

Uncle Andy's Fireside Chat V3.0

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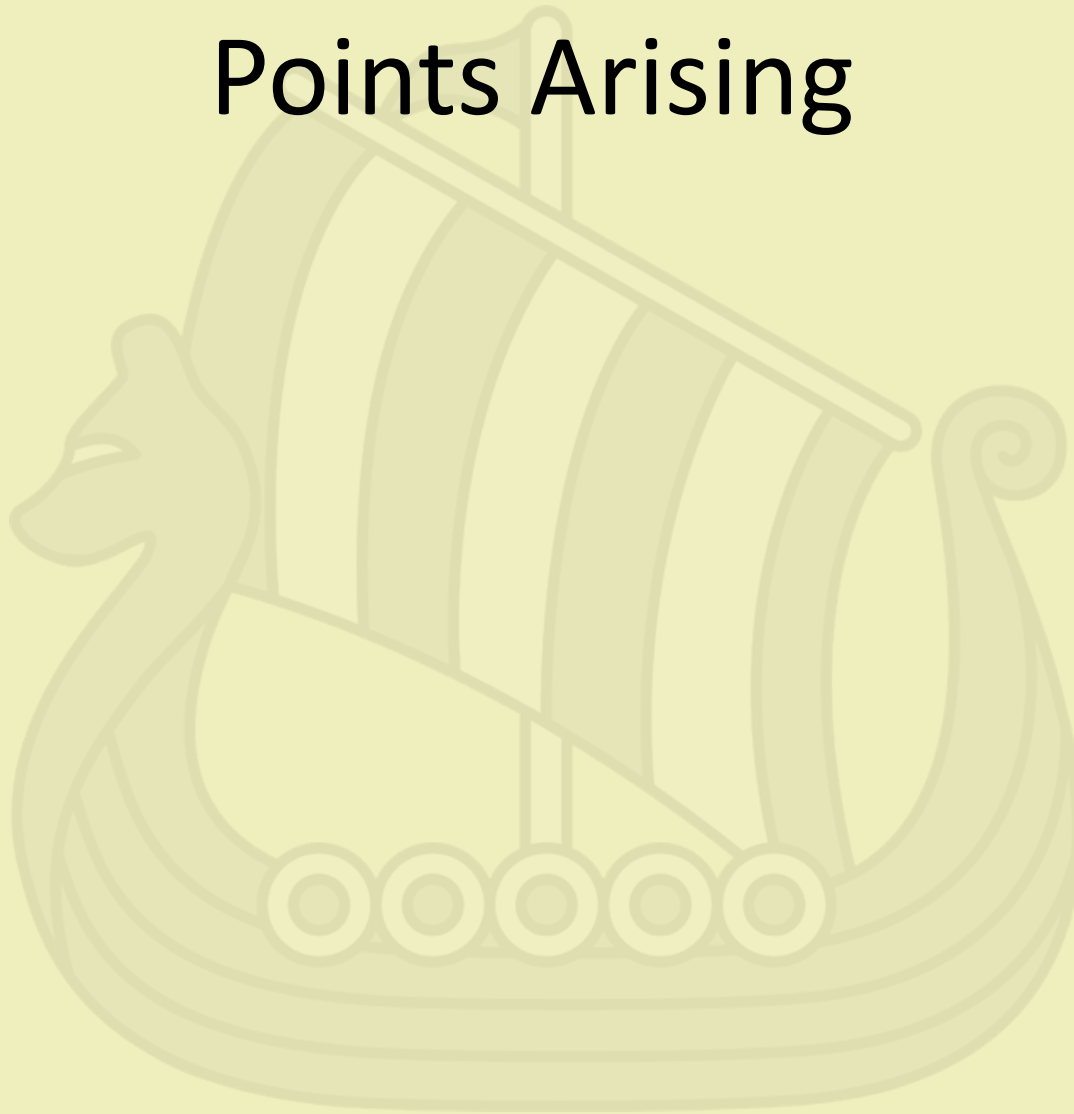


Topics

- Points arising
- Andy's Announcements
- Updating Dyalog
- A miscellany of minutiae
- A group of gotchas
- A little bit of RIDE



Points Arising



Andy's Announcements

➤ From V16 onwards

- We will issue only 64 bit Unicode on Linux
 - Pi remains 32 bit Unicode
 - We intend to add 64 bit Unicode to Pi when the O/S becomes 64 bit
- On AIX
 - Will investigate having a generic interpreter, not one for each CPU type
 - Plan to support POWER 7 onwards
 - What is the lowest CPU type that needs to be supported



Native Files

➤ 1 `▢NPARTS` ' '

Windows: `C:/Users/andys.DYALOG/Desktop/`

UNIX: `/home/andys/`

➤ `▢nread` `-2 163 -1 -1`

Read as many 2-byte integers as possible from current position to end of file

➤ `▢NREPLACE` `-2 -1`

Replace from the current file position onwards



SQAPL

- Share data between APL and SQL-based databases
 - Includes Dyalog acting as if it were a SQL database
 - SQAPL was included in Windows and Linux/Pi 15.0, and is available for AIX (but needs separate licence)
 - Now adding SQAPL to OS X/macOS



SQAPL

- SQAPL on all platforms to MySQL & clones
- SQAPL/Windows and Linux to SQL Server/Windows
- SQAPL/AIX and Windows to Oracle

- Do you know of others that have been used successfully ?



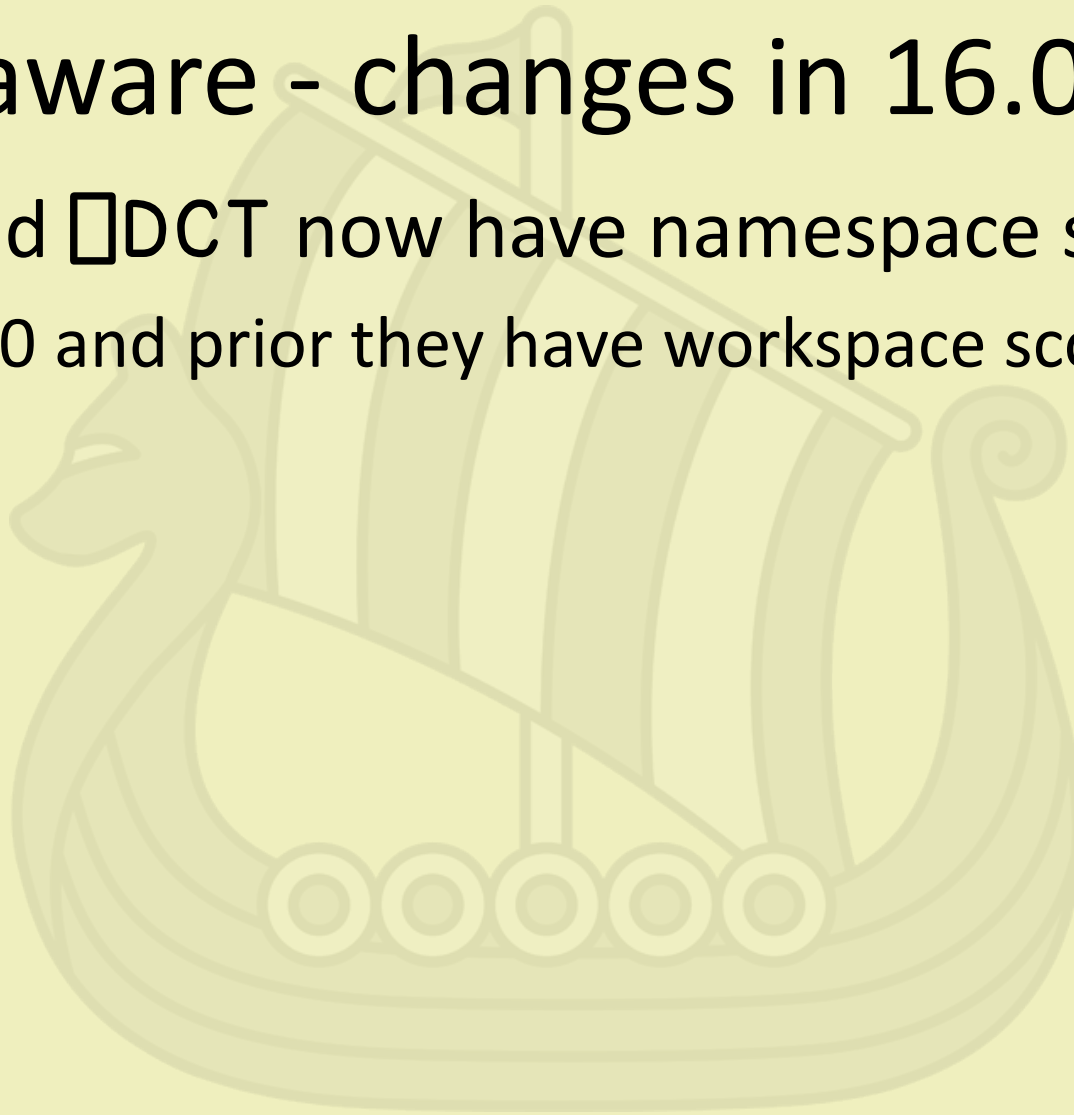
Be aware - changes in 16.0

- Windows:) LIB will report the directory name as it was created - not in upper case
- Syntax checking in control structures is more strict
 - :If 1 :AndIf 1 s/b :if 1 ♦ :andif 1
 - :Else ÷0 s/b :Else ♦ ÷0
 - Editor will highlight the errors



Be aware - changes in 16.0 (2)

- □FR and □DCT now have namespace scope
 - In 15.0 and prior they have workspace scope



Non-admin installs (Windows)

➤ Limitations

- No IME
- No APL385 font installed
- VS2015 redistributables not installed
- A per-user install
 - Multiple users have their own copy
- BUT: no need for admin privileges
 - Updates don't need admin privileges either



Updating Dyalog

➤ Currently

- Pi: Online repository
- AIX: tar file, asked for by customers
- OS/X: new .pkg file posted to my.dyalog.com
- Linux: new .rpm and .deb files (in a .zip file) on my.dyalog.com
- Windows: patch wizard/.dpf files on my.dyalog.com



Update mechanisms - planned

➤ Linux:

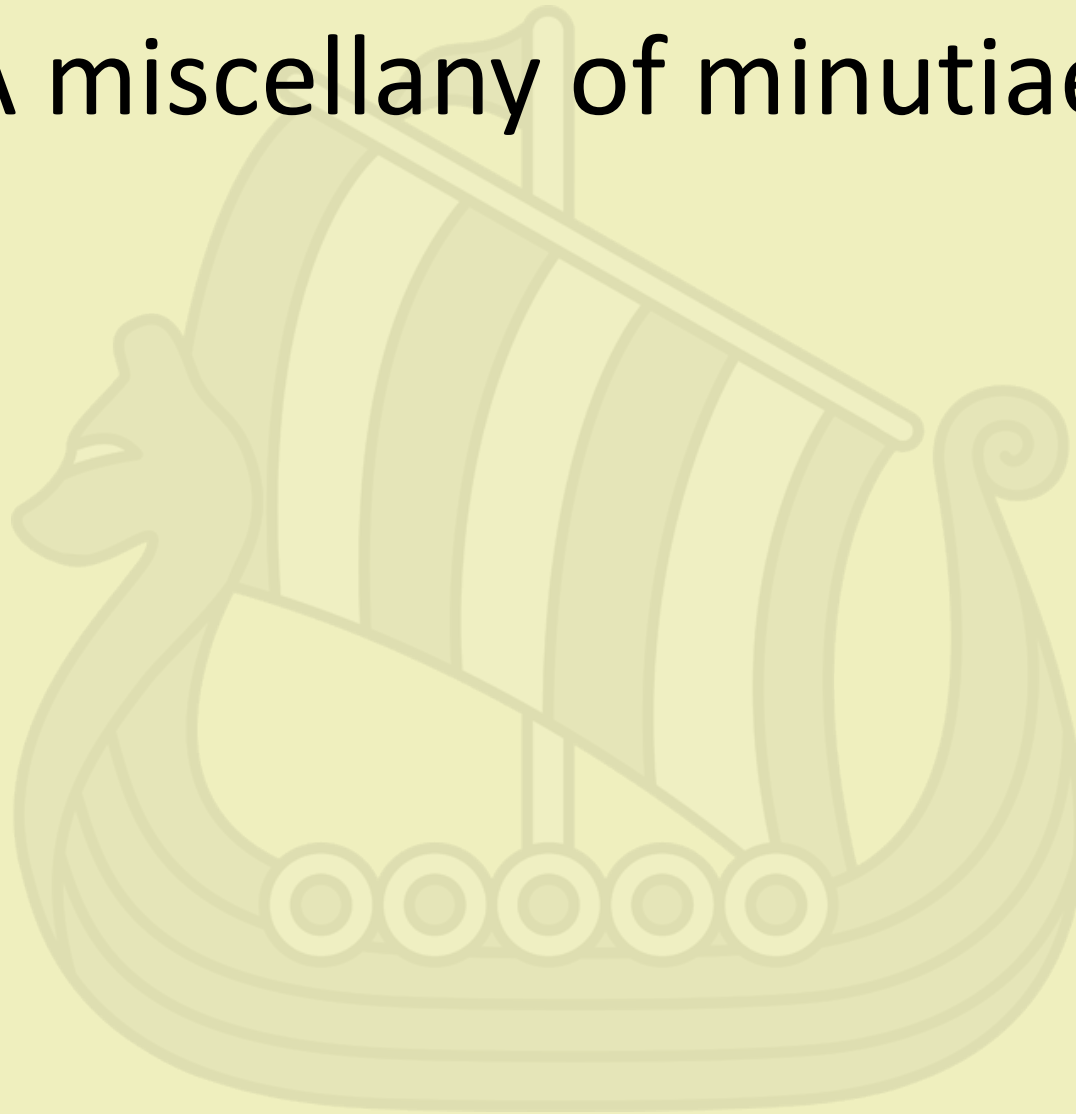
- .rpm & .deb repositories
 - password protected

➤ Windows:

- Update .msi files
- Keep patch mechanism to allow fine-grain control over what is updated
- Comments please !



A miscellany of minutiae



Editor

- View -> Syntax
 - Allows syntax colouring for
 - APL, JSON, XML, no syntax colouring
- View -> Compiler Errors
 - Windows Only: Show lines that will fail to compile
- Highlight All Matches
 - 16.0 will allow you to clear the search string
- Reformat Scripts Automatically



Editor features

The screenshot displays the DyalOC editor interface. The top-left pane shows the 'Language Bar' with a toolbar and version information: 'Dyalog APL/W-64 Version 16.0.2', 'Serial No : 123456', 'Unicode Edition', 'Non-commercial Licence', and 'Thu Oct 6 09:30:15 2016'. Below this, the code 'clear ws' and ')ed foo' is visible. The top-right pane shows the 'Session' menu with 'APL385 Unicode' selected and a search bar. The main editor window contains the code 'foo b;x' and 'x←a+b'. A context menu is open over the editor, listing options: Trace, Stop, Monitor, Line Numbers, Function Line Numbers, Tree View, **Compiler Errors** (checked), **Outlining** (checked), Expand All Outlines, Collapse All Outlines, and Expand all Outlines below here. The bottom pane is the 'Debugger' window, showing 'Ready...' and 'CurObj: qoo (Undefined)'. The status bar at the bottom indicates 'Modified Function' and 'Pos: 2/3,0'.



Standalone Editor/Previewer

➤ Preview pane:

- Font size can now be changed
- Works with
 - Windows Explorer
 - SpeedCommander
 - XYplorer (thanks to Michael Baas)

➤ Standalone Editor

- Font size can now be changed



Setting the hint on SysTray icons

- Allows you to set the text of the hint for SysTray icons
- Same syntax as Window Captions
- I generally use

```
[HKEY_CURRENT_USER\Software\Dyalog\Dyalog APL/W-64 15.0 Unicode\Captions]
"MessageBox"="150U64 {PID} {WSID}:{SNSID}"
"Session"="150U64 {PID} {WSID}:{SNSID}"
>Status"="150U64 {PID} {WSID}:{SNSID}"
"SysTray"="150U64 {PID} {WSID}"
```



Exit code from `SSH`

➤ Non-Windows platforms only

- 15.0

```
z←SSH'exit 17'
```

```
DOMAIN ERROR
```

```
DMX.Message
```

```
Command interpreter returned failure code 17
```

- 14.1 and prior

- ```
z←SSH'mycmd; echo $? ; exit 0'
```



# It's I-beam time !

## WARNING:

*"Although documentation is provided for I-Beam functions, any service provided using I-Beam should be considered as "experimental" and subject to change – without notice - from one release to the next. Any use of I-Beams in applications should therefore be carefully isolated in cover-functions that can be adjusted if necessary."*



## 600 I : Control traps

- 600 I 2: with suspended functions, an error in the session does not trigger a trap
- 600 I 1: default behaviour
- 600 I 0: disable all traps (not advised if using SALT)
- Windows has Options->Disable traps in session



# 819I - Case Convert

## ➤ Unicode only

```
1(819I)'School Street' 'Rue de l''École' 'Schülestraße'
SCHOOL STREET RUE DE L'ÉCOLE SCHÜLESTRABE
```

```
0(819I)'School Street' 'Rue de l''École' 'Schülestraße'
school street rue de l'école schülestraße
```

## ➤ Was backported to 14.1 (27141 and later)



# 1500I – Hash Array

- Returns a hashed array
  - Improves performance of set functions on the array
  - The hash is preserved across assignments and a few forms of modified assignment
    - $R, \leftarrow A$  For scalar or vector  $R$
    - $R; \leftarrow A$
    - $R \downarrow \sim \leftarrow Y$  For negative singleton  $Y$
  - Survives )save and )load/)copy



# Text in □DM/□DMX is stringified(!)

- In 15.0 onwards, the text in □DM/□DMX is generated when
  - at a 6-space prompt
  - During save operation
  - When you reference □DM
- Interpreter can free up the pockets needed to generate □DM/□DMX
  - see Fireside Chat V2.0
    - (<http://www.dyalog.com/user-meetings/dyalog15.htm>)



# □ SIGNAL 0

➤ □ SIGNAL 0 resets □ EN, □ DM and □ DMX

```

 ÷0
DOMAIN ERROR: Divide by zero
 ÷0
 ^
 □dmx
EM DOMAIN ERROR
Message Divide by zero
 □dm
DOMAIN ERROR ÷0 ^
 □en
11
 □signal 0
 □dmx
 □dm
 □en
0

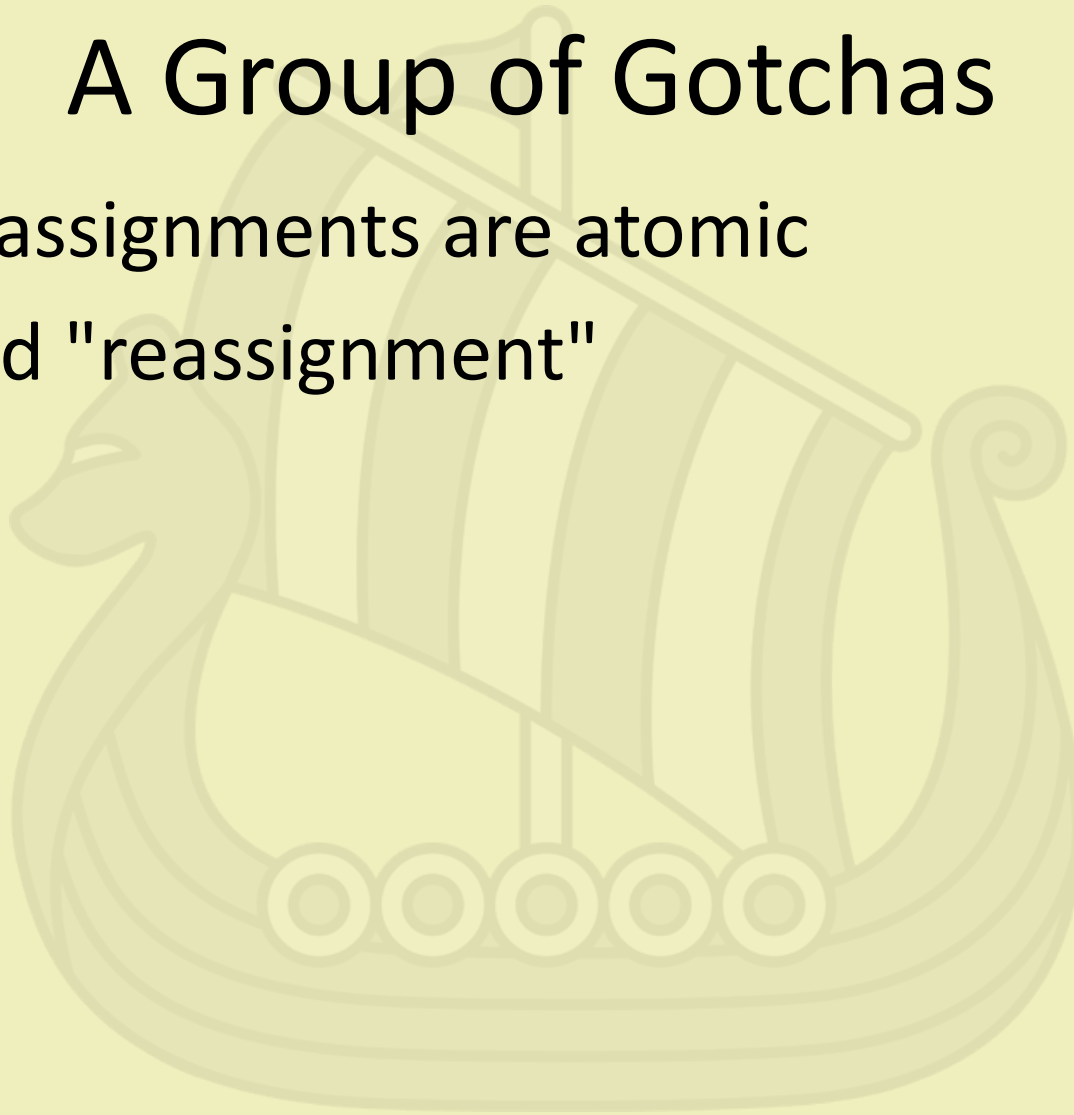
```





# A Group of Gotchas

- Not all assignments are atomic
- dfns and "reassignment"



# Not all assignments are atomic

```
a 7 b←1 2 3
SYNTAX ERROR
```

```
a 7 b←1 2 3
```

```
^
```

```
a
```

```
1
```

```
b
```

```
VALUE ERROR
```

```
b
```

```
^
```



# dfns and Redefining/"Reassignment"

- What appears to be a redefining of/reassignment to a variable in a dfn is actually a shadow then an assignment
  - Potential workspace size implications



# Tradfns and reassignment

```

▽ r←foo r;a
 □←2000I1
 a←1000000ρ1.1 ◇ □←2000I1
 a←a+1 ◇ □←2000I1
 a←1 ◇ □←2000I1
 r←1

```

```

▽
 foo 1
1221792
9217624
9217624
1217592
1

```



# dfns and "Reassignment"

```
foo←{
 □←2000I1
 a←1000000ρ1.1 ◇ □←2000I1
 a←a+1 ◇ □←2000I1
 a←1 ◇ □←2000I1
 1
}
```

```
foo 1
```

```
1575688
9198832
17198928
17198992
1
```



# Dfns: failures when redefining variables

- In dfns, names are shadowed even if the assignment fails

```
∇foo←{
 i←1
 i←
}∇
```

```
foo 1
SYNTAX ERROR
foo[2] i←
```

```
 i
VALUE ERROR
 i
```



# RIDE and Dyalog

- Dyalog/OS X uses RIDE as the front end
- Dyalog/Linux & Pi will use RIDE as the front end in v16.0 when under a windows manager
- RIDE available for Windows
- No reason not to use a terminal window in either case
- Any RIDE can connect to any Dyalog on any machine (needs to be 15.0 or later)



# RIDE connection management

- 3502 $\pm$  manages RIDE connections
  - Overrides RIDE\_INIT
  - Makes RIDE\_INIT superfluous for most situations
- If RIDE\_INIT is set when a development interpreter is started, RIDE is enabled
- Runtime interpreters never enable RIDE (and never will): 3502 $\pm$ 1 must be called, whether RIDE\_INIT is set or not





# RIDE connection management

```
res←3502I'SERVE::4502' A Set the connection string
res←3502I1 A Enable RIDE connections

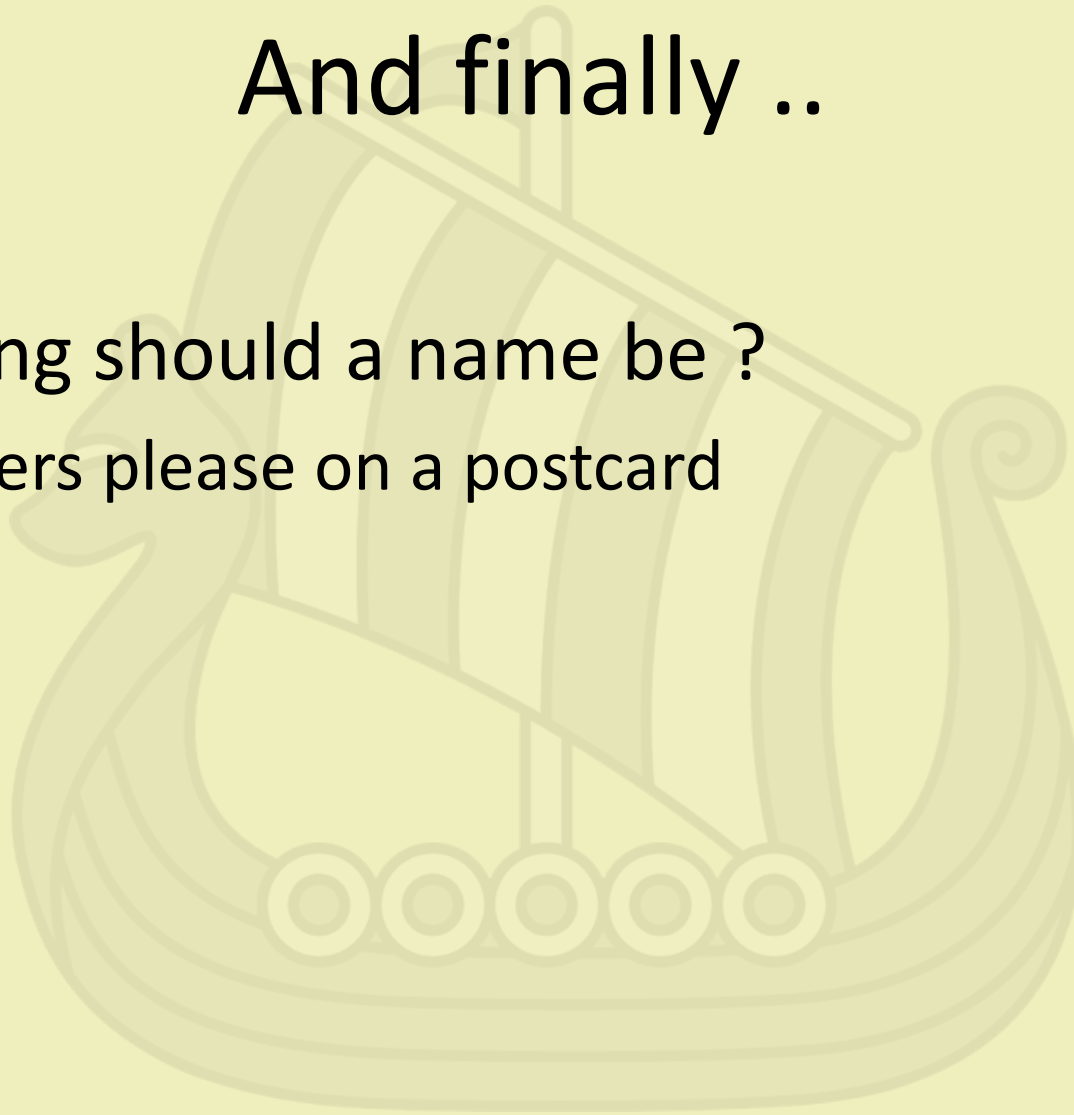
res←3502I0 A Disable RIDE connections
res←3502I'POLL::9999' A Change the connection string
res←3502I1 A Enable RIDE connections again
```

- You cannot change the connection string while RIDE connections are enabled
- Using 3502 `I` is more flexible and more secure than using RIDE\_INIT



# And finally ..

- How long should a name be ?
  - Answers please on a postcard



# Thank You

*Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.*

Winston Churchill

