

Regular Expressions Cheat Sheet by [DaveChild](#)

A quick reference guide for regular expressions (regex), including symbols, ranges, grouping, assertions and some sample patterns to get you started.

[development](#) [regex](#) [regular](#) [expressions](#) [programming](#)

Anchors

- ^ Start of string, or start of line in multi-line pattern
- \A Start of string
- \$ End of string, or end of line in multi-line pattern
- \Z End of string
- \b Word boundary
- \B Not word boundary
- \< Start of word
- \> End of word

Character Classes

- \c Control character
- \s White space
- \S Not white space
- \d Digit
- \D Not digit
- \w Word
- \W Not word
- \x Hexadecimal digit
- \O Octal digit

POSIX

- [upper:] Upper case letters
- [lower:] Lower case letters
- [alpha:] All letters
- [alnum:] Digits and letters
- [digit:] Digits
- [xdigit:] Hexadecimal digits
- [punct:] Punctuation
- [blank:] Space and tab
- [space:] Blank characters
- [cntrl:] Control characters
- [graph:] Printed characters
- [print:] Printed characters and spaces
- [word:] Digits, letters and underscore

Quantifiers

- * 0 or more {3} Exactly 3
- + 1 or more {3,} 3 or more
- ? 0 or 1 {3,5} 3, 4 or 5

Add a ? to a quantifier to make it ungreedy.

Escape Sequences

- \ Escape following character
- \Q Begin literal sequence
- \E End literal sequence

"Escaping" is a way of treating characters which have a special meaning in regular expressions literally, rather than as special characters.

Common Metacharacters

- ^ [. \$
- { * (\
- +) | ?
- < >

The escape character is usually \

Special Characters

- \n New line
- \r Carriage return
- \t Tab
- \v Vertical tab
- \f Form feed
- \xxx Octal character xxx
- \xhh Hex character hh

Groups and Ranges

- . Any character except new line (\n)
- (a|b) a or b
- (...) Group
- (?...?) Passive (non-capturing) group
- [abc] Range (a or b or c)
- [^abc] Not (a or b or c)
- [a-q] Lower case letter from a to q
- [A-Q] Upper case letter from A to Q
- [0-7] Digit from 0 to 7
- \x Group/subpattern number "x"

Ranges are inclusive.

Pattern Modifiers

- g Global match
- i * Case-insensitive
- m * Multiple lines
- s * Treat string as single line
- x * Allow comments and whitespace in pattern
- e * Evaluate replacement
- U * Ungreedy pattern
- * PCRE modifier

String Replacement

- \$n nth non-passive group
- \$2 "xyz" in /^(abc(xyz))\$/
- \$1 "xyz" in /^(?:abc)(xyz)\$/
- \$` Before matched string
- \$' After matched string
- \$+ Last matched string
- & Entire matched string

Some regex implementations use \ instead of \$.

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Assertions

- ?= Lookahead assertion
- ?! Negative lookahead
- ?<= Lookbehind assertion
- ?!= or ?<! Negative lookbehind
- ?> Once-only Subexpression
- ?() Condition [if then]
- ?()| Condition [if then else]
- ?# Comment

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Comments

[Doug](#), 10:02 28 Nov 11

Your regex cheatsheet says ^ is "Start of string" and \$ is "End of string"

[DaveChild](#), 10:02 28 Nov 11

Hi Doug. I've clarified that section. Thanks for the heads up :)

, 10:02 28 Nov 11

It looks unchanged to me. ^ still says it's "start of string" and \$ still says "end of string". They should be reversed, right?

Cheatographer



[DaveChild](#)
www.getpostcookie.com

Metadata

Languages: [English](#)
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Actually, I'm sorry, you're right! I was pretty confused there, sorry if I've confused anyone else.

[DaveChild, 10:02 28 Nov 11](#)

No worries Keith – easy mistake to make!

[Tom Hunter, 10:02 28 Nov 11](#)

Can you tag this as 'regex'? Searching for regex on cheatography yields two other results, but not this one.

[Doug, 22:52 12 Apr 12](#)

Would you add \Q... \E to the cheatsheet?

[Jorge, 12:16 4 May 12](#)

It would be nice to see the list of white space characters

[Jeff, 15:44 9 May 12](#)

Great resource! Thanks for putting this together and sharing.

[david, 08:58 20 May 12](#)

What language/flavor is this? Or I should also ask, if non is specified, what tends to be the default? I'm specifically looking for php or javascript, and I know they're all mostly the same, but not 100%.

Thanks!

[Chris, 09:19 7 Jun 12](#)

David, Regex is programming language neutral, as in, it doesn't matter if you are programming regex expressions in javascript, c#, c++, PHP, or even command line *nix, makes no difference. Only thing you have to watch out for is some programming languages may require different various regex characters to be escaped differently (so the programming language doesn't try to interpret it). Usually a backslash. For instance \\ means ONE backslash in many languages.

[BillSmith, 20:27 30 Jan 18](#)

Chris, I am a bit confused.

At the following URL (<https://www.regular-expressions.info/cookbook.html>), I just read this:

"The book covers the regular expression flavors .NET, Java, JavaScript, XRegExp, Perl, PCRE, Python, and Ruby, and the programming languages C#, Java, JavaScript, Perl, PHP, Python, Ruby, and VB.NET. After a quick introduction, the book starts with a detailed regular expressions tutorial which equally covers all 8 regex flavors."

I am having trouble squaring the quoted statement with what you wrote above.

Thanks.

[Andy Crawford, 09:45 28 Jun 12](#)

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Don't forget Perl ;-)

littleguy, [15:23 6 Aug 12](#)

Great and useful stuff!

Chilean, [14:03 23 Aug 12](#)

Hi, I'm trying to learn REGEX, and I need to find this: "Page 1 Of 60", "Page 50 of 60", But I can't find it using reg. expressions! :(How would you do that? Thank you!

kris w, [08:50 13 Sep 12](#)

Is there a cheat sheet to the cheat sheet? Is this in plain english anywhere?... "negative lookahead" ..huh?

Travis, [13:07 4 Oct 12](#)

@david, this cheat sheet is pretty neutral. The most common flavor is Perl Compatible Regular Expressions (PCRE). Javascript's engine is close to that and PHP also has Perl Compatible functions for Regex; they use the PREG prefix. Most everything on this sheet should be supported by PHP's engine (I think POSIX character classes are not). Javascript's engine isn't as featureful. Some advanced features aren't supported, but all the basics are there. If you need a multiline match and you can't use the flag, you can use an inverted class range such as `[\s\S]` in place of the `.` (dot) to match anything including newlines.

@Chilean+kris w, You need to find a resource for learning Regular Expressions. This cheat sheet is for reference, not learning. Check out <http://www.regular-expressions.info/>

fsnow55, [16:17 22 Oct 12](#)

I was confused by the first comment (which was wrong, but you compounded the error with an acknowledgement). `^` is the start of string or line. Period.

Also, your cheat sheet is better organized than the more comprehensive <http://www.regular-expressions.info/> since its more succinct. The latter has a 1-page summary but its too verbose.

ty, [12:50 22 Nov 12](#)

Nice sheet.

Rob, [11:47 24 Jan 13](#)

Is there a reason why the `]'` character is not listed under metacharacters? Doesn't that character require to be escaped if searched for?

Bill, [11:48 24 Jan 13](#)

Hey Dave. Thanks for the cheat sheet. You may want to change "Not a or b or c" when you describe the `[^abc]` negated character class, because in English, the negation is ambiguous. It could mean "neither a nor b nor c." Or the "a" could be the only negated disjunct. You could mean `(~a v (b v c))`.

Edir, [09:17 15 Feb 13](#)

Could be added to the list.

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\L Make entire string (up to \E) lowercase
\U Make entire string (up to \E) uppercase
\u\L Capitalize first char, lowercase rest (sentence)

Gabe, [17:16 26 Mar 13](#)

I have a database using regex. I am trying to use ^file to get all files with name file_,file ,file_name_date. but it is not working any help

[david.baird, 18:59 15 Jul 13](#)

Is \x supported anywhere? I can't find examples of it in use searching the web. It also does not work in a script on my Macintosh, OSX 10.7.5 using the OS's perl installation.

Drew White, [15:10 13 Feb 14](#)

I'm trying to come up with a regex string to filter results to a directory that includes a-zA-Z but that also includes an underscore ('_'). Do you know of a way to do this?

David, [15:14 13 Feb 14](#)

Is \x supported anywhere? I can't seem to find where it is supported. E.g., perl on MacOS 10.7.5. Searching for on-line examples or help also fails, in that no one knows about it.

David, [15:14 13 Feb 14](#)

Is \x (Regular Expressions Character Classes) supported anywhere? Is this a new class that has just been added, because I am unable to use it in working with IPV6 addresses. Searching for a string containing something like 2001::1a79 with a RegEx 2001::\x{1,4} will fail, but if I use 2001::[a-fA-F0-9]{1,4} will work.

David, [15:14 13 Feb 14](#)

\x is a term in "Regular Expressions Character Classes" for an hexadecimal digit. How does this compare to the \xhh "Special Characters"? Is it supported today?

Benoit, [08:54 14 Feb 14](#)

It would be great to increase in some ways the --> : <---- in the "(?...)" Passive (non-capturing) group" description. Just after the "?", it is pratically not visible. Thanks!

Simon, [17:33 17 Feb 14](#)

This is a great cheat-sheet. Two minor niggles:

* Would be great to hint on the characters hidden in the character classes (\s = [\t\n\r\f], \d = [0-9], \w = [a-zA-Z_0-9])

* I think possibly there's a mistake in the section "Special Characters" - \xxx is probably not the octal character xxx. See "Character Classes": it should be \Oxxx (and by the way: why are \O and \x duplicated in "Special Characters" and "Character Classes"...)

And I support Edir's request for a section "Case Conversion".

But again: great sheet, thanks!

Sahana A V, [17:48 17 Feb 14](#)

Thank you for the Regex cheat sheet :-)

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Thank you. It would have been better if you would have included test, match, etc.

Bhaggs, [11:33 21 Apr 14](#)

Does these support ereg too?

yashawanth, [10:24 17 May 14](#)

what is mean by (.*) please let me know as soon as possible ??

Roedy Green, [20:57 26 May 14](#)

There are so many dialects of regex. The most important fact should be right up top, which dialects do you cover?

Ted, [16:34 13 Jun 14](#)

Can you please fix the pdf so it is able to download? Right now my browser (Google Chrome) only show a raw pdf instead of downloading it. Thank you very much :)

William, [09:21 10 Jul 14](#)

I agree with Roedy Green. I came here looking for specific a version of regex. This is still so helpful.

Aaron, [11:13 8 Sep 14](#)

Ted, when the PDF displays in Chrome, right-click in the page and select Save As.

jaya prakash, [09:35 31 Oct 14](#)

Hi ,
Can u help me to find regular expression --

```
SELECT distinct col_1 FROM tablename  
WHERE (SUBSTR(col_1,-1,1)) = '5'
```

need resuslt as abc-cxy-5

not as abc-cxy-65
not as abc-cxy-555
not as abc-cxy-05545

Ken Sanders, [09:12 5 Nov 14](#)

Hello Jaya,
MySQL supports regular expressions:
select distinct col_1
from tablename
where col_1
REGEXP '[a-z]{3}-[a-z]{3}-5'

Jeff, [08:50 11 Mar 15](#)

Great Cheatsheet. Maybe you could add the toggles like (?i...), (?-i...), (?i: ...), (?-i: ...) and their cousins with "m" and "x".

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Thank you for this !!

TMES20, 03:31 23 Apr 15

Nice cheat sheet, great job !

Sudhakar, 18:36 25 May 15

Hi Team,

How to write a regular expression for this kind of below line present in document .

Ref: 000/SP/00-000

I need to set Target data formats and Keywords for this field.

Thanks in advance.

ms_jo553698, 17:25 20 Jun 15

I have been searching for programs that others might be using to roll dice in Pachisi on the internet. I know nothing about programming and don't know how to word the question. Are there cheat sheets out there for something like this?

matu, 17:45 29 Jun 15

If you like this you may want to check out my tutorial on how to use regular expressions in Ruby :) <http://www.blackbytes.info/2015/06/mastering-ruby-regex/>

romeoh, 08:56 5 Aug 15

good

Shamim, 09:11 14 Sep 15

Thanks for the great job!

Prabhakaran Govindaraj, 10:59 7 Oct 15

Thanks for the nice and comprehensive resource.

Philbo Baggins, 14:45 7 Nov 15

Hi I am a techno retard I gather Regex is coding flavour. However I have no idea what you write is there sny resources.

Sorry for stupidity.

Philbo.

DZanke, 14:16 28 Nov 15

Great list! I'm new to Teradata Regular Expressions and couldn't find them anywhere.

Ish, 21:27 26 Jan 16

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Shrirang Garge, [13:29 24 Feb 16](#)

I am finding it difficult to write a regex for the date input..it looks like this...[31-Mar-2015:06:22:48 -600]. I am trying with [0-9a-zA-Z] but giving me null values. Please help.

pradeep, [13:29 24 Feb 16](#)

I need to split a group of element based on "," delimiter this is the example
input :"(10,{10,9,8,7,6,5,4,3,2,1}),(8,{8,7,6,5,4,3,2,1}),(8,{8,7,6,5,4,3,2,1})"
output: (10,{10,9,8,7,6,5,4,3,2,1})
(8,{8,7,6,5,4,3,2,1})
(8,{8,7,6,5,4,3,2,1}) regex: [()], which is not getting me in the way i want.

brent, [15:28 5 Mar 16](#)

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DaveChild, [15:31 5 Mar 16](#)

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<http://creativecommons.org/licenses/by-nc-sa/2.0/uk/>

So, go for it :)

Bartleby, [15:29 5 Mar 16](#)

Shrirang: What're you trying to do with the date? Just capture it?

I don't know how detailed you want to be, but this'll capture everything in what you posted. For experienced people it's probably really inelegant, but it's functional, anyway:

```
(\D\d{2}(\-)([A-Z]+)(\-)(\d{4})(\:\d{2}\:\d{2})(\s+)(\-\d+)(\))
```

Bartleby, [15:29 5 Mar 16](#)

Pradeep: I was able to accomplish what you're looking for with the following text (I'm using Notepad++):

Search: (\))(
Replace: \1\r\n\2

tasjaevan, [08:24 26 Mar 16](#)

Hi Dave – could you an entry for free whitespace regexes using the ?x syntax?

Abdel Maghraby, [17:19 28 Mar 16](#)

Hello Guys,

I am trying to create a code to prevent white spaces before or after a string.

[name]
[name]

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[Name]

How can i achieve that?

Culbin, 17:00 12 Jul 16

Hi Folks! I use regexp syntax to schedule TV recordings via TVHeadend which is case-insensitive by default. Here's an extreme example which highlights the problem.

Simply using 'big brother' produces many different program name matches like:

Big Brother
Big Brother's Bit On The Side
Big Brother: Annihilation
Big Brother: Eviction Massacre
New: Big Brother
New: Big Brother's Bit On The Side
New: Big Brother: Live...

I'd like to tell it to ignore the Bit On The Side programs but match the rest. I've researched till I'm blue in the face with no luck.

My tiny brain tells me that in regular English it would read like this: match 'big brother' but not if contains 'bit on the side' but I'm lost when it comes to translating this to regexp syntax. I honestly don't know if it accepts Lookahead or Lookbehind which I see is mentioned a lot, sorry.

Any geniuses out there got any ideas? Much appreciated.

[deleted], 15:12 27 Oct 16

Cảm ơn | Thanks!

hatelove, 02:02 6 Jan 17

better clarify which syntax flavor this cheatsheet is about, is it BRE? ERE or PCRE?

sainojin, 07:15 27 Nov 17

Can you talk about flag in Regex, sir?
Specially, it is flag Y. And it will be great if there is examples.
Anyway, thank you so much.

BillSmith, 20:14 30 Jan 18

Greetings, and thanks for providing this.

Where can I find a comprehensive, accessible textual reference on this topic that includes numerous examples? Instead of pursuing blind trial and error, I would like to understand thoroughly what I am doing, and why.

Thanks.

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