

Using JOD Regular Expressions

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1 Using JOD Regular Expressions

1.0.1 Introduction

JOD's regular expressions are built on J's regex class. [regex is documented on the J wiki](#). I would recommend familiarizing yourself with J's regex facilities before using rxs.

rxs calls only three regex verbs: rxfirst, rxall and rxmatches. If you understand how to use these verbs you will quickly master rxs.

```
In [1]: NB. load JOD in a clear base locale
        load 'general/jod' [ clear ''
```

```

        NB. The distributed JOD profile automatically RESETME's.
        NB. To safely use dictionaries with many J tasks they must
        NB. be READONLY. To prevent opening the same put dictionary
        NB. READWRITE comment out (dpset) and restart this notebook.
        dpset 'RESETME'
```

```

        NB. Converting Jupyter notebooks to LaTeX is
        NB. simplified by ASCII box characters.
        portchars ''
```

```

        NB. Verb to show large boxed displays in
        NB. the notebook without ugly wrapping.
```



```
sbx=: ' ... ', "1~ 90&{."1@":
```

NB. Create a test put dictionary for this notebook.

NB. The use of (didnum) insures it does not exist.

```
rxsDemo=: 'rxsdemo',":didnum_ajod_''
```

```
newd rxsDemo
```

NB. unregisters any extant rxsdemo's

NB. 3 regd> s #~ (s=. }. od '') +./@E.>~ <'rxsdemo'

NB. open some JOD dictionaries to search

```
od ;:rxsDemo,' joddev jod utils' [ 3 od ''
```

$$\text{sbx did} \sim 0$$
[illegible]

```
| |+-+-----+-----+-----+-----+-----+-----+ ...
| ||utils                                     |ro|391 |7   |21   |0    |17   |/  ...
| |+-+-----+-----+-----+-----+-----+-----+ ...
+-+-----+-----+-----+-----+-----+-----+ ...
```

1.0.2 rxs searches only nonnoun JOD text objects

JOD dictionaries can store all types of J objects. It's not unusual to store binary data in JOD. The following saves some nouns in the demo dictionary.

```
In [2]: intTablerxsDemo=: i. 2 3 4
        floatMerxsDemo=: (100?100) % 7.71
        boxMerxsDemo=: ;:'I do what I do because I am what I am'
        bigNumsrxsDemo=: (x: i. 10) ^ 300
        smoutput charMerxsDemo=: 'even though I am text I will not be searched by rxs because I am a noun'
```

even though I am text I will not be searched by rxs because I am a noun

```
In [3]: NB. store nouns
        put ;:'charMerxsDemo intTablerxsDemo floatMerxsDemo boxMerxsDemo bigNumsrxsDemo'
```

```
+-----+
|1|5 word(s) put in ->|rxsdemo139348011294925134387562053815836102718|
+-----+
```

```
In [4]: NB. list all objects with suffix rxsDemo
        0 3 dnl 'rxsDemo'
```

```
+-----+
|1|bigNumsrxsDemo|boxMerxsDemo|charMerxsDemo|floatMerxsDemo|intTablerxsDemo|
+-----+
```

Search for the string `rxs` in all nonnoun path words. `rxs` only displays hits in nonempty text. Observe that `charMerxsDemo` is not in the match table.

```
In [5]: 'rxs' rxs }. dnl ''
```

```
+-----+
|1|+-----+---+| | | |
| ||rxs      |rxs||
| |+-----+---+|
| ||rxsget   |rxs||
| |+-----+---+|
| ||rxssearch|rxs||
| |+-----+---+|
+-----+
```

1.0.3 Empty `rxs` patterns return all nonempty search text

If `rxs` is given an empty pattern it returns all the text that would be searched by a nonempty pattern. This is useful for debugging complex regular expressions.

```
In [6]: NB. all nonempty short (EXPLAIN_ajod_ = 8) explanation texts
        smoutput ('';0 8 1) rxs }. dnl 'si'
```

```
NB. all nonempty long (DOCUMENT_ajod_ = 9) test documents
sbn ('';1 9 2) rxs }. 1 dnl ''
```

```
+-----+
|1|+-----+-----+| | | |
| ||sin |sine radians  ||
| |+-----+-----+|
| ||sind|sin degrees    ||
| |+-----+-----+|
| ||sinh|hyperbolic sine||
| |+-----+-----+|
```

```

+-+-----+
+-+-----+
|1|+-----+-----+
| ||doctest|*doctest v-- test text for documentation (doc) verb.  This text is associated ...
| |+-----+-----+
+-+-----+

```

1.0.4 rxs searches word text by default

If rxs is given a character list (x) argument it searches word text. To search documents, tests and macros rxs requires option codes.

In [7]: *NB. words starting with s with at least one occurrence of string ex*
`'ex' rxs }. dnl 's'`

```

+-+-----+
|1|+-----+--+| | | |
| ||setbuilddirs |ex||
| |+-----+--+|
| ||setifacelinks |ex||
| |+-----+--+|
| ||setifacetargs |ex||
| |+-----+--+|
| ||setjodliterate|ex||
| |+-----+--+|
| ||setwwwbrowser |ex||
| |+-----+--+|
| ||sexpin        |ex||
| |+-----+--+|
| ||strexp        |ex||
| |+-----+--+|
+-+-----+

```

In [8]: *NB. show all ex matches (option 2) for words starting with s*

```
smoutput opts=: WORD_ajod_,DEFAULT_ajod_,2
('ex';opts) rxs }. dnl 's'
```

0 7 2

```
+-----+
|1|+-----+
| ||setbuilddirs |+-+
| ||           ||ex|
| ||           |+-+
| |+-----+
| ||setifacelinks |+-+---+---+---+---+
| ||           ||ex|ex|ex|ex|ex|ex|
| ||           |+-+---+---+---+---+
| |+-----+
| ||setifacetargs |+-+---+---+---+
| ||           ||ex|ex|ex|ex|
| ||           |+-+---+---+---+
| |+-----+
| ||setjodliterate|+-+---+---+
| ||           ||ex|ex|ex|
| ||           |+-+---+---+
| |+-----+
| ||setwwwbrowser |+-+---+
| ||           ||ex|ex|
| ||           |+-+---+
| |+-----+
| ||sexpin        |+-+---+
| ||           ||ex|ex|
| ||           |+-+---+
| |+-----+
| ||strexpr       |+-+---+---+
| ||           ||ex|ex|ex|
| ||           |+-+---+---+
| |+-----+
+-----+
```

In [9]: *NB. repeat previous search but now show position array (option 3) with matched text*
`sbx ('ex';0 7 3) rxs }. dnl 's'`

```

+-----+-----+-----+-----+-----+-----+ ...
|1|+-----+-----+-----+-----+-----+-----+ ...
| ||setbuilddirs |669 2|3 : 0 NB.*setbuilddirs v-- sets paths used by JOD build words. N ...
| |+-----+-----+-----+-----+-----+-----+ ...
| ||setifacelinks |162 2|4 : 0 NB.*setifacelinks v-- set hyperref links in any o ...
| ||           |      | ...
| ||           |175 2| ...
| ||           |      | ...
| ||           |229 2| ...
| ||           |      | ...
| ||           |255 2| ...
| ||           |      | ...
| ||           |303 2| ...
| ||           |      | ...
| ||           |376 2| ...
| |+-----+-----+-----+-----+-----+-----+ ...
| ||setifacetargs | 63 2|4 : 0 NB.*setifacetargs v-- set hyperlink targets in group latex ...
| ||           |      | ...
| ||           |116 2| ...
| ||           |      | ...
| ||           |177 2| ...
| ||           |      | ...
| ||           |272 2| ...
| |+-----+-----+-----+-----+-----+-----+ ...
| ||setjodliterate|419 2|3 : 0 NB.*setjodliterate v-- prepare for processing. NB. NB. mon ...
| ||           |      | ...
| ||           |483 2| ...
| ||           |      | ...
| ||           |494 2| ...
| |+-----+-----+-----+-----+-----+-----+ ...

```

```

| ||setwwwbrowser |334 2|3 : 0 NB.*setwwwbrowser v-- tests and sets the WWW browser. NB. ...
| ||              |      |
| ||              |363 2|
| |+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| ||sexpin        |11 2 |3 : 0 NB.*sexpin v-- single line explicit definition test. if. ...
| ||              |      |
| ||              |33 2 |
| |+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| ||strexpr       | 14 2|3 : 0 NB.*strexpr v-- returns a boxed list of words containing st ...
| ||              |      |
| ||              |127 2|
| ||              |      |
| ||              |150 2|
| |+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
++-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+

```

In [10]: *NB. show first J quoted text in JOD tests with names that begin with r and t*
(Jchar_jregex;1) rxs }. (1 dnl 'r') , }. 1 dnl 't'

```

++-----+
|1|+-----+-----+-----+-----+-----+
| ||releasejod      |'ijod'
| |+-----+-----+-----+-----+-----+
| ||restdbasic01     |'createtestdictionaries'
| |+-----+-----+-----+-----+-----+
| ||rxsBadSmoke00    |'base'
| |+-----+-----+-----+-----+-----+
| ||rxsSmoke00       |'testjod00'
| |+-----+-----+-----+-----+-----+
| ||rxsgetSmoke00    |'base'
| |+-----+-----+-----+-----+-----+
| ||testdictionarypaths|'base'
| |+-----+-----+-----+-----+-----+
| ||teststub         |'/AAAttrash999/AAAAsmoke999'

```



```
| | +-----+-----+
| ||teststubClassGroup |'{~T~}' |
| | +-----+-----+
+ +-----+
```

In [11]: *NB. show all J quoted text in JOD tests with names that begin with r and t*
 sbx (Jchar_jregex_;1 7 2) rxs }. (1 dnl 'r') , }. 1 dnl 't'

```
+ +-----+-----+ ...
|1| +-----+-----+ ...
| ||releasejod | +-----+-----+-----+-----+-----+ ...
| || | |'ijod'|'base'|'AAATrash999'|'AAATrash999'|'ijod'|' |'joddev jod u ...
| || | +-----+-----+-----+-----+-----+-----+ ...
| | +-----+-----+-----+-----+-----+-----+ ...
| ||restdbasic01 | +-----+-----+-----+-----+-----+ ...
| || | |'createtestdictionaries'|'~JODTEST'|'base'|'jodtester'|'~JODTEST' ...
| || | +-----+-----+-----+-----+-----+-----+ ...
| | +-----+-----+-----+-----+-----+-----+ ...
| ||rxsBadSmoke00 | +-----+-----+-----+-----+-----+-----+ ...
| || | |'base'|'~JODTEST'|'~JODTEST'|'jodtester'|'AAASmoke999'|'AAASmoke9 ...
| || | +-----+-----+-----+-----+-----+-----+ ...
| | +-----+-----+-----+-----+-----+-----+ ...
| ||rxsSmoke00 | +-----+-----+-----+-----+-----+-----+ ...
| || | |'testjod00'|'~JODTEST/testjod00'|'base'|'~JODTEST'|'~JODTEST'|'jo ...
| || | +-----+-----+-----+-----+-----+-----+ ...
| | +-----+-----+-----+-----+-----+-----+ ...
| ||rxsgetSmoke00 | +-----+-----+-----+-----+-----+-----+ ...
| || | |'base'|'~JODTEST'|'~JODTEST'|'jodtester'|'AAATrash999'|'AAATrash9 ...
| || | +-----+-----+-----+-----+-----+-----+ ...
| | +-----+-----+-----+-----+-----+-----+ ...
| ||testdictionarypaths| +-----+-----+-----+-----+-----+-----+ ...
| || | |'base'|'jodtester'|'AAATrash999'|'AAATrash999'|'ijod'|'good'|'JOD ...
| || | +-----+-----+-----+-----+-----+-----+ ...
| | +-----+-----+-----+-----+-----+-----+ ...
```

```

| ||teststub          | +-----+-----+-----+-----+ ...
| ||                  | |'/AAAttrash999/AAAsmoke999'|'newtest'|'base'|'jodtester'|'JODCLEAR ...
| ||                  | +-----+-----+-----+-----+ ...
| | +-----+-----+-----+-----+ ...
| ||teststubClassGroup | +-----+ ...
| ||                  | |'{~T~}'| ...
| ||                  | +-----+ ...
| | +-----+-----+-----+-----+ ...
+ +-----+-----+-----+-----+ ...

```

1.0.5 rxs can search short and long object documents

JOD words, test, groups, suites and macros are often associated with short and long documents.

In [12]: *NB. search all short (EXPLAIN_ajod_ = 8) texts for words starting with wr*
 ('r[aeiou]b*';0,EXPLAIN_ajod_,2) rxs }. dnl 'wr'

```

+ +-----+
|1| +-----+
| ||wraplinear      | +---+---+---+---+|| | | | | | |
| ||                | |ra|re|re|ri|ri|||
| ||                | +---+---+---+---+||
| | +-----+
| ||wrapvrblong      | +---+          || | |
| ||                | |ra|          ||
| ||                | +---+          ||
| | +-----+
| ||wrapwords        | +---+          || | |
| ||                | |ra|          ||
| ||                | +---+          ||
| | +-----+
| ||wrddglobals      | +---+---+          || | | |
| ||                | |ra|ro|          ||
| ||                | +---+---+          ||

```

+-----+-----+		
	wrdglobalsOLD000	+---+---+
		ra ro
		+---+---+
+-----+-----+		
	wrep	+---+---+---+
		ra re re
		+---+---+---+
+-----+-----+		
	write	+---+
		ri
		+---+
+-----+-----+		
	writeas	+---+---+---+---+
		ri ro ro re
		+---+---+---+---+
+-----+-----+		
	writeijs	+---+---+
		ri re
		+---+---+
+-----+-----+		
	writenoun	+---+
		ri
		+---+
+-----+-----+		
	writetd	+---+
		ri
		+---+
+-----+-----+		
	writetd2	+---+
		ri
		+---+
+-----+-----+		
+---+---+		

```
In [13]: NB. search group (GROUP_ajod_ = 2) long document (DOCUMENT_ajod_ = 9) texts for all patterns
        sbx ('lo...e';GROUP_ajod_,DOCUMENT_ajod_,2) rxs }. 2 dnl ''
```

```
++-----+...
|1|+-----+...
| ||doctest | +-----+...
| ||         ||long documentation of a te|lbyte strings typical operations  complete is ...
| ||         | +-----+...
| | +-----+...
| ||jodliterate| +-----+...
| ||         ||lot more use|lows pandoc source code highlighting conve|loaded like|load ...
| ||         | +-----+...
| | +-----+...
| ||sunmoon   | +-----+...
| ||         ||loating point table where|longitude in degrees with western longitudes ne ...
| ||         | +-----+...
| | +-----+...
++-----+...
```

1.0.6 rxs can search the dictionary document

rxs can search the dictionary document.

```
In [14]: NB. save a dictionary document (DICTIONARY_ajod_ = 5) for the rxs demo dictionary
        DICTIONARY_ajod_ put ;25 # <' all work and no play make jack a dull boy all work and no play make jack a dull boy',LF
        5 disp ''
```

```
all work and no play make jack a dull boy all work and no play make jack a dull boy
all work and no play make jack a dull boy all work and no play make jack a dull boy
all work and no play make jack a dull boy all work and no play make jack a dull boy
all work and no play make jack a dull boy all work and no play make jack a dull boy
all work and no play make jack a dull boy all work and no play make jack a dull boy
```

[illegible]

```
In [15]: NB. all the dull boys
          sbx ('jack';5 7 2) rxs ''
```

```

+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|1|++-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| |||+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| ||||jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|jack|
| |||+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| |++-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+

```

1.0.7 Final remarks

rxs performs well for "reasonable" numbers of JOD objects. If you search for a complex pattern in very large dictionaries without restricting your search object list rxs may take some time. It's a good idea to restrict the list of searched objects whenever feasible. Typical uses of rxs search groups, suites and particular macro types.

The following are typical rxs searches.

```
In [16]: NB. search group
         ('DEFAULT';0 7 1) rxs }. grp 'jodstore'
```

```
++-----+
|1|+-----+-----+
| ||bnlsearch|DEFAULT||
| |+-----+-----+
| ||dnlsearch|DEFAULT||
| |+-----+-----+
| ||mnlsearch|DEFAULT||
| |+-----+-----+
++-----+
```

```
In [17]: NB. search test suite for all negative expected (ner) results
         ('ner';1 7 2) rxs }. 3 grp 'jodsmoketests'
```

```
++-----+
|1|+-----+-----+-----+-----+-----+-----+-----+
| ||compjSmoke00      |+----+                                     || | |
| ||                  ||ner|                                     ||
| ||                  |+----+                                     ||
| |+-----+-----+-----+-----+-----+-----+-----+
| ||dnlSmoke00        |+---+---+---+---+---+---+---+---+---+ || | | | | | | | | |
| ||                  ||ner|ner|ner|ner|ner|ner|ner|ner|      ||
| ||                  |+---+---+---+---+---+---+---+---+---+ ||
| |+-----+-----+-----+-----+-----+-----+-----+
| ||globsSmokeAssign000|+---+---+                                     ||
| ||                  ||ner|ner|                                     ||
```

```
In [18]: NB. search all (MARKDOWN_ajod_ = 27) macros (MACRO_ajod_ = 4) for J quoted text
sbx (Jchar_jregex_ ; 4 7 1) rxes }. (MACRO_ajod_ , 1, MARKDOWN_ajod_) dnl ''
```

15

```
| |-----+ .....
| |macnotes_TXT |'joddev jod utils' .....
| |-----+ .....
+-----+ .....
```