Language Features of version 18.0 in Depth

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New

`⎕C`	Case convert
`f⍤⍥g`	Over
`f⍤⍤g`	Atop
`≠⌿Y`	Unique mask
`A⍨⍨`	Constant
`⎕DT`	Date-time
`1200⌶`	Format date-time

Improved

```
⎕JSON⍠'HighRank'
⎕JSON⍠'Dialect'
⎕R/⎕S⍠'Regex'
⎕NPUT⍠'NEOL'
⍳⌿Y
X⊂Y
↑[k]Y
```

New

`⎕C`	Case convert
`f⍤⍥g`	Over
`f⍤⍤g`	Atop
`≠Y`	Unique mask
`A⍨⍨`	Constant
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Improved

```
⎕JSON⍠'HighRank'
⎕JSON⍠'Dialect'
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⎕NPUT⍠'NEOL'
⍳Y
X⊂Y
↑[k]Y
```

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New

⎕C	Case convert
f⍤⍥g	Over
f⍤⍤g	Atop
≠⌸Y	Unique mask
A⍨⍨	Constant
⎕DT	Date-time
1200⌶	Format date-time

+ bonus feature

Improved

```
⎕JSON⍠'HighRank'
⎕JSON⍠'Dialect'
⎕R/⎕S⍠'Regex'
⎕NPUT⍠'NEOL'
⍳⌸Y
X⊂Y
↑[k]Y
```

Converting rank>1 arrays to JSON

no need for ↑ and ↓ pre/post-processing

```
⎕JSON⍠'HighRank'
```

Ever tried this?

```
data←2 3⍴⍳6
⎕JSON data
```

Ever tried this?

```
      data←2 3⍴⍳6
      ⎕JSON data
DOMAIN ERROR: JSON export: the right argument ca
      ⎕JSON data
      ^
```

Ever tried this?

```
      data←2 3⍴⍳6
      ⎕JSON↓data
[[1,2,3],[4,5,6]]
```

Ever tried this?

```
      data←2 3 4⍴⍳24
      ⎕JSON↓data
DOMAIN ERROR: JSON export: the right argument ca
      ⎕JSON data
      ^
```

Ever tried this?

```
      data←2 3 4⍴⍳24
      ⎕JSON↓↓data
[[[1,2,3,4],[5,6,7,8],[9,10,11,12]],[[13,14,15,1
```

Ever tried this?

```
⎕JSON↓⍠(¯1+≠⍴data)⊢data
```

Ever tried this?

```
data←(2 3⍴⍳6) 'abc'
⎕JSON↓⍕⍤(¯1+≢⍴data)⊢data
```

Ever tried this?

```
      data←(2 3⍴⍳6) 'abc'
      ⎕JSON↓⍤(¯1+≢⍴data)⊢data
```

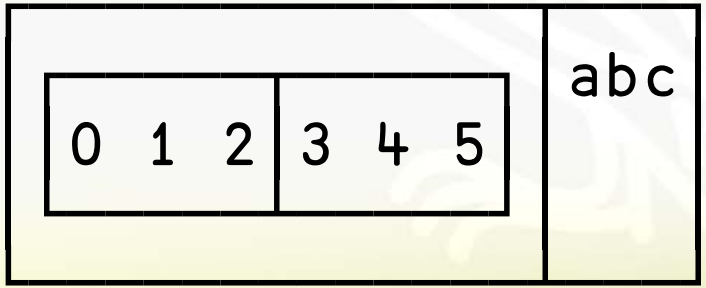
```
↓⍤(¯1+≢⍴data)⊢data
```

0	1	2	abc
3	4	5	

Ever tried this?

```
data←(2 3⍴⍳6) 'abc'
⎕JSON{0=≡⍵:⍵ ⋄ 1<≢⍴⍵:∇↓⍵ ⋄ ∇¨⍵}data
```

```
{0=≡⍵:⍵ ⋄ 1<≢⍴⍵:∇↓⍵ ⋄ ∇¨⍵}data
```



Ever tried this?

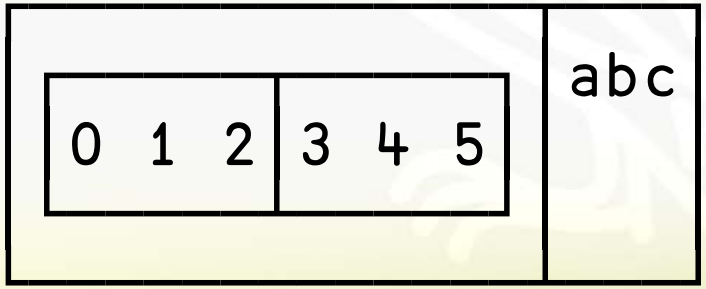
```
      data←(2 3⍴⍳6) 'abc' ⋄ 'ns'⎕NS'data'
      ⎕JSON{0=≡⍵:⍵ ⋄ 1<≢⍴⍵:∇↓⍵ ⋄ ∇¨⍵}ns
DOMAIN ERROR: JSON export: item "data[1]" of the
⎕JSON{0=≡⍵:⍵ ⋄ 1<≢⍴⍵:∇↓⍵ ⋄ ∇¨⍵}ns
      ^
```

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

```
]JSON5 '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

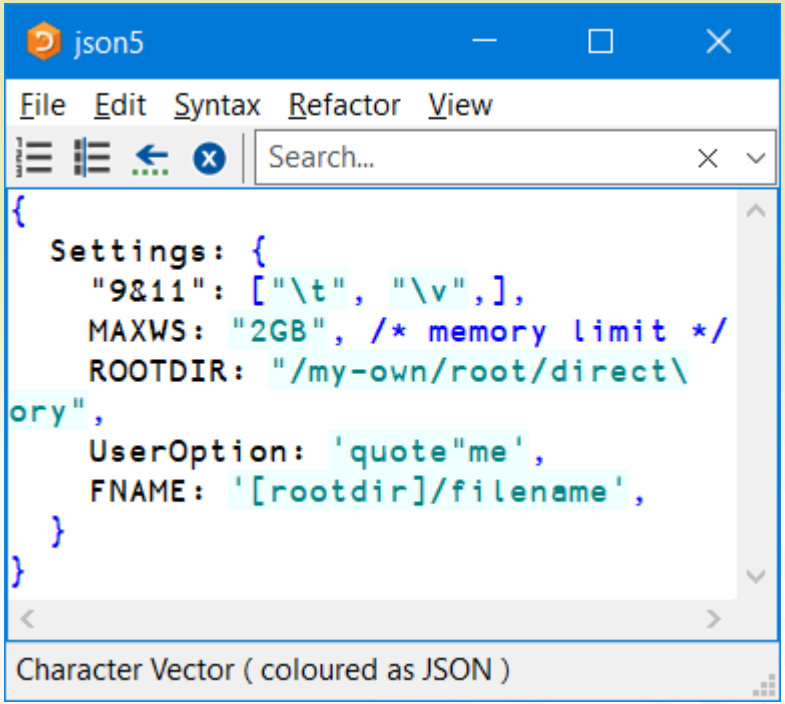
```
{
  Settings: {
    "9&11": ["\t", "\v"],
    MAXWS: "2GB", /* memory limit */
    ROOTDIR: "/my-own/root/direct\
ory",
    UserOption: 'quote"me',
    FNAME: '[rootdir]/filename',
  }
}
```

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',
  }
}
```



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'⎕NS⍬
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' 0⊢ns
{
  "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' 0⊢ns
{
  "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' 0⊢ns
{
  "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 α⊢ω}
      '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'\\\&'⊢⍺)⊢⍵}
```

Case study

```
Sub←{'%Entity%'⎕R('&'⎕R'\\\&'⊢⍺)⊢⍵}
'Dad & Sons' Sub 'Re: %Entity% funds'
```

Case study

```
      Sub←{'%Entity%'⎕R('&'⎕R'\\\&'⊢⍺)⊢⍵}
      'Dad & Sons' Sub 'Re: %Entity% funds'
Re: Dad & Sons funds
```

Case study

```
      Sub←{'%Entity%'⎕R('&'⎕R'\\\&'⊢⍺)⊢⍵}
      'Dad & Sons' Sub 'Re: %Entity% funds'
Re: Dad & Sons funds
      'Back\Slash' Sub 'Re: %Entity% funds'
```

Case study

```
      Sub←{'%Entity%'⎕R('&'⎕R'\\\&'⊢⍺)⊢⍵}
      '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'\\\&'⊢⍺)⊢⍵}
                          ^
```

Case study

```
Sub←{'%Entity%'⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
```

Case study

```
      Sub←{'%Entity%'⎕R('%|&|\\'⎕R'\\&'⊢α)⊢ω}
      'Back\Slash' Sub 'Re: %Entity% funds'
Re: Back\Slash funds
```

Case study

```
Sub←{'%Entity%'⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
EPATTERN←'$Entity$'
```

Case study

```
Sub←{ EPATTERN ⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
EPATTERN←'$Entity$'
```

Case study

```
Sub←{ EPATTERN ⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
EPATTERN←'$Entity$'
'Back\Slash' Sub 'Re: $Entity$ funds'
```

Case study

```
      Sub←{ EPATTERN ⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      EPATTERN←'$Entity$'
      'Back\Slash' Sub 'Re: $Entity$ funds'
Re: $Entity$ funds
```

Case study

```
      Sub←{ EPATTERN ⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      EPATTERN←'$Entity$'
      'Back\Slash' Sub 'Re: $Entity$ funds'
Re: $Entity$ funds
```

Case study

```
Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
EPATTERN←'$Entity$'
```

Case study

```
Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
EPATTERN←'$Entity$'
'Back\Slash' Sub 'Re: $Entity$ funds'
```

Case study

```
      Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      EPATTERN←'$Entity$'
      'Back\Slash' Sub 'Re: $Entity$ funds'
Re: Back\Slash funds
```

Case study

```
Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
EPATTERN←'\Entity\'
'Back\Slash' Sub 'Re: \Entity\ funds'
```

Case study

```
      Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      EPATTERN←'\Entity\'
      'Back\Slash' Sub 'Re: \Entity\ funds'
Re: \Entity\ funds
```

Case study

```
      Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      EPATTERN←'\Entity\'
      'Back\Slash' Sub 'Re: \Entity\ funds'
Re: \Entity\ funds
```

Case study

```
      Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      EPATTERN←'\Entity\'
      'Back\Slash' Sub 'Re: \Entity\ funds'
Re: \Entity\ funds
```

Case study

```
      Sub←{('\Q',EPATTERN,'\E')⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      EPATTERN←'\Entity\'
      'Back\Slash' Sub 'Re: \Entity\ funds'
Re: \Entity\ funds
```

Case study

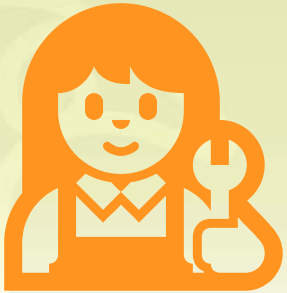
```
Sub←{('\W'⎕R'\\&'⊢EPATTERN)⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
EPATTERN←'\Entity\'
```

Case study

```
      Sub←{('\W'⎕R'\\&'⊢EPATTERN)⎕R('%|&|\\'⎕R'\\&'⊢⍺)⊢⍵}
      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

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Folding vs Mapping

```
      ⍺⍺C 'Μωυσής' 'ΜΩΥΣΉΣ'      ⍝ fold
μωυσήσ  μωυσήσ
      ¯1 ⍺⍺C 'Μωυσής' 'ΜΩΥΣΉΣ'  ⍝ map
μωυσής  μωυσήσ
```

Folding vs Mapping

```
      '.+' ⎕R '\l&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ'   ⍝ lower map
μωυσής  μωυσήσ
      '.+' ⎕R '\u&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ'   ⍝ upper map
ΜΩΥΣΉΣ  ΜΩΥΣΉΣ
```

Folding vs Mapping

```
      '.+' ⎕R '\l&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ'   ⍝ lower map
μωυσής  μωυσής
      '.+' ⎕R '\f&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ'   ⍝ fold
μωυσήσ  μωυσήσ
```

Folding vs Mapping

```
      '.+' ⎕R '\l&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ'   ⍝ lower map
μωυσής  μωυσής
      '.+' ⎕R '\f&' ⊢ 'Μωυσής' 'ΜΩΥΣΉΣ'   ⍝ fold
μωυσήσ  μωυσήσ
```

Folding and Mapping

```
'.+'⌸R'\l&'    '.+'⌸S'\l&'    ¯1∘⌸C   ⍝ lower map
'.+'⌸R'\u&'    '.+'⌸S'\u&'     1∘⌸C   ⍝ upper map
'.+'⌸R'\f&'    '.+'⌸S'\f&'       ⌸C   ⍝ fold
```

Why, though?

```
'.+'⎕R'\l&'    '.+'⎕S'\l&'    ¯1∘⎕C   ⍝ lower map
'.+'⎕R'\u&'    '.+'⎕S'\u&'     1∘⎕C   ⍝ upper map
'.+'⎕R'\f&'    '.+'⎕S'\f&'       ⎕C   ⍝ fold
```

Why, though?

```
'.+'⍠'R'\l&'    '.+'⍠'S'\l&'    ¯1∘⍠C   ⍝ lower map
'.+'⍠'R'\u&'    '.+'⍠'S'\u&'     1∘⍠C   ⍝ upper map
'.+'⍠'R'\f&'    '.+'⍠'S'\f&'       ⍠C   ⍝ fold
```

```
tn2('.+'⍠'R'\f&')tn1
```

Case study: normalisation for comparison

```
names←'Μαϊμωνίδης, Μωυσής' 'ΜΑΪΜΩΝΊΔΗΣ ΜΩΥΣΉΣ'
```

Case study: normalisation for comparison

```
      names←'Μαϊμωνίδης, Μωυσής' 'ΜΑΪΜΩΝΊΔΗΣ ΜΩΥΣΉΣ'
      ≡/⎕C names
0
```

Case study: normalisation for comparison

```
      names←'Maïμωνίδης, Μωυσής' 'ΜΑΪΜΩΝΊΔΗΣ ΜΩΥΣΉΣ'
      ≡/⎕C names
0
      ⎕C names
 μαϊμωνίδησ, μωυσήσ  μαϊμωνίδησ μωυσήσ
```

Case study: normalisation for comparison

```
      names←'Μαϊμωνίδης, Μωυσής' 'ΜΑΪΜΩΝΊΔΗΣ ΜΩΥΣΉΣ'
      ≡/⎕C names
0
      ⎕C names
 μαϊμωνίδησ, μωυσήσ  μαϊμωνίδησ μωυσήσ
```

Case study: normalisation for comparison

```
      names←'Maïμωνίδης, Μωυσής' 'MAÏMΩNΊΔHΣ MΩYΣΉΣ'
      ≡/⎕C names
0
      ⎕C names
 μαϊμωνίδησ, μωυσήσ  μαϊμωνίδησ μωυσήσ
      Norm←'(\w+)\W+(\w+)'⎕S'\f1 \f2'⍠'UCP'1
```

Case study: normalisation for comparison

```
      names←'Μαϊμωνίδης, Μωυσής' 'ΜΑΪΜΩΝΊΔΗΣ ΜΩΥΣΉΣ'
      ≡/⎕C names
0
      ⎕C names
 μαϊμωνίδησ, μωυσήσ  μαϊμωνίδησ μωυσήσ
      Norm←'(\w+)\W+(\w+)'⎕S'\f1 \f2'⍠'UCP'1
      Norm names
 μαϊμωνίδησ μωυσήσ  μαϊμωνίδησ μωυσήσ
```

Case study: normalisation for comparison

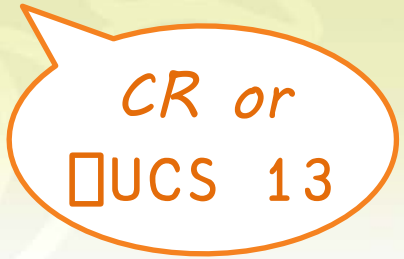
```
      names←'Maïμωνίδης, Μωυσής' 'ΜΑΪΜΩΝΊΔΗΣ ΜΩΥΣΉΣ'
      ≡/⎕C names
0
      ⎕C names
 μαϊμωνίδησ, μωυσήσ  μαϊμωνίδησ μωυσήσ
      Norm←'(\w+)\W+(\w+)'⎕S'\f1 \f2'⍠'UCP'1
      Norm names
 μαϊμωνίδησ μωυσήσ  μαϊμωνίδησ μωυσήσ
      ≡/Norm names
1
```

End-Of-Line Normalisation

```
⎕NPUT⍠'NEOL'
```

Case study

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



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
⎕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'
```

<!DOCTYPE html> <html> <head> <title>My Page</title> </head> <body> Here be dragons </body> </html>	UTF-8-NOBOM	13

CR or ⎕UCS 13

Case study

```
html←⎕JSON'"<!DOCTYPE html>\r<html>\r<head>\r<title>
html''(13 10)⎕NPUT⍠'NEOL'2 ⊢ '/tmp/page.html'
⎕NGET'/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 convert

f⍤⍥g Over

f⍤⍤g Atop

≠⌸Y Unique mask

A⍨ Constant

⎕DT Date-time

1200⌶ Format date-time

+ bonus feature: \f&

Improved

```
⎕JSON⍠'HighRank'
⎕JSON⍠'Dialect'
⎕R/⎕S⍠'Regex'
⎕NPUT⍠'NEOL'
⍳⌸Y
⍸⌸Y
↑[k]Y
```

Questions?

New

`⎕C`	Case convert
`f⍤⍥g`	Over
`f⍤⍤g`	Atop
`≠⌸Y`	Unique mask
`A⍨⍨`	Constant
`⎕DT`	Date-time
`1200⌶`	Format date-time

Improved

```
⎕JSON⍠'HighRank'
⎕JSON⍠'Dialect'
⎕R/⎕S⍠'Regex'
⎕NPUT⍠'NEOL'
⍳⌸Y
X⊂Y
↑[k]Y
```

The Rank Operator

Richard Park