

rsv Group

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<https://github.com/bakerjd99/jackshacks/blob/main/rsv.ijs>

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rsv Overview

rsv is a [J script](#) that decodes and encodes RSV files.

For more information see the blog post [Decoding and Encoding RSV Files with J](#).

RSV is distributed as an auxiliary J addon. Auxillary addons are hosted in private GitHub repositories. **rsv** can be installed in the local J folder `~addons/jacks` with that standard J pacman utility:

```
load 'pacman'
```

```
NB. files from https://github.com/bakerjd99/jackshacks  
install 'github:bakerjd99/jackshacks'
```

```
NB. installed files  
dir '~addons/jacks'
```

After installing the **rsv** addon download the test files at:

<https://github.com/Stenway/RSV-Challenge/tree/main/TestFiles>

and save them in a local directory. Cloning the repository

<https://github.com/Stenway/RSV-Challenge>

is a handy way to get these files.

After saving the test files in a local directory, define a J configured folder `~RSVTEST` that points to the test files. J configured folders are defined in the file `jpath '~user/config/folders.cfg'`. Add a line to this file like:

```
NB. windows  
RSVTEST c:/mp/zighacks/RSV-Challenge/TestFiles
```

NB. macOS linux

RSVTEST /users/mystuff/RSV-Challenge/TestFiles

Then save the edited config file and restart J. The expression `jpath '~RSVTEST'` should expand to the location of the test files. Running `rsv` is now a simple matter of:

```
load '~addons/jacks/rsv.ijs'
```

NB. files from <https://github.com/Stenway/RSV-Challenge>

NB. are stored in a J configured directory RSVTEST

```
jpath '~RSVTEST'
```

NB. decode rsv file

```
rsvdec read jpath '~RSVTEST/Valid_001.rsv'
```

NB. direct definition version

NB. one line of J code decodes rsv

```
rsvdecdd=: {{ ]`('null'"_)@.((,RSVNULL)&-:)L:0 <;._2&.> <;._2 y }}
```

NB. list of valid rsv test files

```
validrsv=: 1 dir '~RSVTEST/Valid*.rsv'
```

NB. encode decode test - 1 when OK 0 otherwise

```
rsvdent=: {{rsv -: rsvenc rsvdec rsv=. read y}}
```

NB. decode all valid files

```
([] ,. rsvdec@read&.>) validrsv
```

NB. list any valid files that fail decode/encode test - should be none

```
bool=: rsvdent&> valid_rsv  
smoutput >valid_rsv #~ -.bool
```

NB. all tacit and dd decodings should match - result is 1

```
*./ (rsvdec -: rsvdecdd)&> read&.> validrsv
```

rsv Interface

```
read    [7] reads a file as a list of bytes  
rsvdec  [7] decode rsv bytes - marks nulls with (NULLMARK)  
rsvenc  [7] encode rsv bytes - marks nulls with (NULLMARK)  
rsvok   [8] 1 if bblcl rsv nouns have no bad bytes - 0 otherwise  
write   [8] writes a list of bytes to file
```

rsv Algorithm Notes

For an excellent description of RSV files see the YouTube video:

https://www.youtube.com/watch?v=tb_70o6ohMA

rsv Source Code

*NB.*rsv s-- j script for encoding and decoding rsv files.*

NB.

NB. verbatim: see:

NB.

NB. <https://github.com/Stenway/RSV-Specification>

NB. <https://github.com/Stenway/RSV-Challenge>

NB. https://www.youtube.com/watch?v=tb_70o6ohMA

NB.

NB. interface word(s):

NB. -----

NB. read - reads a file as a list of bytes

NB. rsvdec - decode rsv bytes - marks nulls with (NULLMARK)

NB. rsvenc - encode rsv bytes - marks nulls with (NULLMARK)

NB. rsvok - 1 if blblcl rsv nouns have no bad bytes - 0 otherwise

NB. write - writes a list of bytes to file

NB.

NB. created: 2024jan08

NB. changes: -----

`coclass 'rsv'`

*NB.*end-header*

NB. interface words (IFACEWORDSrsv) group

`IFACEWORDSrsv=: <.;_1 ' read rsvdec rsvenc rsvok write'`

NB. string used to mark RSV nulls

NULLMARK=: 'null'

NB. row terminator byte - hex: FD

REOR=: 253{a.

NB. value terminator byte - hex: FF

REOV=: 255{a.

NB. null value byte - hex: FE

RNULL=: 254{a.

NB. root words (ROOTWORDSrsv) group

ROOTWORDSrsv=: <;._1 ' IFACEWORDSrsv ROOTWORDSrsv VMDrsv read rsvdec rsvenc rsvok write'

NB. bytes that should never be emitted by UTF8 encoders

UTF8BADBYTES=: _8{a.

NB. version, make count, and date

VMDrsv=: '0.9.0';18;'06 Sep 2024 14:16:04'

NB. signal with optional message

assert=: 0 0"_ \$ 13!:8^:((0: e.])^ (12"_))

NB. tests for character data

ischar=: 2&=@(3!:0)

NB. reads a file as a list of bytes

```
read=: 1!:1&[]`<@.(32&>@{3!:0}))
```

```
rsvdec=: 3 : 0
```

*NB.*rsvdec v-- decode rsv bytes - marks nulls with (NULLMARK).*

NB.

NB. monad: bblcl =. rsvdec clRsv

NB.

NB. rsv=. read jpath '~RSVTEST/Valid_001.rsv'

NB. rsvdec rsv

```
[]` (NULLMARK"_ )@.((,RNULL)&-:)L:0 <;._2&.> <;._2 y  
)
```

```
rsvenc=: 3 : 0
```

*NB.*rsvenc v-- encode rsv bytes - marks nulls with (NULLMARK).*

NB.

NB. monad: clRsv =. rsvenc bblclRsv

NB.

NB. rsv=. rsvdec read jpath '~RSVTEST/Valid_001.rsv'

NB. rsvenc rsv

```
(0=#y) }. ; ,&REOR&.> ;&.> REOV -.&.>~ ,&REOV L: 0 (>[]` (RNULL"_ ))@.(NULLMARK&-:) L: 0 y  
)
```

```
rsvok=: 3 : 0

NB.*rsvok v-- 1 if blblcl rsv nouns have no bad bytes - 0 otherwise.
NB.
NB. monad: pa =. rsvok blblclRsv
NB.
NB.    NB. check blblcl for bad bytes before encoding
NB.    lol=: (<"1 <"0 ?2 2$1000), (<'') , <"0 ;:'some words'
NB.    lol=: utf8@": L: 0 ,@.> lol
NB.
NB.    NB. no bad bytes in utf8 formatted cells - result 1
NB.    rsvok lol
NB.
NB.    NB. add an RSV delimiter byte - result 0
NB.    rsvok lol,<,<RSVEOR

NB. sublists must be list of lists of char
msg=. 'not a list of lists of characters'
msg assert 1 = #@$y
msg assert *./ ischar&> ;y
msg assert -.0 e. #@$ &> y

NB. without bad bytes
-. +./ ;; L: 1 ] 1&e.@(UTF8BADBYTES&e.) L: 0 y
)

NB. writes a list of bytes to file
write=: 1!:2 ]`<@.(32&>@.(3!:0))
```


NB.POST_rsv post processor.

```
smoutput IFACE_rsv=: (0 : 0)
NB. (rsv) interface word(s): 20240906j141604
NB. -----
NB. read      NB. reads a file as a list of bytes
NB. rsvdec    NB. decode rsv bytes - marks nulls with (NULLMARK)
NB. rsvenc    NB. encode rsv bytes - marks nulls with (NULLMARK)
NB. rsvok     NB. 1 if blblcl rsv nouns have no bad bytes - 0 otherwise
NB. write     NB. writes a list of bytes to file
)

cocurrent 'base'
coinsert 'rsv'
```

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