

# Using JOD Regular Expressions

December 8, 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. display J version
9!:14''
```

```
j901/j64avx/windows/beta-s/commercial/www.jsoftware.com/2019-12-02T12:51:33
```

```
In [2]: 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 ''  
sbx did ~ 0

```

+-----+-----+-----+-----+-----+-----+-----+-----+
|1|+-----+-----+-----+-----+-----+-----+-----+-----+
| ||                                     |--|Words|Tests|Groups*|Suites*|Macros|Pa ...
| |+-----+-----+-----+-----+-----+-----+-----+-----+
| ||rxsdemo24347018837875837655937079410780880785|rw|0    |0    |0    |0    |0    |/ ...
| |+-----+-----+-----+-----+-----+-----+-----+-----+
| ||joddev                                     |rw|32    |8    |2    |1    |12    |/j ...
| |+-----+-----+-----+-----+-----+-----+-----+-----+

```

```

| ||jod                                |ro|782 |67  |22    |13    |61    |/j ...
| |+-----+-----+-----+-----+-----+-----+-----+ ...
| ||utils                              |ro|392 |7    |21    |0     |17    |/u ...
| |+-----+-----+-----+-----+-----+-----+-----+ ...
+-+-----+-----+-----+-----+-----+-----+-----+ ...

```

## 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 [3]: 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 [4]: NB. store nouns
        put ;:'charMerxsDemo intTablerxsDemo floatMerxsDemo boxMerxsDemo bigNumsrxsDemo'

```

```

+-+-----+-----+-----+-----+-----+-----+-----+
|1|5 word(s) put in ->|rxsdemo24347018837875837655937079410780880785|
+-+-----+-----+-----+-----+-----+-----+-----+

```

```

In [5]: NB. list all objects with suffix rxsDemo
        0 3 dn1 '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 [6]: '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 [7]: 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 [8]: 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 [9]: 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|
| ||              |+++--+
| |+-----+
| ||strexp        |+-+--+--+
| ||              ||ex|ex|ex|
| ||              |+++--+--+
| |+-----+
+-----+
```

```
In [10]: 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 [11]: *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 [12]: 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 [13]: 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	
				+++	
		+-----+			
		+-----+			

```
In [14]: 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|llobyte 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 [15]: 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
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 [16]: 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 [17]: NB. search group
         ('DEFAULT';0 7 1) rxs }. grp 'jodstore'
```

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

```
In [18]: NB. search test suite for all negative expected (ner) results
         ('ner';1 7 2) rxs }. 3 grp 'jodsmoketests'
```

```
+--+-----+
|1|+-----+-----+
| ||bgetSmoke00      |+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| ||                ||ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|
| ||                |+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| |+-----+-----+
| ||bnlSmoke00       |+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| ||                ||ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|ner|
| ||                |+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| |+-----+-----+
| ||compjSmoke00     |+---+
| ||                ||ner|
| ||                ||
```



```

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

```