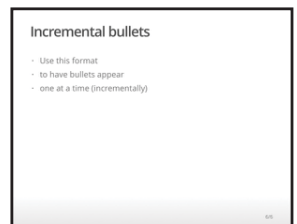
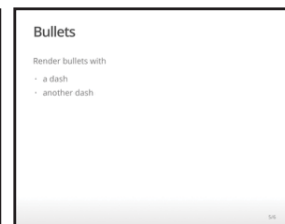
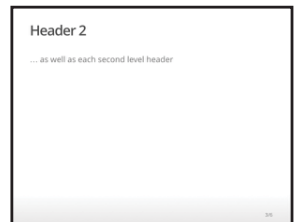
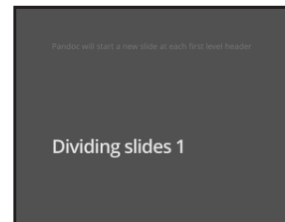
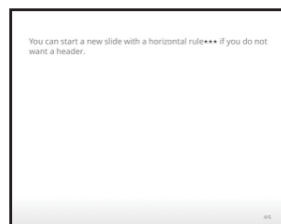
Render bullets with

- a dash
- another dash

## Incremental bullets

- >- Use this format
- >- to have bullets appear
- >- one at a time (incrementally)

becomes



## Slide display modes

Press a key below during presentation to enter display mode. Press **esc** to exit display mode.

### ioslides

- f** - enable fullscreen mode
- w** - toggle widescreen mode
- o** - enable overview mode
- h** - enable code highlight mode
- p** - show presenter notes

### slidy

- C** - show table of contents
- F** - toggle display of the footer
- A** - toggle display of current vs all slides
- S** - make fonts smaller
- B** - make fonts bigger

## Top level options to customize LaTeX (pdf) output

| option                                 | description                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------------------|
| lang                                   | Document language code                                                                    |
| fontsize                               | Font size (e.g. 10pt, 11pt, 12 pt)                                                        |
| documentclass                          | Latex document class (e.g. article)                                                       |
| classoption                            | Option for document class (e.g. oneside); may be repeated                                 |
| geometry                               | Options for geometry class (e.g. margin=1in); may be repeated                             |
| mainfont, sansfont, monofont, mathfont | Document fonts (works only with xelatex and lualatex, see the latex_engine option)        |
| linkcolor, urlcolor, citecolor         | Color for internal, external, and citation links (red, green, magenta, cyan, blue, black) |



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| option         | html | pdf | word | md | ioslides | slidy | beamer | description                                                                                                                                                 |
|----------------|------|-----|------|----|----------|-------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| colortheme     |      |     |      |    |          |       | X      | Beamer color theme to use (e.g., <code>colortheme: "dolphin"</code> ).                                                                                      |
| css            | X    |     |      |    | X        | X     |        | Filepath to CSS style to use to style document (e.g., <code>css: styles.css</code> ).                                                                       |
| duration       |      |     |      |    |          | X     |        | Add a countdown timer (in minutes) to footer of slides (e.g., <code>duration: 45</code> ).                                                                  |
| fig_caption    | X    | X   | X    |    | X        | X     | X      | Should figures be rendered with captions?                                                                                                                   |
| fig_crop       |      | X   |      |    |          |       | X      | Should pdfcrop utility be automatically applied to figures (when available)?                                                                                |
| fig_height     | X    | X   | X    | X  | X        | X     | X      | Default figure height (in inches) for document.                                                                                                             |
| fig_retina     | X    |     |      | X  | X        | X     |        | Scaling to perform for retina displays (e.g., <code>fig_retina: 2</code> ).                                                                                 |
| fig_width      | X    | X   | X    | X  | X        | X     | X      | Default figure width (in inches) for document.                                                                                                              |
| font_adjustmen |      |     |      |    |          | X     |        | Increase or decrease font size for entire presentation (e.g., <code>font_adjustment: -1</code> ).                                                           |
| fonttheme      |      |     |      |    |          |       | X      | Beamer font theme to use (e.g., <code>fonttheme: "structurebold"</code> ).                                                                                  |
| footer         |      |     |      |    |          | X     |        | Text to add to footer of each slide (e.g., <code>footer: "Copyright (c) 2014 RStudio"</code> ).                                                             |
| highlight      | X    | X   |      |    |          | X     | X      | Syntax highlighting style (e.g. "tango", "pygments", "kate", "zenburn", and                                                                                 |
| includes       | X    | X   |      | X  | X        | X     | X      | See below                                                                                                                                                   |
| -in_header     | X    | X   |      |    | X        | X     | X      | File of content to place in document header (e.g., <code>in_header: header.html</code> ).                                                                   |
| -before_body   | X    | X   |      |    | X        | X     | X      | File of content to place before document body (e.g., <code>before_body:</code>                                                                              |
| -after_body    | X    | X   |      |    | X        | X     | X      | File of content to place after document body (e.g., <code>after_body: doc_suffix.html</code> ).                                                             |
| incremental    |      |     |      |    | X        | X     | X      | Should bullets appear one at a time (on presenter mouse clicks)?                                                                                            |
| keep_md        | X    |     |      |    | X        | X     |        | Save a copy of .md file that contains knitr output (in addition to the .Rmd and HTML files)?                                                                |
| keep_tex       |      | X   |      |    |          |       | X      | Save a copy of .tex file that contains knitr output (in addition to the .Rmd and PDF files)?                                                                |
| latex_engine   |      | X   |      |    |          |       |        | Engine to render latex. Should be one of "pdflatex", "xelatex", and "lualatex".                                                                             |
| lib_dir        | X    |     |      |    | X        | X     |        | Directory of dependency files to use (Bootstrap, MathJax, etc.) (e.g., <code>lib_dir: libs</code> ).                                                        |
| logo           |      |     |      |    | X        |       |        | File path to a logo (at least 128 x 128) to add to presentation (e.g., <code>logo: logo.png</code> ).                                                       |
| mathjax        | X    |     |      |    | X        | X     |        | Set to <code>local</code> or a URL to use a local/URL version of MathJax to render equations                                                                |
| number_section | X    | X   |      |    |          |       |        | Add section numbering to headers (e.g., <code>number_sections: true</code> ).                                                                               |
| pandoc_args    | X    | X   | X    | X  | X        | X     | X      | Arguments to pass to Pandoc (e.g., <code>pandoc_args: ["--title-prefix", "Foo"]</code> ).                                                                   |
| preserve_yaml  |      |     |      | X  |          |       |        | Preserve YAML front matter in final document?                                                                                                               |
| reference_docx |      |     | X    |    |          |       |        | A .docx file whose styles should be copied to use (e.g., <code>reference_docx:</code>                                                                       |
| self_contained | X    |     |      |    | X        | X     |        | Embed dependencies into the doc? Set to <code>false</code> to keep dependencies in external files.                                                          |
| slide_level    |      |     |      |    |          |       | X      | The lowest heading level that defines individual slides (e.g., <code>slide_level: 2</code> ).                                                               |
| smaller        |      |     |      |    | X        |       |        | Use the smaller font size in the presentation?                                                                                                              |
| smart          | X    |     |      |    | X        | X     |        | Convert straight quotes to curly, dashes to em-dashes, ... to ellipses, and so on?                                                                          |
| template       | X    | X   |      |    |          | X     | X      | Pandoc template to use when rendering file (e.g., <code>template:</code>                                                                                    |
| theme          | X    |     |      |    |          |       | X      | Bootswatch or Beamer theme to use for page. Valid bootswatch themes include "cerulean", "journal", "flatly", "readable", "spacelab", "united", and "cosmo". |
| toc            | X    | X   |      | X  |          |       | X      | Add a table of contents at start of document? (e.g., <code>toc: true</code> ).                                                                              |
| toc_depth      | X    | X   |      | X  |          |       |        | The lowest level of headings to add to table of contents (e.g., <code>toc_depth: 2</code> ).                                                                |
| transition     |      |     |      |    | X        |       |        | Speed of slide transitions should be "slower", "faster" or a number in seconds.                                                                             |
| variant        |      |     |      | X  |          |       |        | The flavor of markdown to use; one of "markdown", "markdown_strict", "markdown_github", "markdown_mmd", and "markdown_phpextra"                             |
| widescreen     |      |     |      |    | X        |       |        | Display presentation in widescreen format?                                                                                                                  |



# R Markdown

## 速查表

详情请查看 [rmarkdown.rstudio.com](http://rmarkdown.rstudio.com)

rmarkdown 0.2.50 更新: 8/14



由 **supstat** 翻译  
ANALYTICS

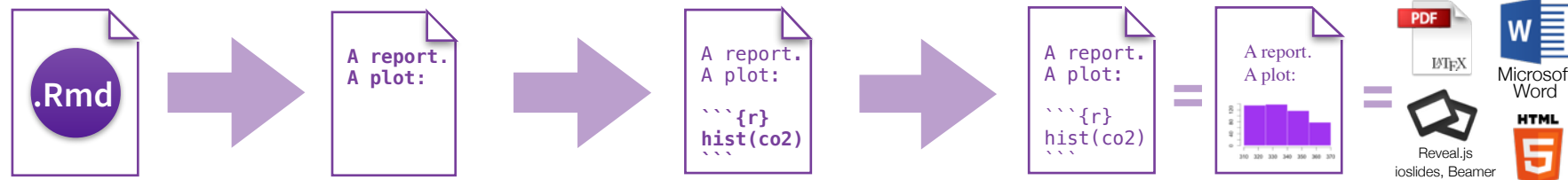
**1. 工作流程** R Markdown是通过R来书写可重复动态报告的一种格式。利用它在幻灯片、pdf、html文档、Word文件中嵌入R代码和结果。报告制作流程:

i. 打开 - 打开扩展名为.Rmd的文件

ii. 编写 - 利用简易的R Markdown 语法编写内容

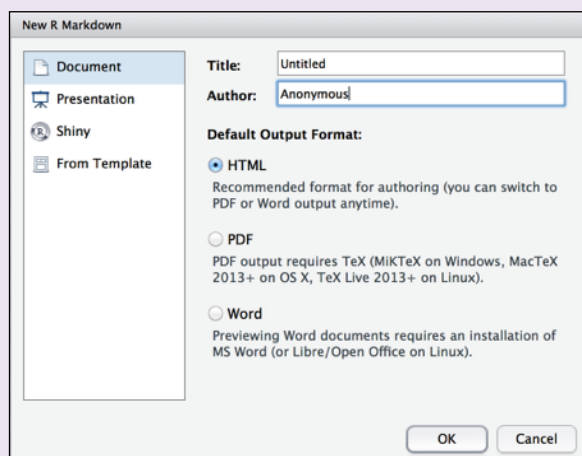
iii. 嵌入 - 嵌入R代码, 生成报告所需的输出结果

iv. 提交 - 用输出结果替代R代码, 把报告转换为幻灯片、pdf、html或微软Word文件。



**2. 打开文件** 以保存为扩展名.Rmd的文本文件开始, 或打开一个RStudio Rmd模板

- 点击菜单栏中的:  
**File ► New File ► R Markdown...**
- 窗口弹出。选择.Rmd文件的输出类型
- 单击指定输出类型 (亦可随后修改)
- 点击确认



**4. 选择输出格式** 编辑YAML表头, 说明从R markdown文件中建立的文档类型。

### YAML

YAML表头是一组键: 在文件开头的值对。以三短横(- -)开始和结束

```
---  
title: "Untitled"  
author: "Anonymous"  
output: html_document  
---
```

This is the start of my report. The above is metadata saved in a YAML header.

RStudio已为你  
写好了YAML表  
头模板

输出值决定R从.Rmd文件中建立的文件类型 (步骤6)

**output: html\_document** ..... html文件(网页)  
**output: pdf\_document** ..... pdf文档  
**output: word\_document** ..... Microsoft Word.docx  
**output: beamer\_presentation** ..... beamer幻灯片(pdf)  
**output: ioslides\_presentation** ..... ioslides幻灯片(html)



**3. 简易标记** 之后, 用纯文本书写你的报告。利用markdown语法来说明如何设计在最终报告中的文本格式。

### 语法

Plain text  
End a line with two spaces to start a new paragraph.  
*\*italics\** and *\_italics\_*  
**\*\*bold\*\*** and **\_\_bold\_\_**  
superscript^2^  
~~strikethrough~~  
[link](www.rstudio.com)

# Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

##### Header 6

endash: --  
emdash: ---  
ellipsis: ...  
inline equation:  $A = \pi * r^2$   
image: 

horizontal rule (or slide break):

\*\*\*

> block quote

\* unordered list  
\* item 2  
+ sub-item 1  
+ sub-item 2

1. ordered list  
2. item 2  
+ sub-item 1  
+ sub-item 2

| Table Header | Second Header |
|--------------|---------------|
| Table Cell   | Cell 2        |
| Cell 3       | Cell 4        |

### 显示

Plain text  
End a line with two spaces to start a new paragraph.  
*italics* and *italics*  
**bold** and **bold**  
superscript<sup>2</sup>  
~~strikethrough~~  
[link](#)

## Header 1

## Header 2

### Header 3

#### Header 4

##### Header 5

###### Header 6

endash: –

emdash: —

ellipsis: ...

inline equation:  $A = \pi * r^2$

image:

horizontal rule (or slide break):

block quote

- unordered list
- item 2
  - sub-item 1
  - sub-item 2

1. ordered list
2. item 2
  - sub-item 1
  - sub-item 2

| Table Header | Second Header |
|--------------|---------------|
| Table Cell   | Cell 2        |
| Cell 3       | Cell 4        |

## 5. 嵌入代码

利用knitr语法在报告中嵌入R代码。在提交报告的时候，R就会运行代码及显示结果

### 内联代码

用反勾号和字母r把代码包围起来，R就会把内联代码替代为它的结果。

Two plus two equals ``r 2 + 2``.

Two plus two equals 4.

### 代码块

代码块以````{r}`开始，以`````结束。

Here's some code  
````{r}  
dim(iris)  
````

Here's some code

`dim(iris)`

## [1] 150 5

### 显示选项

利用knitr选项来设置代码块的输出形式。把条件选项放置在代码块上方的大括号中。

Here's some code  
````{r eval=FALSE}  
dim(iris)  
````

Here's some code

`dim(iris)`

Here's some code  
````{r echo=FALSE}  
dim(iris)  
````

Here's some code

## [1] 150 5

| 选项         | 默认值      | 效果                                                  |
|------------|----------|-----------------------------------------------------|
| eval       | TRUE     | 是否估计代码的值及显示其结果                                      |
| echo       | TRUE     | 显示结果时，是否也一同显示代码                                     |
| warning    | TRUE     | 是否显示警告                                              |
| error      | FALSE    | 是否显示错误                                              |
| message    | TRUE     | 是否显示消息                                              |
| tidy       | FALSE    | 是否调整代码的显示格式，使其更整洁                                   |
| results    | "markup" | "markup"（标记显示），"asis"（文本显示），"hold"（末尾显示）或"hide"（隐藏） |
| cache      | FALSE    | 为了方便以后的提交，是否缓存结果                                    |
| comment    | "##"     | 注释符号，用于结果之前                                         |
| fig.width  | 7        | 由代码块生成的图表的宽度（英寸）                                    |
| fig.height | 7        | 由代码块生成的图表的高度（英寸）                                    |

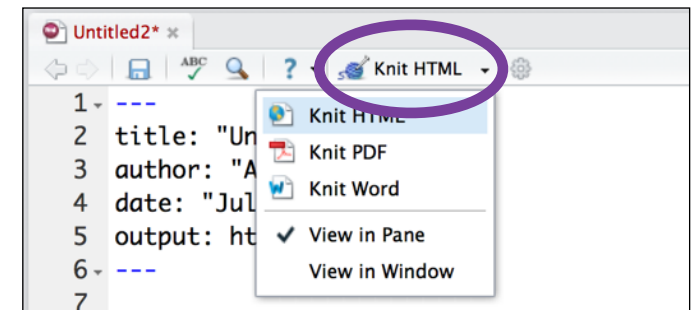
详情请访问[yihui.name/knitr/](http://yihui.name/knitr/)

## 6. 提交

把.Rmd文件作为建立完整报告的蓝图

使用两种方法中的一种来提交报告

1. 运行`rmarkdown::render("<file path>")`
2. 点击RStudio顶端脚本窗格中的**knit HTML**按钮



当你提交时，R会

- 执行每一个嵌入的代码块，在报告中插入执行结果
- 根据输出文件类型，建立报告的新版本
- 在视图窗格中打开输出文件的预览
- 在工作目录中保存输出文件

## 7. 交互式文档

3步把报告转换为交互式的Shiny文档

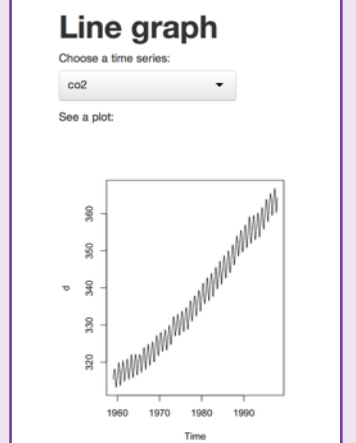
- 1 在YAML表头中添加`runtime: shiny`

```
---  
title: "Line graph"  
output: html_document  
runtime: shiny  
---
```

- 2 在代码块中，添加Shiny `input`函数来嵌入部件，添加Shiny `render`函数来嵌入响应式输出

```
---  
title: "Line graph"  
output: html_document  
runtime: shiny  
---  
  
Choose a time series:  
```{r echo = FALSE}  
selectInput("data", "",  
  c("co2", "lh"))  
---  
  
See a plot:  
```{r echo = FALSE}  
renderPlot({  
  d <- get(input$data)  
  plot(d)  
})
```

- 3 在RStudio中使用`rmarkdown::run`命令或点击Run Document来提交



\* 提示: 报告将会以Shiny应用的形式呈现, 这意味着你必须选择一种html的输出形式, 如`html_document`（针对交互式报告）或`ioslides_presentation`（针对交互式幻灯片）。

## 8. 发布

分享报告，使得用户能够在线访问

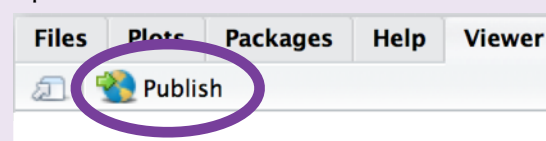
### Rpubs.com

在RStudio的免费R Markdown发布网址中分享非交互式文档，地址为  
[www.rpubs.com](http://www.rpubs.com)

### ShinyApps.io

在RStudio的服务器上构建交互式文档。免费或付费服务地址为  
[www.shinyapps.io](http://www.shinyapps.io)

在RStudio预览窗口中点击"Publish"按钮，单击即可把文档发布到rpubs.com中



## 9. 了解更多

说明文档与示例 - [rmarkdown.rstudio.com](http://rmarkdown.rstudio.com)

更多文章 - [shiny.rstudio.com/articles](http://shiny.rstudio.com/articles)

W - [blog.rstudio.com](http://blog.rstudio.com)

T - @rstudio



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844-448-1212 [rstudio.com](http://rstudio.com)

本介绍由SupStat Inc.翻译。

英文网址: [supstat.com](http://supstat.com) 中文网址: [supstat.com.cn](http://supstat.com.cn)



# Shiny

## 速查表

详情访问[shiny.rstudio.com](http://shiny.rstudio.com)

Shiny 0.10.0 Updated: 6/14

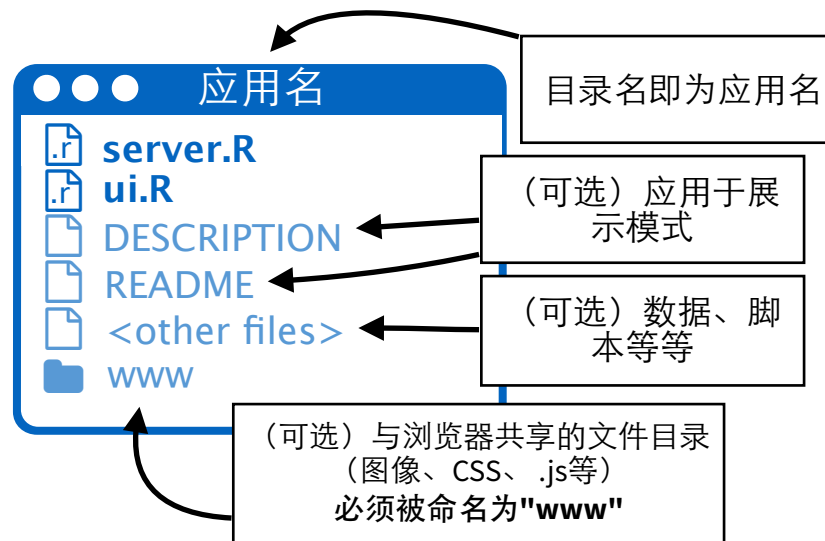


由supstat ANALYTICS 翻译

## 2. server.R 应用程序的R组件的构建命令组。如何编写server.R:

- A** 为server.R提供最简短的必要代码，  
`shinyServer(function(input, output) {})`
- B** 在`function(input, output)`之后的大括号之间定义应用的R组件
- C** 以`output$<component name>`的方式在UI之中保存R组件
- D** 通过render\*函数来创建每一个输出组件
- E** 把服务器所需的用于建立组件的R代码赋予到每一个render\*函数中。服务器将会对每一个出现在R代码中的响应值做标记且在这些值发生改变的同时重建组件。
- F** 通过`input$<widget name>`引用部件值

## 1. 架构 每个应用程序都相当于一个目录。这个目录包含一个server.R文件，一般还包含一个ui.R文件（以及可选的额外文件）



## server.R

```
# load libraries, scripts, data
A shinyServer(function(input, output) { B
  # make user specific variables

  output$text <- renderText({
    input$title
  })

  C output$plot <- D renderPlot({
    E x <- mtcars[, input$x] F
    y <- mtcars[, input$y]
    plot(x, y, pch = 16)
  })
})
```

## 3. 执行 把代码放置在运行次数最少的地方

**运行一次** - 当你首次启动应用程序时，在shinyServer函数之外的代码将只会运行一次。对于服务器只需要其一个副本的工具，利用该代码来建立此这些工具。

**为每个用户运行一次** - 每当用户访问应用程序（或刷新浏览器页面）时，在shinyServer函数内的代码都将运行一次。对于服务器针对每一个用户均需要一个独特副本的工具，利用该代码来建立来建立这些工具。

**多次运行** - 在render\*、reactive或observe函数中的代码将会运行多次。只有在部件发生改变后服务器重建UI组件所需的代码会放在这个位置。

## 4. 响应 当输入改变时，服务器将重建依赖于此输入的每一个输出（即便是非直接的依赖关系）。你可通过改变依赖链的方式来控制该行为。

**render\*** - 每当在其render\*中的输入改变时，输出将会自动更新。

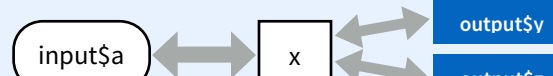
**Reactive表达式** - 利用reactive表达式来创建将会用于多个输出的对象。

**isolate** - 利用isolate来使用一个输入而无需依赖于该输入。当被isolate函数使用的输入改变时，Shiny将不会重建对应的输出。

**observe** - 利用observe来创建代码使之在输入改变时运行，却不会生成输出对象。



```
output$z <- renderText({
  input$a
})
```



```
x <- reactive({
  input$a
})
output$y <- renderText({
  x()
})
output$z <- renderText({
  x()
})
```



```
output$z <- renderText({
  paste(
    isolate(input$a),
    input$b
  )
})
```



```
observe({
  input$a
  # code to run
})
```

## A shinyUI(fluidPage(

```

titlePanel("mtcars data"),
B sidebarLayout(
  sidebarPanel(
    C textInput("title", "Plot title:",
      value = "x v y"),

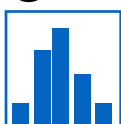
    selectInput("x", "Choose an x var:",
      choices = names(mtcars),
      selected = "disp"),

    selectInput("y", "Choose a y var:",
      choices = names(mtcars),
      selected = "mpg")
  ),

  mainPanel(
    h3(textOutput("text")),
    plotOutput("plot")
  )
)
)

```

C 在每一个面板和列中，放置...



R组件 - 它们是在server.R中定义的输出对象。如何放置一个组件：

1. 选择\*Output函数，使之建立你想安置在UI中的对象类型。
2. 把与在server.R中所指定的对象名相对应的字符串作为参数传递到\*Output函数中，如

output\$plot <- renderPlot({ ... }) ↔ plotOutput("plot")

### \*Output函数

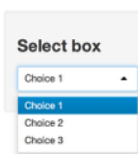
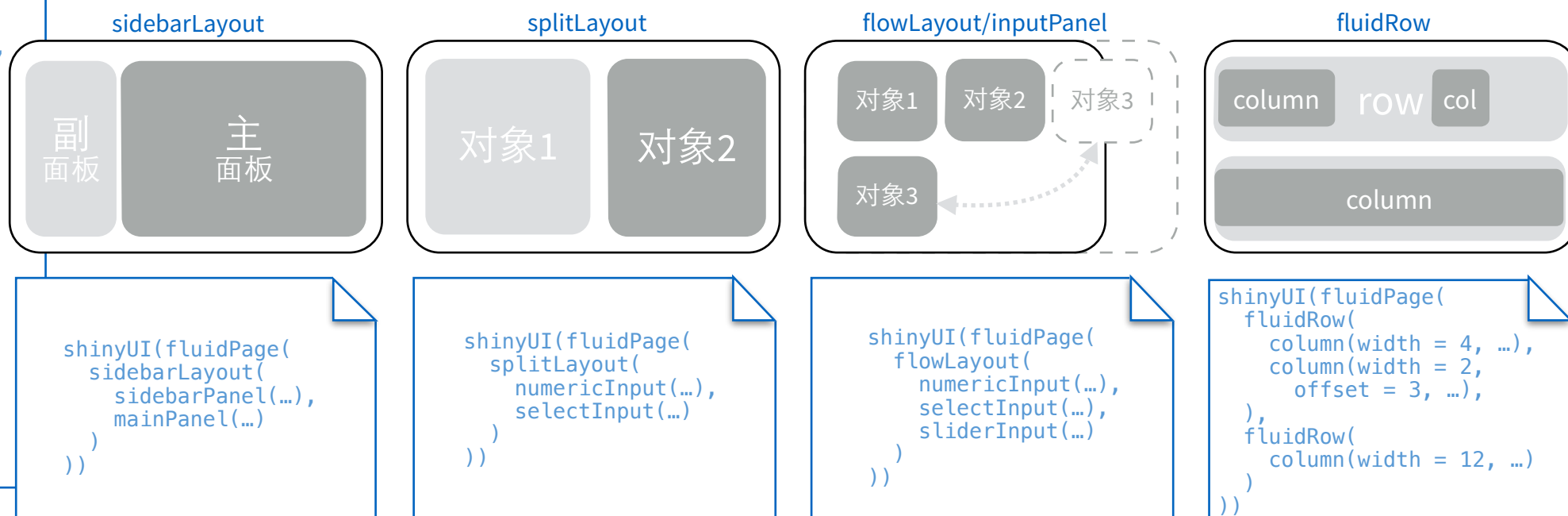
|                 |                    |
|-----------------|--------------------|
| dataTableOutput | tableOutput        |
| htmlOutput      | textOutput         |
| imageOutput     | uiOutput           |
| plotOutput      | verbatimTextOutput |

## 5. ui.R 应用程序用户界面 (UI) 的描述，展示应用程序的网页。如何编写ui.R:

A 在ui.R, shinyUI(fluidPage())中包含最简短的必要代码

\* 注意: 若希望使用导航条来连接多页面应用程序，用navbarPage替代fluidPage

B 为UI建立一个板面。在与sidebarPanel和mainPanel一同使用时，sidebarLayout将会提供一个默认板面。splitLayout、flowLayout和inputLayout把页面划分为多个等间隔排列的区域。fluidRow和column一同创建了一个基于网格的板面，可用于规划页面或面板。



部件 - 每个部件函数的第一个参数都是部件的<名称>。你可以通过input\$<名称>来访问在server.R中的部件当前值。

| 部件     | 函数                 | 常用参数                                         |
|--------|--------------------|----------------------------------------------|
| 动作按钮   | actionButton       | inputId, label                               |
| 复选框    | checkboxInput      | inputId, label, value                        |
| 复选框组   | checkboxGroupInput | inputId, label, choices, selected            |
| 选择日期   | dateInput          | inputId, label, value, min, max, format      |
| 选择日期范围 | dateRangeInput     | inputId, label, start, end, min, max, format |
| 文件上传   | fileInput          | inputId, label, multiple                     |
| 数字字段   | numericInput       | inputId, label, value, min, max, step        |
| 单选按钮   | radioButtons       | inputId, label, choices, selected            |
| 选项框    | selectInput        | inputId, label, choices, selected, multiple  |
| 滑动条    | sliderInput        | inputId, label, min, max, value, step        |
| 提交按钮   | submitButton       | text                                         |
| 文本字段   | textInput          | inputId, label, value                        |



HTML元素 - 通过Shiny函数添加HTML元素，它们相当于一般的HTML标签。

|                  |                   |               |                |                |                              |
|------------------|-------------------|---------------|----------------|----------------|------------------------------|
| a                | tags\$col         | tags\$form    | tags\$input    | tags\$output   | tags\$sub                    |
| tags\$abbr       | tags\$colgroup    | tags\$h1      | tags\$ins      | tags\$summary  | tags\$summary                |
| tags\$address    | tags\$command     | tags\$h2      | tags\$kbd      | tags\$param    | tags\$sup                    |
| tags\$area       | tags\$data        | tags\$h3      | tags\$keygen   | pre            | tags\$table                  |
| tags\$article    | tags\$datalist    | tags\$h4      | tags\$label    | tags\$progress | tags\$tbody                  |
| tags\$aside      | tags\$dd          | tags\$h5      | tags\$legend   | tags\$q        | tags\$td                     |
| tags\$audio      | tags\$del         | tags\$h6      | tags\$li       | tags\$ruby     | tags\$textarea               |
| tags\$b          | tags\$details     | tags\$head    | tags\$link     | tags\$rp       | tags\$tfoot                  |
| tags\$base       | tags\$dfn         | tags\$header  | tags\$mark     | tags\$rt       | tags\$th                     |
| tags\$bdi        | div               | tags\$hgroup  | tags\$map      | tags\$s        | tags <thead< td=""></thead<> |
| tags\$bdo        | tags\$dl          | hr            | tags\$menu     | tags\$samp     | tags\$time                   |
| tags\$blockquote | tags\$dt          | HTML          | tags\$meta     | tags\$script   | tags\$title                  |
| tags\$body       | em                | tags\$i       | tags\$meter    | tags\$section  | tags\$tr                     |
| br               | tags\$embed       | tags\$iframe  | tags\$nav      | tags\$select   | tags\$track                  |
| tags\$button     | tags\$eventsource | img           | tags\$noscript | tags\$small    | tags\$u                      |
| tags\$canvas     | tags\$fieldset    | includeCSS    | tags\$object   | tags\$source   | tags\$ul                     |
| tags\$caption    | tags\$figcaption  | includeMarkdo | tags\$ol       | strong         | tags\$var                    |
| tags\$cite       | tags\$figure      | wn            | tags\$optgroup | tags\$style    | tags\$video                  |
| code             | tags\$footer      | includeScript | tags\$option   |                | tags\$wbr                    |

## 6. 运行应用程序

runApp - 从本地文件中运行

runGitHub - 从www.GitHub.com管理的文件中运行

runGist - 从保存为gist的文件中运行 (gist.github.com)

runURL - 从保存在任意URL中的文件中运行



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844-448-1212 rstudio.com

本介绍由SupStat Inc.翻译。 英文网址: supstat.com 中文网址: supstat.com.cn

## 7. 分享应用程序 将应用程序作为实时网页来启动，让用户在线访问

### ShinyApps.io

在RStudio服务器中管理应用程序。免费和付费方案：  
[www.shinyapps.io](http://www.shinyapps.io)

### Shiny Server

构建个人的linux服务器来管理应用程序。免费且开源。  
[shiny.rstudio.com/deploy](http://shiny.rstudio.com/deploy)

### Shiny Server Pro

构建商业服务器，享受身份验证、资源管理及更多服务。  
[shiny.rstudio.com/deploy](http://shiny.rstudio.com/deploy)