

# Language Features of version 18.0 in Depth

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*Part 3*

## New

`□C` Case convert  
`föög` Over  
`fög` Atop  
`≠Y` Unique mask  
`A~` Constant  
`□DT` Date-time  
`1200I` Format date-time

## Improved

`□JSON@` 'HighRank'  
`□JSON@` 'Dialect'  
`□R/□S@` 'Regex'  
`□INPUT@` 'NEOL'  
lY  
X<Y  
↑[k]Y

## New

`□C` Case convert  
`fög` Over  
`fög` Atop  
`≠Y` Unique mask  
`A~` Constant  
`□DT` Date-time  
`1200I` Format date-time

## Improved

`□JSON: 'HighRank'`  
`□JSON: 'Dialect'`  
`□R/□S: 'Regex'`  
`□INPUT: 'NEOL'`  
`⌊Y`  
`X<Y`  
`↑[k]Y`

**dyalog.tv/webinar**

## New

|       |                  |
|-------|------------------|
| □C    | Case convert     |
| fög   | Over             |
| fög   | Atop             |
| ≠Y    | Unique mask      |
| A~    | Constant         |
| □DT   | Date-time        |
| 1200⊖ | Format date-time |

*+ bonus  
feature*

## Improved

|            |            |
|------------|------------|
| □JSON⊖     | 'HighRank' |
| □JSON⊖     | 'Dialect'  |
| □R/□S⊖     | 'Regex'    |
| □INPUT⊖    | 'NEOL'     |
| <u>⊖</u> Y |            |
| X<Y        |            |
| ↑[k]Y      |            |

# Converting rank>1 arrays to JSON

no need for  $\uparrow$  and  $\downarrow$  pre/post-processing

`JSON: HighRank'`

# Ever tried this?

```
data ← 2 3 ρ 6  
□JSON data
```

# Ever tried this?

```
data ← 2 3 ρ ι 6
```

```
□JSON data
```

```
DOMAIN ERROR: JSON export: the right argument ca
```

```
□JSON data
```

```
^
```

# Ever tried this?

```
data ← 2 3 ρ 6  
□ JSON ↓ data  
[[1,2,3],[4,5,6]]
```



# Ever tried this?

```
data ← 2 3 4 ρι 24
```

```
□JSON ↓ data
```

```
DOMAIN ERROR: JSON export: the right argument ca
```

```
□JSON data
```

```
^
```

# Ever tried this?

```
data ← 2 3 4 ρι 24
```

```
□JSON ↓ ↓ data
```

```
[[[1,2,3,4],[5,6,7,8],[9,10,11,12]], [[13,14,15,1
```

# Ever tried this?

□JSON↓\*(<sup>-1</sup>+≠p data)↳data

# Ever tried this?

```
data←(2 3ρ⊖6) 'abc'
```

```
□JSON↓*(⊖1+ρdata)←data
```

# Ever tried this?

```
data←(2 3ρ⌈6) 'abc'
```

```
□JSON↓*(-1+≠ρdata)⊢data
```

```
↓*(-1+≠ρdata)⊢data
```

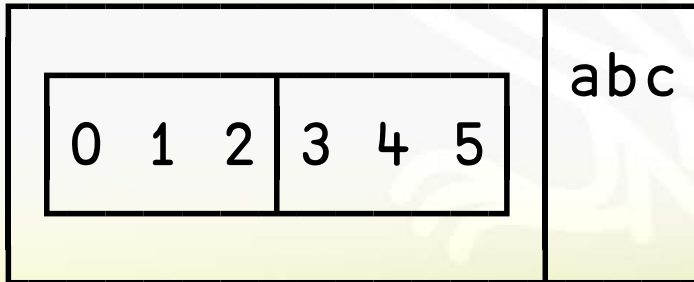
|   |   |   |     |
|---|---|---|-----|
| 0 | 1 | 2 | abc |
| 3 | 4 | 5 |     |

# Ever tried this?

```
data ← (2 3 ρ ι 6) 'abc'
```

```
□ JSON{0=≡ω:ω ◊ 1<≠ρω:∇↓ω ◊ ∇``ω}data
```

```
{0=≡ω:ω ◊ 1<≠ρω:∇↓ω ◊ ∇``ω}data
```



# Ever tried this?

```
data ← (2 3 ρ ι 6) 'abc' ⋄ 'ns' □ NS 'data'
□ JSON { 0 = ≡ ω : ω ⋄ 1 < ≠ ρ ω : ∇ ↓ ω ⋄ ∇ `` ω } ns
```

DOMAIN ERROR: JSON export: item "data[1]" of the

```
□ JSON { 0 = ≡ ω : ω ⋄ 1 < ≠ ρ ω : ∇ ↓ ω ⋄ ∇ `` ω } ns
      ^
```

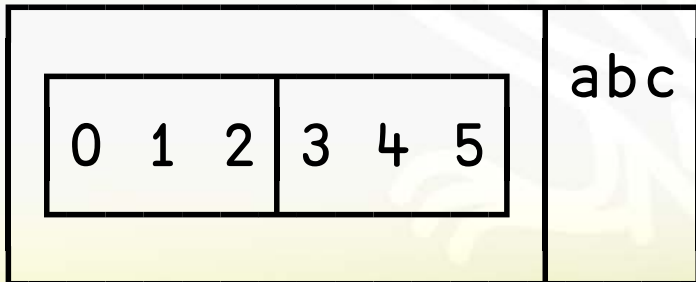
# Try this!

```
data←(2 3⍲6) 'abc' ⋄ 'ns'⍲NS'data'  
⍲JSON⍲'HighRank' 'Split' ⍲ ns  
{"data":[[[1,2,3],[4,5,6]], "abc"]}
```



# Try this!

```
data←(2 3⍥6) 'abc' ⋄ 'ns'⍋NS 'data'
⍋JSON⍋'HighRank' 'Split' ⍣ data
⍋JSON⍋'HighRank' 'Split'⍥2 ⍣ data
```





**{JSON:5,}**

JSON for Humans

□JSON□ 'Dialect'

# JSON

```
{  
  "Settings": {  
    "9&11": ["\t", "\u000B"],  
    "MAXWS": "2GB",  
    "ROOTDIR":  
    "/my-own/root/directory",  
    "UserOption": "quote\"me"  
  }  
}
```

# JSON5

```
{
```

```
}
```

# JSON

```
{  
  "Settings": {  
    "9&11": ["\t", "\u000B"],  
    "MAXWS": "2GB",  
    "ROOTDIR":  
    "/my-own/root/directory",  
    "UserOption": "quote\"me"  
  }  
}
```

# JSON5

```
{  
  Settings: {  
  }  
}
```

# JSON

```
{  
  "Settings": {  
    "9&11": ["\t", "\u000B"],  
    "MAXWS": "2GB",  
    "ROOTDIR":  
    "/my-own/root/directory",  
    "UserOption": "quote\"me"  
  }  
}
```

# JSON5

```
{  
  Settings: {  
    "9&11": ["\t", "\v"],  
  }  
}
```

# JSON

```
{  
  "Settings": {  
    "9&11": ["\t", "\u000B"],  
    "MAXWS": "2GB",  
    "ROOTDIR":  
    "/my-own/root/directory",  
    "UserOption": "quote\"me"  
  }  
}
```

# JSON5

```
{  
  Settings: {  
    "9&11": ["\t", "\v"],  
  }  
}
```

# JSON

```
{
  "Settings": {
    "9&11": ["\t", "\u000B"],
    "MAXWS": "2GB",  
    "ROOTDIR":
    "/my-own/root/directory",
    "UserOption": "quote\"me"
  }
}
```

# JSON5

```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", // memory limit
  }
}
```

# JSON

```
{
  "Settings": {
    "9&11": ["\t", "\u000B"],
    "MAXWS": "2GB",  
    "ROOTDIR":
    "/my-own/root/directory",
    "UserOption": "quote\"me"
  }
}
```

# JSON5

```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", /* memory limit */
  }
}
```



# JSON

```
{
  "Settings": {
    "9&11": ["\t", "\u000B"],
    "MAXWS": "2GB",
    "ROOTDIR": "
/my-own/root/directory",
    "UserOption": "quote\"me"
  }
}
```

# JSON5

```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
ory",
  }
}
```

# JSON

```
{
  "Settings": {
    "9&11": ["\t", "\u000B"],
    "MAXWS": "2GB",
    "ROOTDIR":
    "/my-own/root/directory",
    "UserOption": "quote\"me"
  }
}
```

# JSON5

```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
    ory",
    UserOption: 'quote"me',
  }
}
```

# JSON

```
{
  "Settings": {
    "9&11": ["\t", "\u000B"],
    "MAXWS": "2GB",
    "ROOTDIR":
"/my-own/root/directory",
    "UserOption": "quote\"me"
  }
}
```

# JSON5

```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
ory",
    UserOption: 'quote"me',
  }
}
```

# JSON

```
{
  "Settings": {
    "9&11": ["\t", "\u000B"],
    "MAXWS": "2GB",
    "ROOTDIR":
"/my-own/root/directory",
    "UserOption": "quote\"me\"",
    "FNAME": "[rootdir]/filename"
  }
}
```

# JSON5

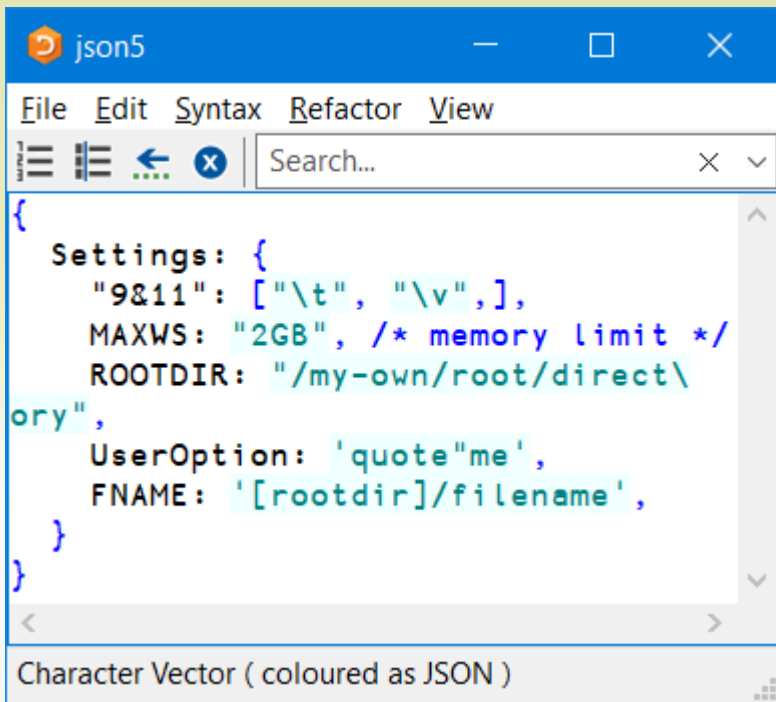
```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
ory",
    UserOption: 'quote"me',
    FNAME: '[rootdir]/filename',
  }
}
```

# JSON

```
{
  "Settings": {
    "9&11": ["\t", "\u000B"],
    "MAXWS": "2GB",
    "ROOTDIR":
"/my-own/root/directory",
    "UserOption": "quote\"me\"",
    "FNAME": "[rootdir]/filename"
  }
}
```

# JSON5

```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
ory",
    UserOption: 'quote"me',
    FNAME: '[rootdir]/filename',
  }
}
```



The screenshot shows a window titled 'json5' with a menu bar (File, Edit, Syntax, Refactor, View) and a search bar. The main text area contains the following JSON5 code:

```
{
  Settings: {
    "9&11": ["\t", "\v",],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
ory",
    UserOption: 'quote"me',
    FNAME: '[rootdir]/filename',
  }
}
```

At the bottom of the window, it says 'Character Vector ( coloured as JSON )'.

# JSON5

```
{
  Settings: {
    "9&11": ["\t", "\v",],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
ory",
    UserOption: 'quote"me',
    FNAME: '[rootdir]/filename',
  }
}
```

# Try this!

```
'ns.Settings' □ NSØ
```

```
ns.Settings.FNAME ← '[rootdir]/filename'
```

```
ns.Settings.MAXWS ← '2GB'
```

```
ns.Settings.ROOTDIR ← '/my-own/root/directory'
```

```
ns.Settings.UserOption ← 'quote"me'
```

```
ns.Settings.Δ911 ← , `` □ UCS 9 11
```

# Try this!

```
JSON: Compact 0ns
{
  "Settings": {
    "FNAME": "[rootdir]/filename",
    "MAXWS": "2GB",
    "ROOTDIR": "/my-own/root/directory",
    "UserOption": "quote\"me\"",
    "Δ911": [
      "\t",
      "\u000B"
    ]
  }
}
```



# Try this!

```
{
  "JSON": 'Compact' 0 "Dialect" 'JSON5' -ns
{
  Settings: {
    FNAME: "[rootdir]/filename",
    MAXWS: "2GB",
    ROOTDIR: "/my-own/root/directory",
    UserOption: 'quote"me',
    "Δ911": [
      "\t",
      "\x0B",
    ],
  },
},
```

# Try this!

```
JSON: Compact 0ns
{
  "Settings": {
    "FNAME": "[rootdir]/filename",
    "MAXWS": "2GB",
    "ROOTDIR": "/my-own/root/directory",
    "UserOption": "quote\"me\"",
    "Δ911": [
      "\t",
      "\u000B"
    ]
  }
}
```

# Try this!


```
□JSON□ 'Compact' 0□ 'Dialect' 'JSON5' ↵ns
{
  Settings: {
    FNAME: "[rootdir]/filename",
    MAXWS: "2GB",
    ROOTDIR: "/my-own/root/directory",
    UserOption: 'quote"me',
    "Δ911": [
      "\t",
      "\x0B",
    ],
  },
},
```

# Try this!

```
JSON: 'Compact' 0ns
{
  "Settings": {
    "FNAME": "[rootdir]/filename",
    "MAXWS": "2GB",
    "ROOTDIR": "/my-own/root/directory",
    "UserOption": "quote\"me\"",
    "Δ911": [
      "\t",
      "\u000B"
    ]
  }
}
```

# Try this!

```
{
  "JSON": 'Compact' 0 "Dialect": 'JSON5' -ns
  Settings: {
    FNAME: "[rootdir]/filename",
    MAXWS: "2GB",
    ROOTDIR: "/my-own/root/directory",
    UserOption: 'quote"me',
    "Δ911": [
      "\t",
      "\x0B",
    ],
  },
},
```



# Regex-free search and replace

No need for escaping everything

□R□ 'Regex'

□S□ 'Regex'

# Case study

Sub ← { '%Entity%' □R α ⊢ ω }

# Case study

```
Sub←{'%Entity%' □R α↔ω}
```

```
'Dyalog' Sub 'Re: %Entity% funds'
```



# Case study

```
Sub←{'%Entity%' □R αω}
```

```
'Dyalog' Sub 'Re: %Entity% funds'
```

```
Re: Dyalog funds
```



# Case study

```
Sub←{'%Entity%' ⓀR α+ω}
```

```
'Dyalog' Sub 'Re: %Entity% funds'
```

```
Re: Dyalog funds
```

```
'Dad & Sons' Sub 'Re: %Entity% funds'
```



# Case study

```
Sub←{'%Entity%' □R α↔ω}
```

```
'Dyalog' Sub 'Re: %Entity% funds'
```

```
Re: Dyalog funds
```

```
'Dad & Sons' Sub 'Re: %Entity% funds'
```

```
Re: Dad %Entity% Sons funds
```

# Case study

```
Sub←{'%Entity%' □R α-ω}
```

```
'Dyalog' Sub 'Re: %Entity% funds'
```

```
Re: Dyalog funds
```

```
'Dad & Sons' Sub 'Re: %Entity% funds'
```

```
Re: Dad %Entity% Sons funds
```



# Case study

Sub ← { '%Entity%' □R ('&' □R '\\\&' ⊢ α) ⊢ ω }

# Case study

```
Sub←{'%Entity%' R('&' R '\\\&' ⋈α)⋈ω}  
'Dad & Sons' Sub 'Re: %Entity% funds'
```

# Case study

```
Sub←{'%Entity%' R('&' R '\\\&' ⋈α)⋈ω}
```

```
'Dad & Sons' Sub 'Re: %Entity% funds'
```

```
Re: Dad & Sons funds
```

# Case study

```
Sub←{'%Entity%' R('&' R '\\\&' ⋮α)⋮ω}
```

```
'Dad & Sons' Sub 'Re: %Entity% funds'
```

```
Re: Dad & Sons funds
```

```
'Back\Slash' Sub 'Re: %Entity% funds'
```



# Case study

```
Sub←{'%Entity%' R('&' R '\\\&' α) ω}
```

```
'Dad & Sons' Sub 'Re: %Entity% funds'
```

```
Re: Dad & Sons funds
```

```
'Back\Slash' Sub 'Re: %Entity% funds'
```

```
DOMAIN ERROR: Invalid escape sequence in transform
```

```
Sub[0] Sub←{'%Entity%' R('&' R '\\\&' α) ω}
```

```
^
```

# Case study

Sub←{'%Entity%' R('%|&|\\' R '\\&' ⋮α)⋮ω}

# Case study

```
Sub←{'%Entity%' R('%|&|\\' R '\\&' ⋈α)⋈ω}
```

```
'Back\Slash' Sub 'Re: %Entity% funds'
```

```
Re: Back\Slash funds
```

# Case study

```
Sub←{'%Entity%' R('%|&|\\\' R '\\&' ⋈α)⋈ω}  
EPATTERN←'$Entity$'
```

# Case study

```
Sub←{ EPATTERN [R('%|&|\\'|[R'\\&'└α)└ω}  
EPATTERN←'$Entity$'
```

# Case study

```
Sub←{ EPATTERN [R('%|&|\\'|[R'\\&'⋮α)⋮ω}
```

```
EPATTERN←'$Entity$'
```

```
'Back\Slash' Sub 'Re: $Entity$ funds'
```

# Case study

```
Sub←{ EPATTERN [R('%|&|\\'|[R'\\&'-α)-ω}
```

```
EPATTERN←'$Entity$'
```

```
'Back\Slash' Sub 'Re: $Entity$ funds'
```

```
Re: $Entity$ funds
```

# Case study

```
Sub←{ EPATTERN □R( '%|&|\\' □R '\\&' †α) †ω }
```

```
EPATTERN← '$Entity$'
```

```
'Back\Slash' Sub 'Re: $Entity$ funds'
```

```
Re: $Entity$ funds
```





# Case study

```
Sub←{ ('\Q', EPATTERN, '\E') R('%|&|\\' R '\\&' α) ω }  
EPATTERN← '$Entity$'
```

# Case study

```
Sub←{('\'Q',EPATTERN,'\'E')R('%|&|\\'|R'\\&'α)ω}
```

```
EPATTERN←'$Entity$'
```

```
'Back\Slash' Sub 'Re: $Entity$ funds'
```

# Case study

```
Sub←{( '\Q', EPATTERN, '\E' ) R( '%|&|\\' R '\\&' α ) ω }
```

```
EPATTERN←'$Entity$'
```

```
'Back\Slash' Sub 'Re: $Entity$ funds'
```

```
Re: Back\Slash funds
```

# Case study

```
Sub←{('Q',EPATTERN,'E')R('%|&|\\'|R'\\&'α)ω}  
EPATTERN←'\Entity\  
'Back\Slash' Sub 'Re: \Entity\ funds'
```

# Case study

```
Sub←{('Q',EPATTERN,'E')R('%|&|\\'R'\\&'α)ω}
```

```
EPATTERN←'\Entity\'
```

```
'Back\Slash' Sub 'Re: \Entity\ funds'
```

```
Re: \Entity\ funds
```

# Case study

```
Sub←{('Q',EPATTERN,'E')R('%|&|\\'|R'\\&'α)ω}
```

```
EPATTERN←'\Entity\'
```

```
'Back\Slash' Sub 'Re: \Entity\ funds'
```

```
Re: \Entity\ funds
```

# Case study

```
Sub←{( '\Q', EPATTERN, '\E' ) R( '%|&|\\' R '\\&' α ) ω }
```

```
EPATTERN←'\Entity\'
```

```
'Back\Slash' Sub 'Re: \Entity\ funds'
```

```
Re: \Entity\ funds
```

# Case study

```
Sub←{(' \Q', EPATTERN, '\E') R('%|&|\\' R '\\&' α) ω}
```

```
EPATTERN←'\Entity\'
```

```
'Back\Slash' Sub 'Re: \Entity\ funds'
```

```
Re: \Entity\ funds
```



ntity\E



# Case study

```
Sub←{('\W'⊔R'\&'⊔EPATTERN)⊔R('%|&|\\'⊔R'\&'⊔α)⊔ω}  
EPATTERN←'\Entity\'
```

# Case study

```
Sub←{('\W'⊔R'\&'⊔EPATTERN)⊔R('%|&|\\'⊔R'\&'⊔α)⊔ω}
```

```
EPATTERN←'\Entity\'
```

```
'Back\Slash' Sub 'Re: \Entity\ funds'
```

```
Re: Back\Slash funds
```

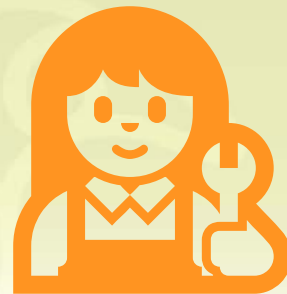
# Case study

```
Sub←{ EPATTERN □R α □ 'Regex' 0↔ω }
```

```
PTRN←'\Entity\'
```

```
'Back\Slash' Sub 'Re: \Entity\ funds'
```

```
Re: Back\Slash funds
```



## *Bonus feature: case fold*

□R '\f&'

□S '\f1'

etc.

# Refresher

Case Folding  
normalisation  
for machine comparison

Case **Mapping**  
display form  
for human readers

*Part 1*

[dyalog.tv/webinar](https://dyalog.tv/webinar)

# Folding vs Mapping

$\square_C$  'Μωυσής' 'ΜΩΥΣΉΣ'    A fold  
 μωυσήσ    μωυσήσ  
 $^{-1}$   $\square_C$  'Μωυσής' 'ΜΩΥΣΉΣ'    A map  
 μωυσής    μωυσήσ

# Folding vs Mapping

```

    ' .+ ' □R '\l&' ⌊ 'Μωυσήc' 'ΜΩΥCΣ΄ΗC'  a lower map
    μωυσήc  μωυσήc
    ' .+ ' □R '\u&' ⌊ 'Μωυσήc' 'ΜΩΥCΣ΄ΗC'  a upper map
    ΜΩΥCΣ΄ΗC  ΜΩΥCΣ΄ΗC
  
```

# Folding vs Mapping

'.'+' □R '\l&' ⌊ 'Μωσής' 'ΜΩΥΣΉΣ' a lower map  
 μωσής μωσήσ

'.'+' □R '\f&' ⌊ 'Μωσής' 'ΜΩΥΣΉΣ' a fold  
 μωσήσ μωσής



# Folding vs Mapping

'.'+' □R '\l&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ' a lower map  
 μωυσής μωυσήσ

'.'+' □R '\f&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ' a fold  
 μωυσήσ μωυσήσ

# Folding and Mapping

|                              |                              |                      |             |
|------------------------------|------------------------------|----------------------|-------------|
| ' .+ ' <code>□R</code> '\l&' | ' .+ ' <code>□S</code> '\l&' | <code>-1 ◦ □C</code> | a lower map |
| ' .+ ' <code>□R</code> '\u&' | ' .+ ' <code>□S</code> '\u&' | <code>1 ◦ □C</code>  | a upper map |
| ' .+ ' <code>□R</code> '\f&' | ' .+ ' <code>□S</code> '\f&' | <code>□C</code>      | a fold      |

# Why, though?

|                  |                  |        |             |
|------------------|------------------|--------|-------------|
| ' .+ ' [R] '\l&' | ' .+ ' [S] '\l&' | -1 [C] | a lower map |
| ' .+ ' [R] '\u&' | ' .+ ' [S] '\u&' | 1 [C]  | a upper map |
| ' .+ ' [R] '\f&' | ' .+ ' [S] '\f&' | [C]    | a fold      |

# Why, though?

|                              |                              |                      |             |
|------------------------------|------------------------------|----------------------|-------------|
| ' .+ ' <code>□R</code> '\l&' | ' .+ ' <code>□S</code> '\l&' | <code>-1 ◦ □C</code> | a lower map |
| ' .+ ' <code>□R</code> '\u&' | ' .+ ' <code>□S</code> '\u&' | <code>1 ◦ □C</code>  | a upper map |
| ' .+ ' <code>□R</code> '\f&' | ' .+ ' <code>□S</code> '\f&' | <code>□C</code>      | a fold      |

```
tn2(' .+ ' □R '\f&' )tn1
```

# Case study: normalisation for comparison

names ← 'Μαϊμωνίδης, Μωσής' 'ΜΑΪΜΩΝΊΔΗΣ ΜΩΥΣ΄ΗΣ'

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≡ /C names

0

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C names

μαϊμωνίδης, μωσής    μαϊμωνίδης μωσής

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C names

μαϊμωνίδης, μωσής μαϊμωνίδης μωσής

Norm ← '(\w+)\W+(\w+)' S '\f1 \f2' : 'UCP' 1

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```
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```

```
≡ /C names
```

0

```
C names
```

```
μαϊμωνίδης, μωσής μαϊμωνίδης μωσής
```

```
Norm ← '(\w+)\W+(\w+)' S '\f1 \f2' : 'UCP' 1
```

```
Norm names
```

```
μαϊμωνίδης μωσής μαϊμωνίδης μωσής
```

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≡ /C names

0

C names

μαϊμωνίδης, μωσής μαϊμωνίδης μωσής

Norm ← '(\w+)\W+(\w+)' S '\f1 \f2' : 'UCP' 1

Norm names

μαϊμωνίδης μωσής μαϊμωνίδης μωσής

≡ /Norm names

1

# End-Of-Line Normalisation

```
INPUT: 'NEOL'
```

# Case study

```
html<JSON' "<!DOCTYPE html>\r<html>\r<head>\r<title>
```

CR or  
□ UCS 13

# Case study

```
html←JSON'"<!DOCTYPE html>\r<html>\r<head>\r<title>  
html''(13 10)NPUT'/tmp/page.html'
```

CR or  
UCS 13

# Case study

```
html←JSON'"<!DOCTYPE html>\r<html>\r<head>\r<title>  
html''(13 10)NPUT'/tmp/page.html'  
NGET'/tmp/page.html'
```

CR or  
N UCS 13

# Case study

```
html←JSON'"<!DOCTYPE html>\r<html>\r<head>\r<title>  
html''(13 10)NPUT'/tmp/page.html'  
NGET'/tmp/page.html'
```

CR or  
N UCS 13

|  |             |    |
|--|-------------|----|
| <pre>&lt;!DOCTYPE html&gt;<br/>&lt;html&gt;<br/>&lt;head&gt;<br/>&lt;title&gt;My Page&lt;/title&gt;<br/>&lt;/head&gt;<br/>&lt;body&gt;<br/>Here be dragons<br/>&lt;/body&gt;<br/>&lt;/html&gt;</pre> | UTF-8-NOBOM | 13 |
|--|-------------|----|



# Case study

```
html←JSON'"<!DOCTYPE html>\r<html>\r<head>\r<title>  
html''(13 10)INPUT'NEOL'2 ↵ '/tmp/page.html '  
INGET'/tmp/page.html '
```

```
<!DOCTYPE html>  
<html>  
<head>  
<title>My Page</title>  
</head>  
<body>  
Here be dragons  
</body>  
</html>
```

```
UTF-8-NOBOM 13 10
```

## New

C Case conversion  
 fög Overlap  
 fög Atop  
 ≠Y Unique rank  
 A~ Constant  
DT Date-time  
 1200± Format date-time

*+ bonus  
 feature:  
 \f&*

## Improved

JSON: 'HighRank'  
JSON: 'Dialect'  
R/S: 'Regex'  
INPUT: 'NEOL'  
zY  
~~X~~Y  
 ↑[k]Y

**Questions?**

## New

`□C` Case convert  
`fög` Over  
`fög` Atop  
`≠Y` Unique mask  
`A~` Constant  
`□DT` Date-time  
`1200I` Format date-time

## Improved

`□JSON@` 'HighRank'  
`□JSON@` 'Dialect'  
`□R/□S@` 'Regex'  
`□INPUT@` 'NEOL'  
`⌊Y`  
`X<Y`  
`↑[k]Y`

# The Rank Operator

## Richard Park



*July 23, 2020*