

Using JOD Regular Expressions

February 14, 2019

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.>~ <'r&sdemo'

NB. open some JOD dictionaries to search

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

$$\text{did} \sim 0$$

1								
	-- Words Tests Groups* Suites* Macros Path*							
	rxsdemo289988915136451023714074325723742283149	rw 0	0	0	0	0	/	
	joddev	rw 74	41	7	9	18	/joddev/jod/utils	
	jod	ro 768	54	22	12	61	/jod/utils	

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

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

```
0 1 2037035976334486086268445688409378161051468393665936250636140449354381299763336706183397376 13689147905858837599132602738208
```

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

```
+ +-----+-----+-----+-----+-----+
|1|5 word(s) put in ->|rxsdemo289988915136451023714074325723742283149|
+ +-----+-----+-----+-----+-----+
```

```
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
        sbx ('';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|
| |+-----+---+
| ||strex        |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|
| ||           |+++--+--+--+--+|
| |+-----+
| ||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|                                     ...
| |+-----+-----+-----+-----+-----+-----+-----+ ...
| ||strex           | 14 2|3 : 0 NB.*strex 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        |'/AAAtrash999/AAAsmoke999' ||
| |+-----+-----+-----+-----+-----+-----+-----+
| ||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        |+-+-----+-----+-----+-----+-----+-----+-----+
| ||                ||'/AAAtrash999/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|
| ||                | +--+--+--+--+--+--+--+--+--+--+--+--+--+--+|
| | +-----+-----+-----+-----+-----+-----+-----+-----+
| ||wrdglobals      | +--+--+--+--+--+--+--+--+--+--+--+--+--+--+| | |
| ||                ||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|                ||
| ||                |+++                ||
| |-----+-----+|
+--+-----+

```


[illegible]

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

[illegible]

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|
```

```

| | | +---+---+ | |
| | +-----+-----+
| | | globsSmokeDoc00 | +---+ | | |
| | | |ner| | |
| | | +---+ | |
| | +-----+-----+
| | | mnlSmokeArgs00 | +---+---+---+---+---+---+---+---+ | | | | | | | | | |
| | | |ner|ner|ner|ner|ner|ner|ner|ner| | |
| | | +---+---+---+---+---+---+---+---+ | |
| | +-----+-----+
| | | rxsBadSmoke00 | +---+---+---+---+---+---+---+---+---+---+---+ | | | | | | | | | | | | | |
| | | |ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner| | |
| | | +---+---+---+---+---+---+---+---+---+---+---+ | |
| | +-----+-----+
| | | rxsSmoke00 | +---+---+---+---+---+---+---+---+ | | | | | | | | |
| | | |ner|ner|ner|ner|ner|ner|ner| | |
| | | +---+---+---+---+---+---+---+---+ | |
| | +-----+-----+
| | | rxsgetSmoke00 | +---+---+---+---+---+---+---+---+---+---+---+ | | | | | | | | | | | | | | | |
| | | |ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner| | |
| | | +---+---+---+---+---+---+---+---+---+---+---+ | |
| | +-----+-----+
+---+-----+

```

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

```

+---+-----+ ...
|1|+-----+ ...
| | | historyjod |'s Day) * `rxs` implemented - see `jod.pdf` * [`rxs` Jupyter Lab ...
| | +-----+ ...
| | | historyjoddoc |'s Day) * `rxs` section added. ### 0.9.996 - October 14, 2018 ...
| | +-----+ ...
| | | linuxnotes_TXT|'john' ...

```

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