Regular Expressions

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Agenda

- How things began
- How you can begin
- Lots of details
- Some pretty crazy stuff
- A few general considerations about using, abusing and not using regular expressions

When UI used to be fun

Text by Patrick J. LoPresti

When UI used to be fun

When I log into my Xenix system with my 110 baud teletype, both vi and Emacs are just too damn slow. They print useless messages like, ‘C-h for help’ and ‘“foo” File is read only’.

Text by Patrick J. LoPresti

When UI used to be fun

W
1
ju
m
is

```
golem$ ed

?
help
?
?
?
quit
?
exit
?
bye
?
hello?
?
eat flaming death
?
^C
?
^C
?
^D
?
```

Text by Patrick J. LoPresti

When UI used to be fun

W
1
ju
m
is

```
golem$ ed

?
help
?
?
?
quit
?
exit
?
bye
?
```

Note the consistent user interface and error reportage. Ed is generous enough to flag errors, yet prudent enough not to overwhelm the novice with verbosity.

Text by Patrick J. LoPresti

sed - streamlined ed

```
sed -e :a -e
   's/\(.*[0-9]\)\([0-9]\{3\}\)/\1,\2/;ta'
```

Some people, when confronted with a problem, think "I know, I'll use regular expressions."

Now they have two problems.

Jamie Zawinski, 1997

> Get started slowly and you’ll have lots of fun. And you’ll also solve that original problem.
>
> Me, just now

Get started slowly and you'll have lots of fun. And you'll also solve that original problem.

Me, just now

I hope

Me again, on second thought

Syntax basics

- Placeholders: literals, . (dot) and character classes [ ], \w, \d etc
- Quantifiers: ?, *, + and {x,y}
- Alternation: | (pipe)

Structural elements and match strategy

- Anchors: ^, $, \A, \Z
- Boundaries: \b, \B

- Greedy vs lazy matches: *?, +?
  - Use lazy matching sparingly
  - Sometimes a specific character class can achieve the same result

Capture groups

- Parens ( ) build capture groups
  - Unless prefixed with ?:
- Groups can be postfixed with quantifiers
- Refer back to groups using \1, \2… within the same expression
- In replacement, use $1, $2… for the group content
- Named groups (?<name>) available in some engines, use ${name} when replacing

Looking around

- Zero-width look-ahead assertions:
  (?=) and (?!)
- Look-behind assertions (not in JS by default):
  (?<=) and (?<!)
- Find out what happens before or after a match
- Create matches that don’t contain anything

.NET balanced matching

- Syntax: (?<group2-group1>)
- Denotes a match for group2 that decrements the “match count” for group1
- Expression (?(group1)(?!)) should fail the expression if group1 still contains matches - but this doesn’t appear to work right

So, after all this… - what do we have here?

`^-?\d+$`

`^([a-z]):\\([^\\]+\\)+([^\\]+)$`

`^(?:(?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?)\.){3}(?:25[0-5]|2[0-4][0-9]|[01]?[0-9][0-9]?)$`

`(\d),(?=\d)` with replacement `$1`

`(\.|-|!)\1+` with replacement `$1`

Via Jeff Atwood

```
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Via Jeff Atwood

Validating an RFC822 email address

Author comment:

[this] somewhat pushes the limits of what it is sensible to do with regular expressions

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```

Via Jeff Atwood

Go away or I shall replace you with a ~~very small~~ ~~small~~ ~~concise~~ exciting regex

Paraphrased from a popular t-shirt

Thank You

Please feel free to contact me about the content anytime.

oliver@oliversturm.com