DYALOG
Eastbourne 2026

Time's Up

Richard Smith



Seven Christmases ago …

September 2019

by Farrin N. Abbott, CopyCatFilms

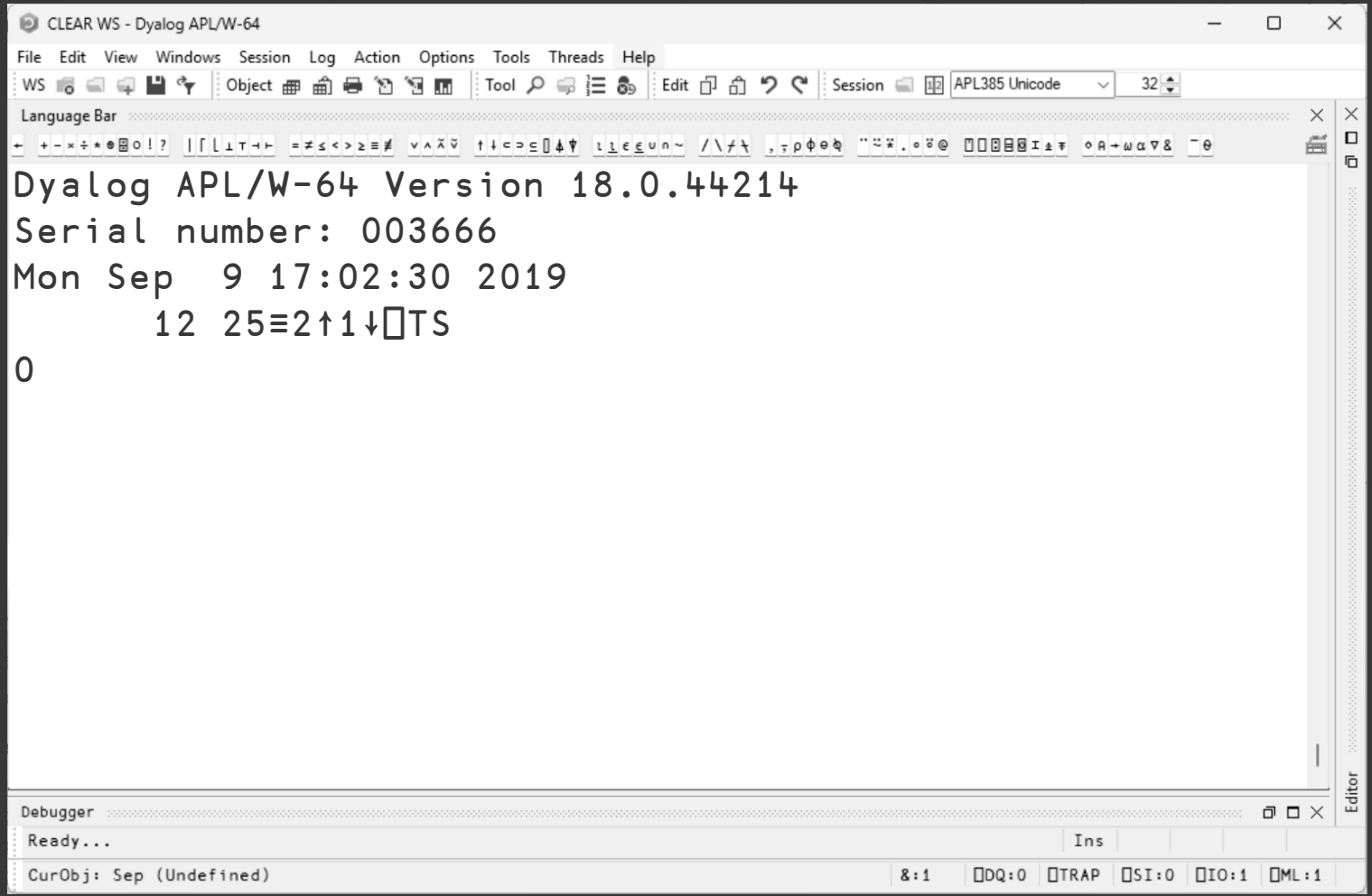


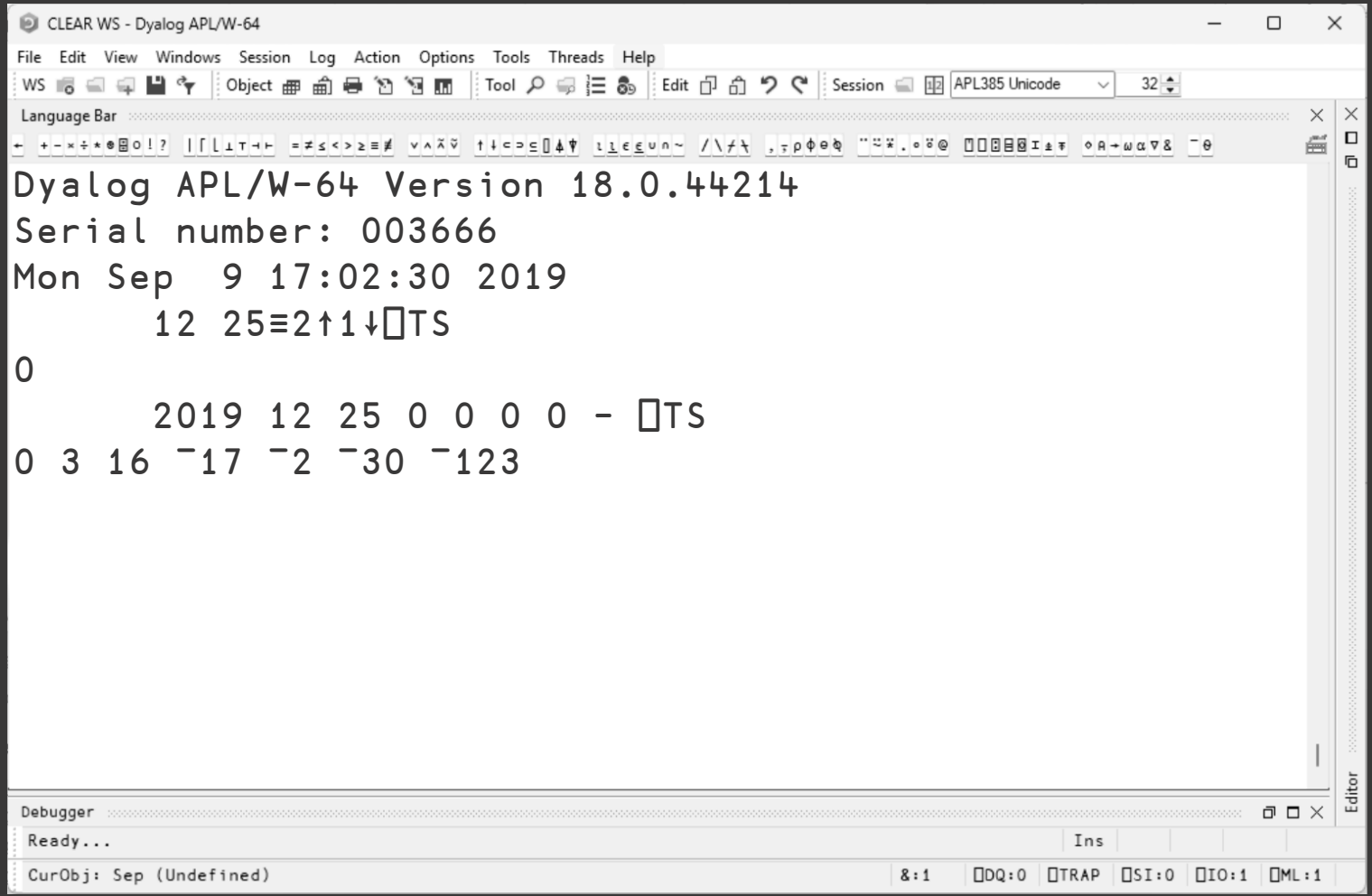
DYALOG

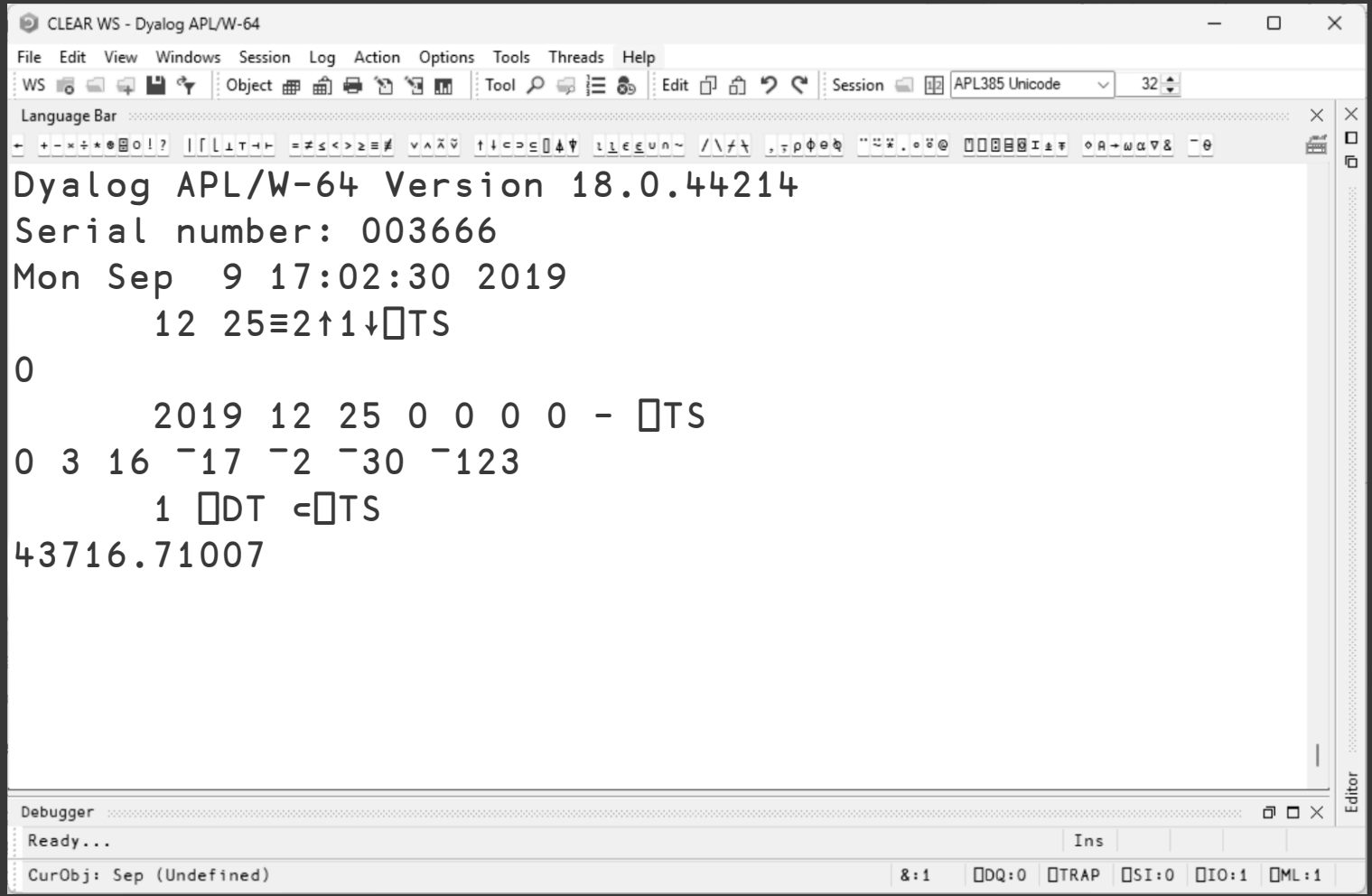
Elsinore 2019

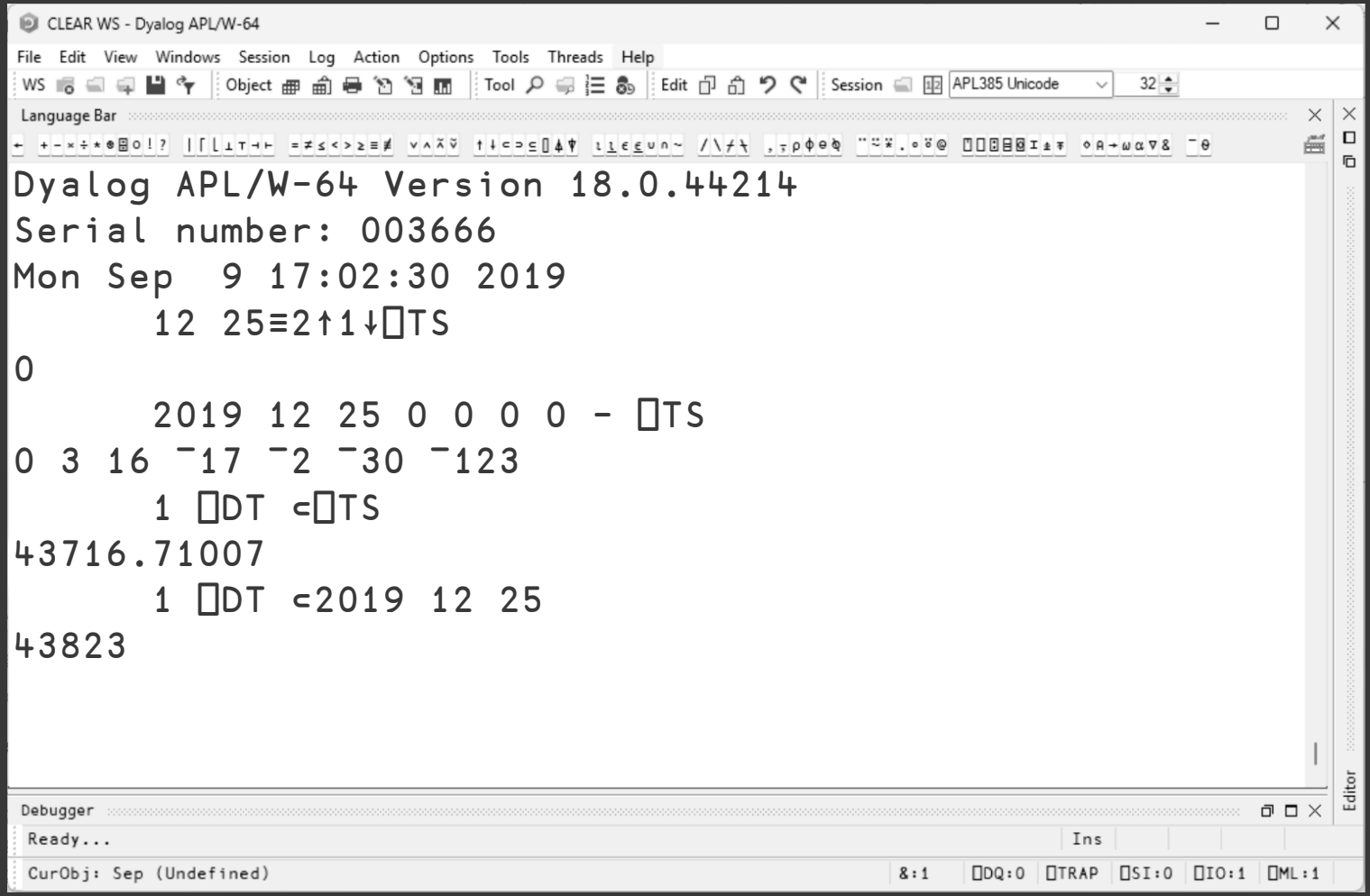
Is It Christmas Yet?

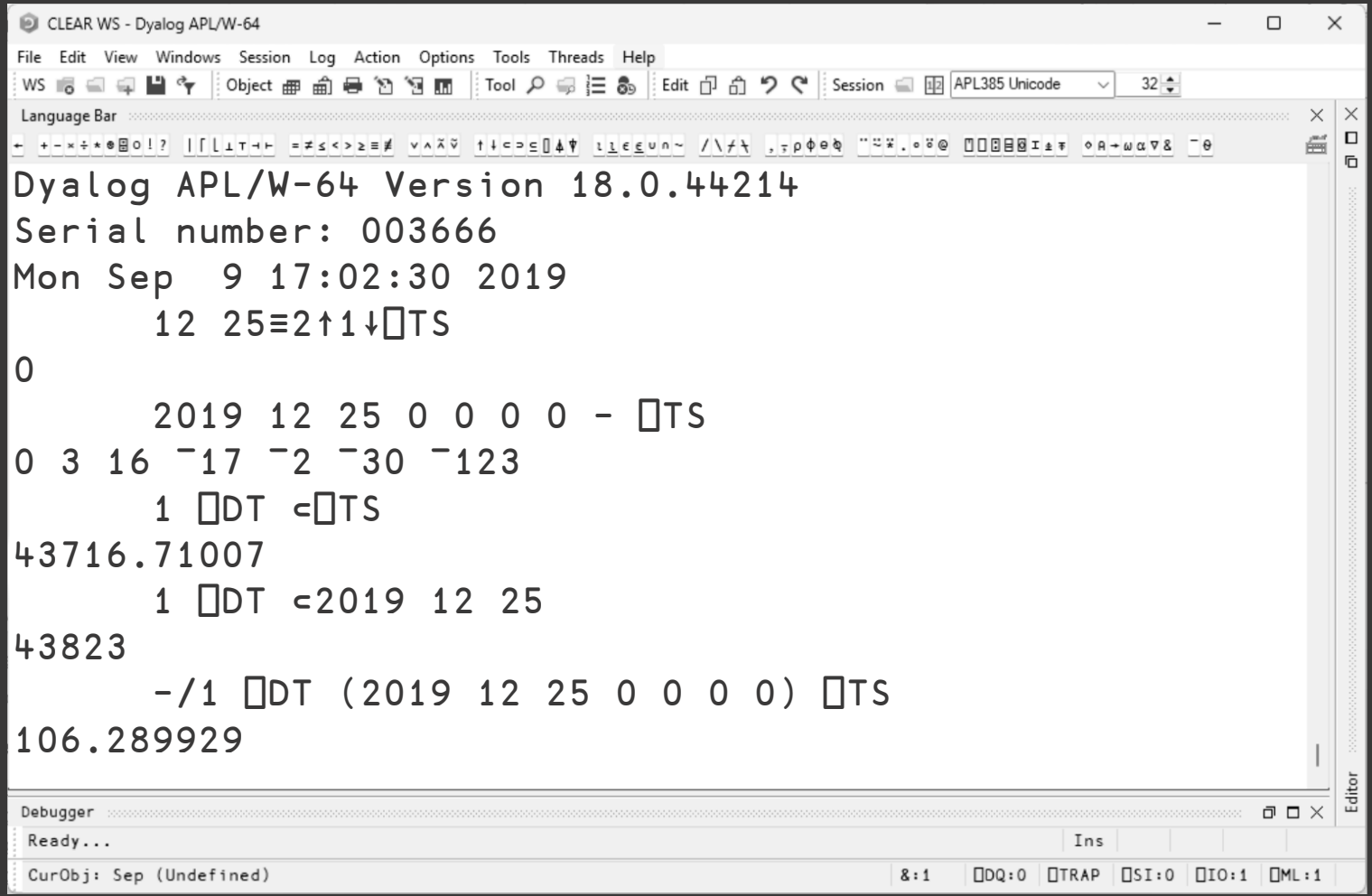
Richard Smith

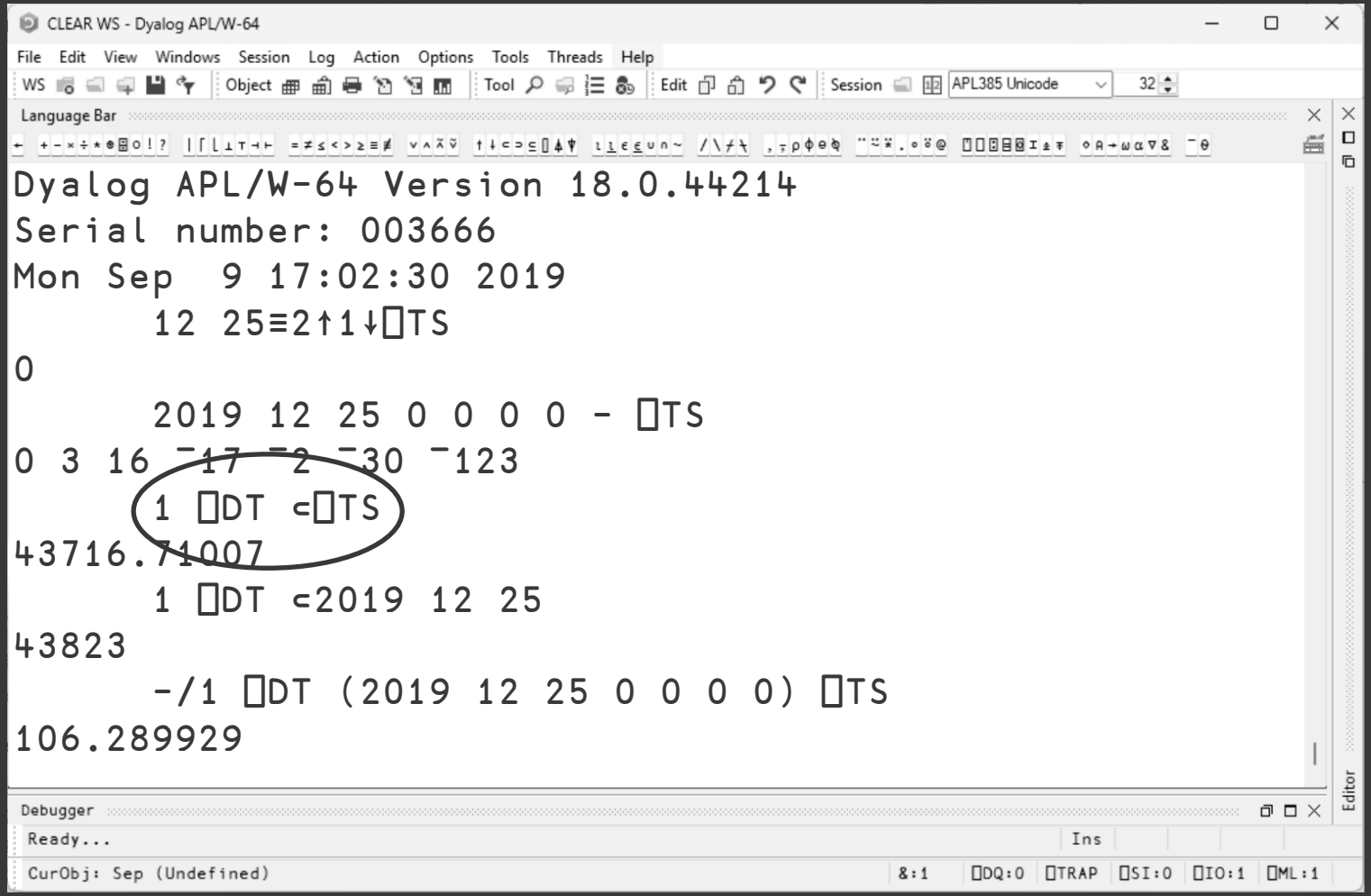

CLEAR WS - Dyalog APL/W-64
File Edit View Windows Session Log Action Options Tools Threads Help
WS Object Tool Edit Session APL385 Unicode 32
Language Bar
Dyalog APL/W-64 Version 18.0.44214
Serial number: 003666
Mon Sep 9 17:02:30 2019
      12 25≡2↑1↓⎕TS
0
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

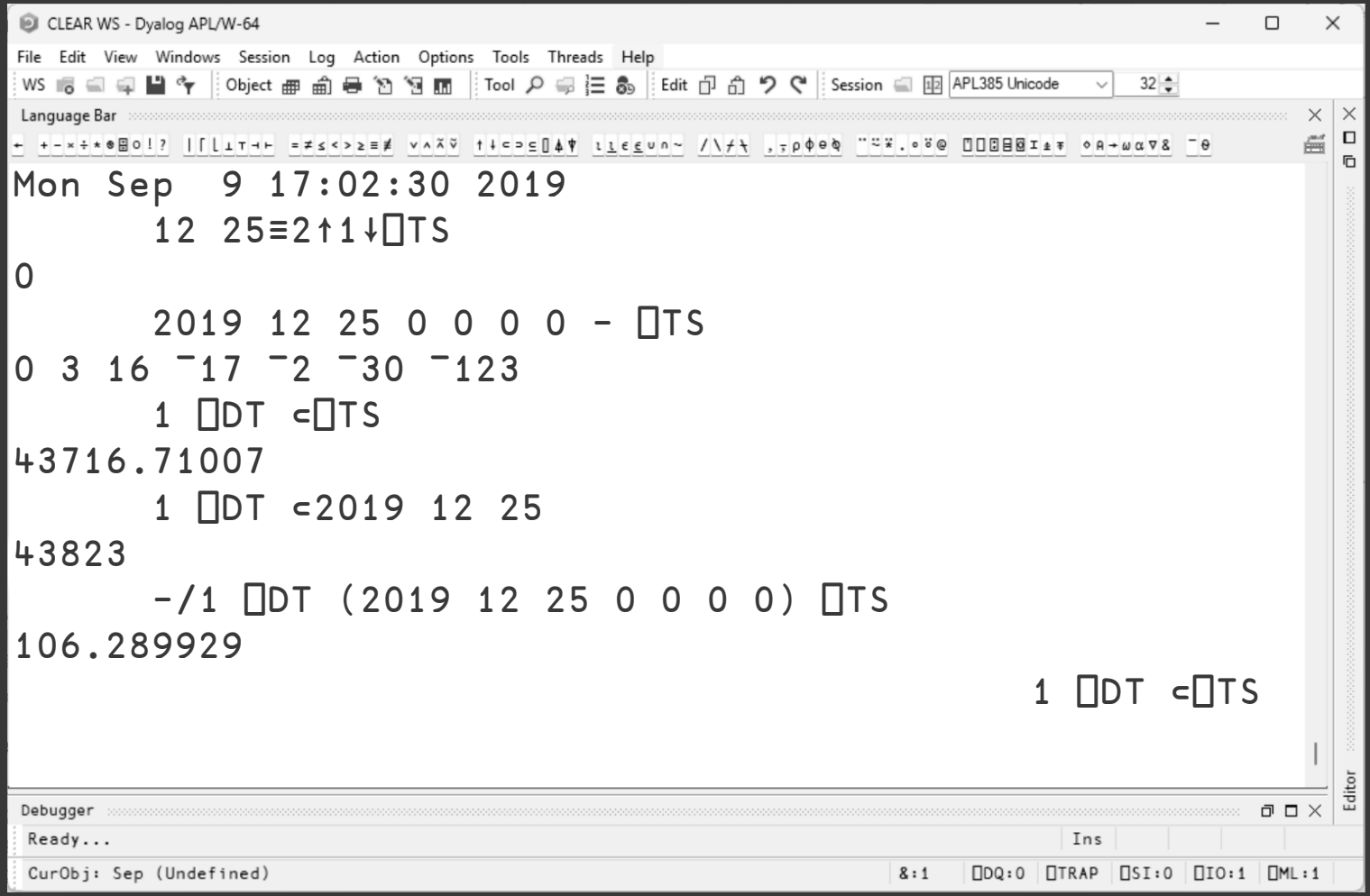

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Serial number: 003666
Mon Sep 9 17:02:30 2019
12 25≡2↑1↓⎕TS
0
2019 12 25 0 0 0 0 - ⎕TS
0 3 16 ¯17 ¯2 ¯30 ¯123
Debugger
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Ins
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⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
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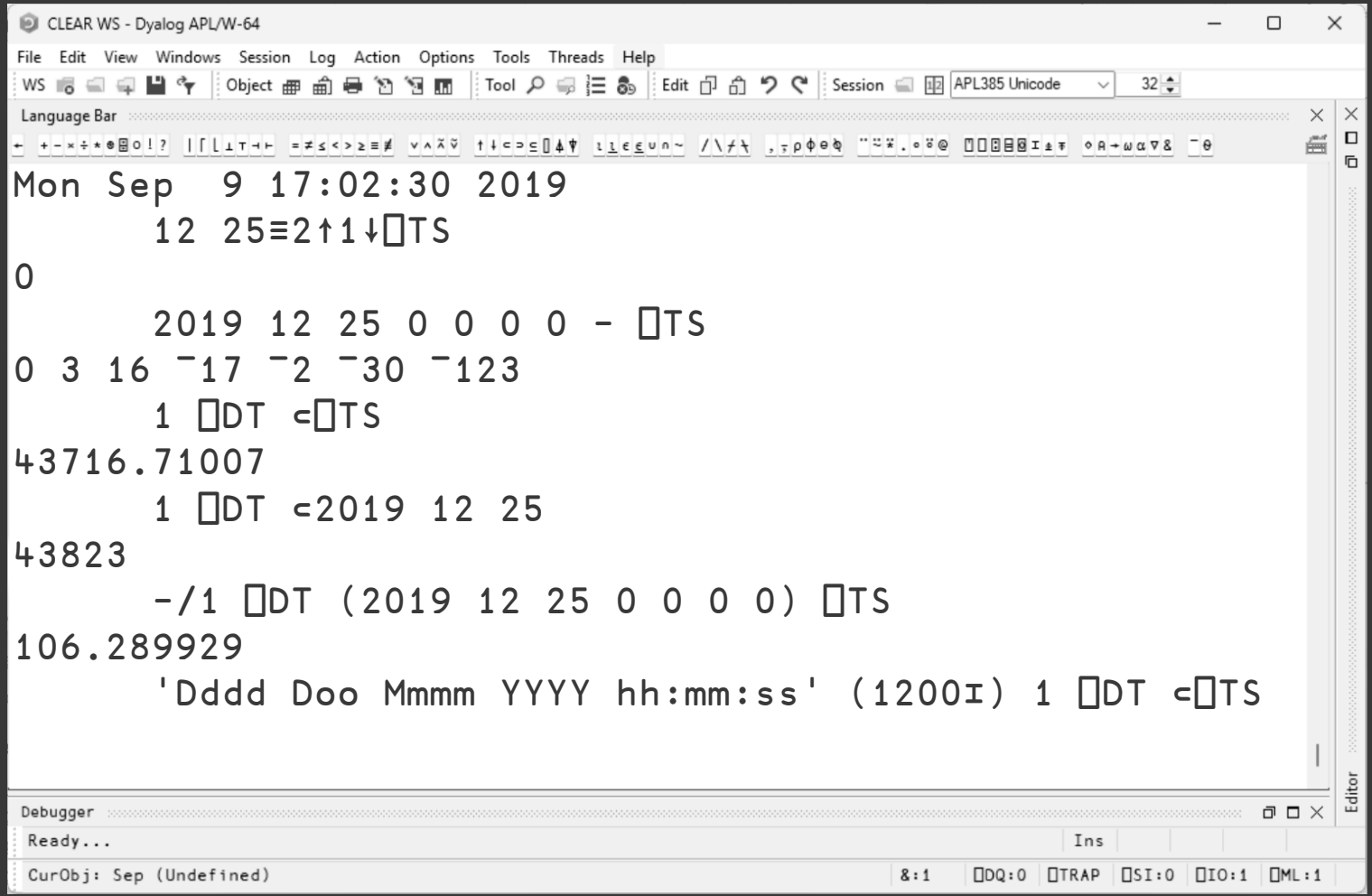

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Mon Sep 9 17:02:30 2019
12 25≡2↑1↓⎕TS
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2019 12 25 0 0 0 0 - ⎕TS
0 3 16 ¯17 ¯2 ¯30 ¯123
1 ⎕DT ⊂⎕TS
43716.71007
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

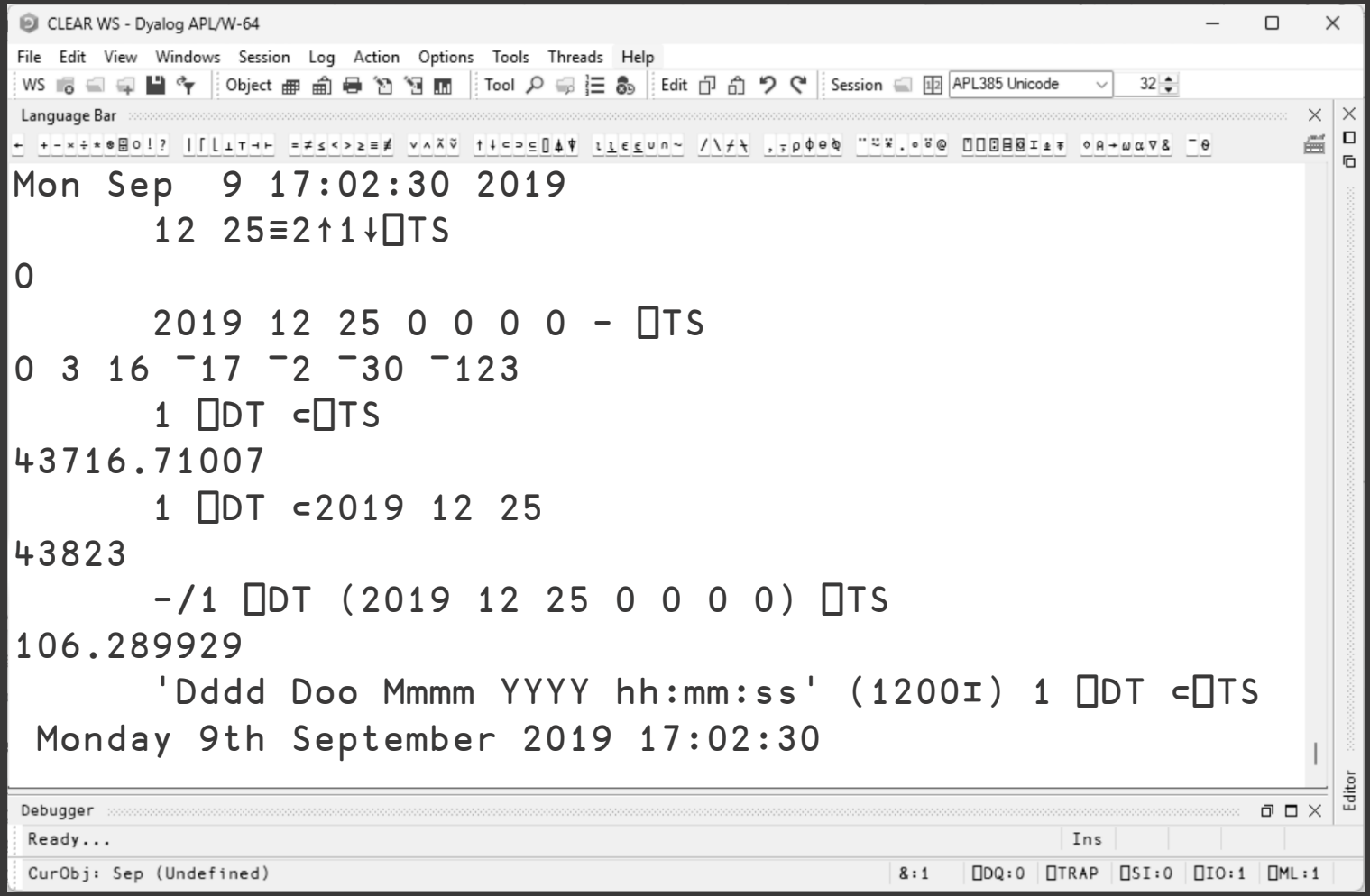

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2019 12 25 0 0 0 0 - ⎕TS
0 3 16 ¯17 ¯2 ¯30 ¯123
1 ⎕DT ⊂⎕TS
43716.71007
1 ⎕DT ⊂2019 12 25
43823
Editor
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1


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12 25≡2↑1↓⎕TS
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2019 12 25 0 0 0 0 - ⎕TS
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1 ⎕DT ⊂⎕TS
43716.71007
1 ⎕DT ⊂2019 12 25
43823
-/1 ⎕DT (2019 12 25 0 0 0 0) ⎕TS
106.289929
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor


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12 25≡2↑1↓⎕TS
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2019 12 25 0 0 0 0 - ⎕TS
0 3 16 ¯17 ¯2 ¯30 ¯123
1 ⎕DT ⊂⎕TS
43716.71007
1 ⎕DT ⊂2019 12 25
43823
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⎕TRAP
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⎕ML:1
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2019 12 25 0 0 0 0 - ⎕TS
0 3 16 ¯17 ¯2 ¯30 ¯123
1 ⎕DT ⊂⎕TS
43716.71007
1 ⎕DT ⊂2019 12 25
43823
-/1 ⎕DT (2019 12 25 0 0 0 0) ⎕TS
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1 ⎕DT ⊂⎕TS
43716.71007
1 ⎕DT ⊂2019 12 25
43823
-/1 ⎕DT (2019 12 25 0 0 0 0) ⎕TS
106.289929
'Dddd Doo Mmmm YYYY hh:mm:ss' (1200⌶) 1 ⎕DT ⊂⎕TS
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
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Language Bar
Mon Sep 9 17:02:30 2019
12 25≡2↑1↓⎕TS
0
2019 12 25 0 0 0 0 - ⎕TS
0 3 16 ¯17 ¯2 ¯30 ¯123
1 ⎕DT ⊂⎕TS
43716.71007
1 ⎕DT ⊂2019 12 25
43823
-/1 ⎕DT (2019 12 25 0 0 0 0) ⎕TS
106.289929
'Dddd Doo Mmmm YYYY hh:mm:ss' (1200⌶) 1 ⎕DT ⊂⎕TS
Monday 9th September 2019 17:02:30
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

Time passes ...



Photos by Imitat on Unsplash

October 2026

DT

DT understands **many different date-time formats**, and can **convert between any of them**.

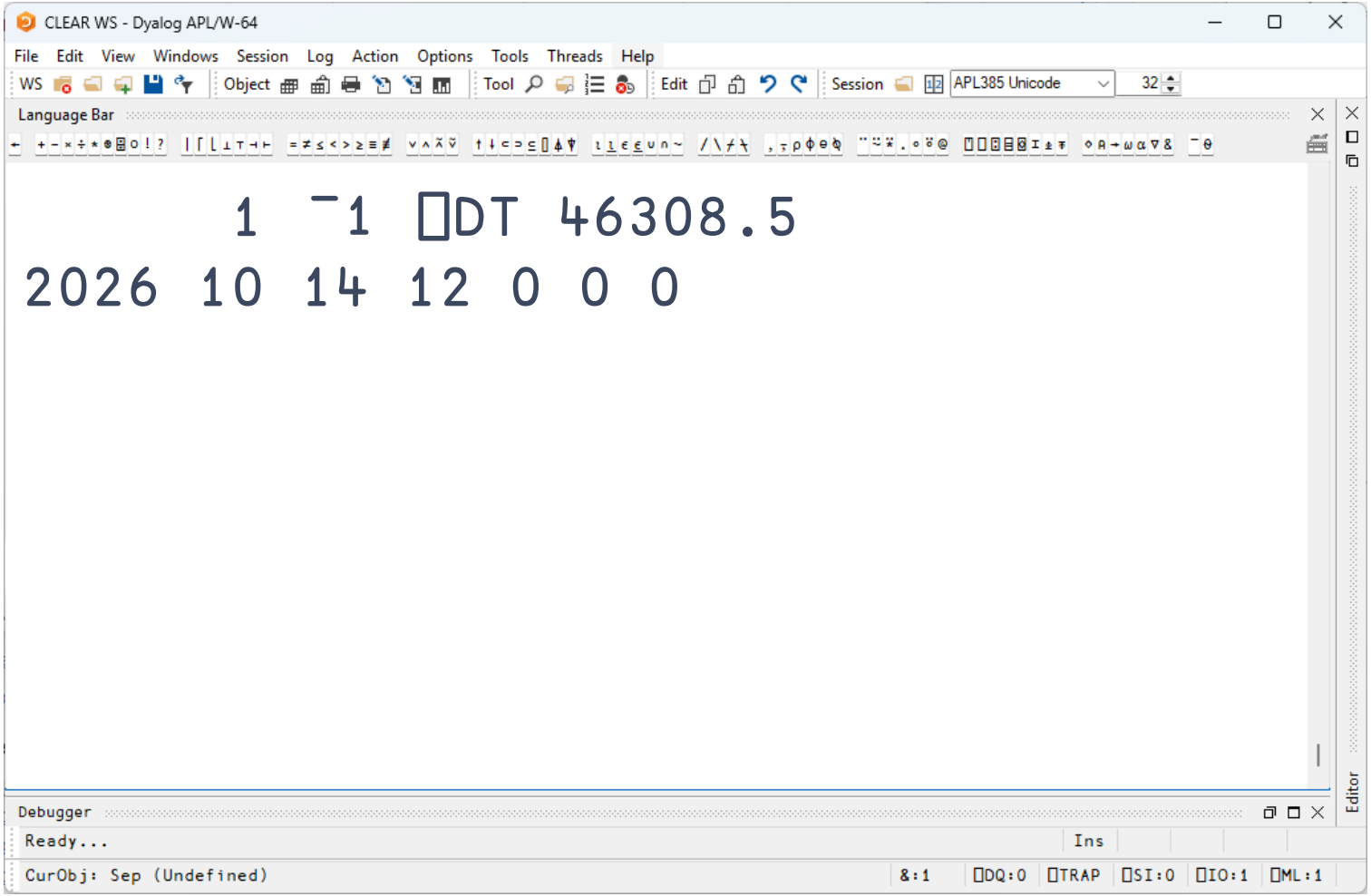
Dyalog Date Number
Dyalog component file time
J nanosecond time
J dayno
Shakti K7
Skakti K9
Javascript / D / Q
Go Unix Milli
Go Unix Micro
Go Unix Nano
R
APL+Win workspace
Unix time
Apollo NCS UUID
OSF DCE UUID
Microsoft DOS (FAT)
Microsoft Win32 FILETIME
Microsoft CLR DateTime
Microsoft OLE Automation
Excel 1900
Excel 1904
Stata statistics package
SPSS statistics package
SAS
Julian Date
Reduced Julian Date
Modified Julian Date
Dublin Julian Date
CNES Julian Date
CCSDS Julian Date
FP decimal encoded
Integer decimal encoded
AmigaOS
7-element TS millisecond (⎕TS)
7-element TS microsecond
7-element TS nanosecond
6-element ISO day-of-year
7-element ISO day-of-week
2-element decimal encoded
4-element DateTimePicker

Time's Up

1

Dyalog Date Number	Excel 1904
Dyalog component file time	Stata statistics package
J nanosecond time	SPSS statistics package
J dayno	SAS
Shakti K7	Julian Date
Skakti K9	Reduced Julian Date
Javascript / D / Q	Modified Julian Date
Go Unix Milli	Dublin Julian Date
Go Unix Micro	CNES Julian Date
Go Unix Nano	CCSDS Julian Date
R	FP decimal encoded
APL+Win workspace	Integer decimal encoded
Unix time	AmigaOS
Apollo NCS UUID	7-element TS millisecond (⎕TS)
OSF DCE UUID	7-element TS microsecond
Microsoft DOS (FAT)	7-element TS nanosecond
Microsoft Win32 FILETIME	6-element ISO day-of-year
Microsoft CLR DateTime	7-element ISO day-of-week
Microsoft OLE Automation	2-element decimal encoded
Excel 1900	4-element DateTimePicker

¯1


CLEAR WS - Dyalog APL/W-64
File Edit View Windows Session Log Action Options Tools Threads Help
WS Object Tool Edit Session APL385 Unicode 32
Language Bar
1 ¯1 ⎕DT 46308.5
2026 10 14 12 0 0 0
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

1200I

1200I can **format Dyalog Date Numbers** as plain text **using a pattern template**, supporting both built-in and user-defined languages

```
DD/MM/YYYY hh:mm:ss
14/09/2026 09:02:30
```

```
DD/MM/YYYY hh:mm:ss
14/09/2026 09:02:30
```

Clearly shows how the date-time will be formatted

Regular use of case

D/M

14/9

DD/MM

14/09

```
_D/_M
14/ 9
```

D MMM

14 SEP

D MMMM

14 SEPTEMBER

D Mmmm

14 September

Dddd Doo Mmmm

Monday 14th September

```
__it__Dddd Doo Mmmm
```

Lunedì 14 Settembre

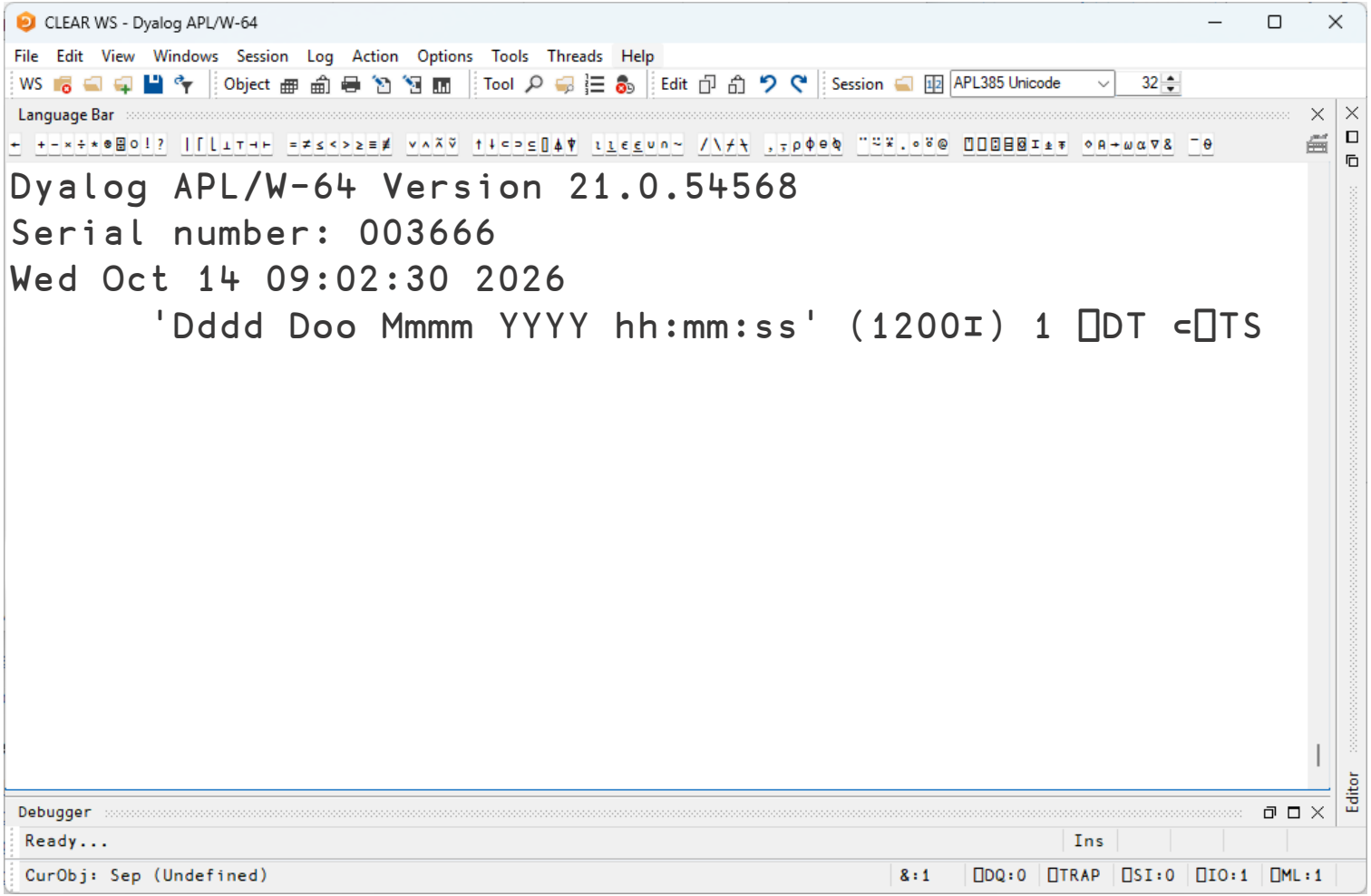
```
__it__dddd Doo mmmm
lunedì 14 settembre
```

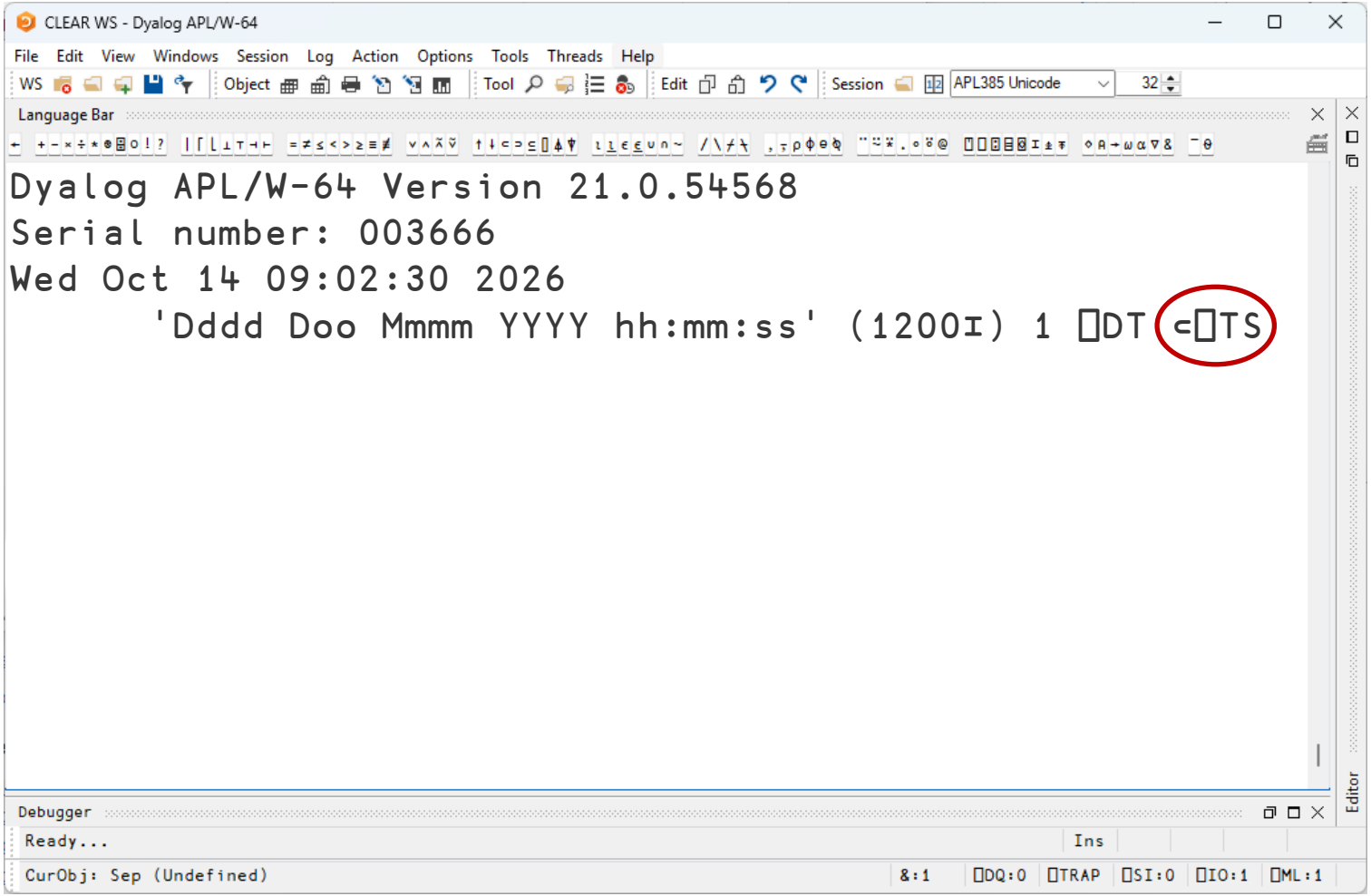
```
__it___ddd Doo _mmm
lunedì 14 settembre
```

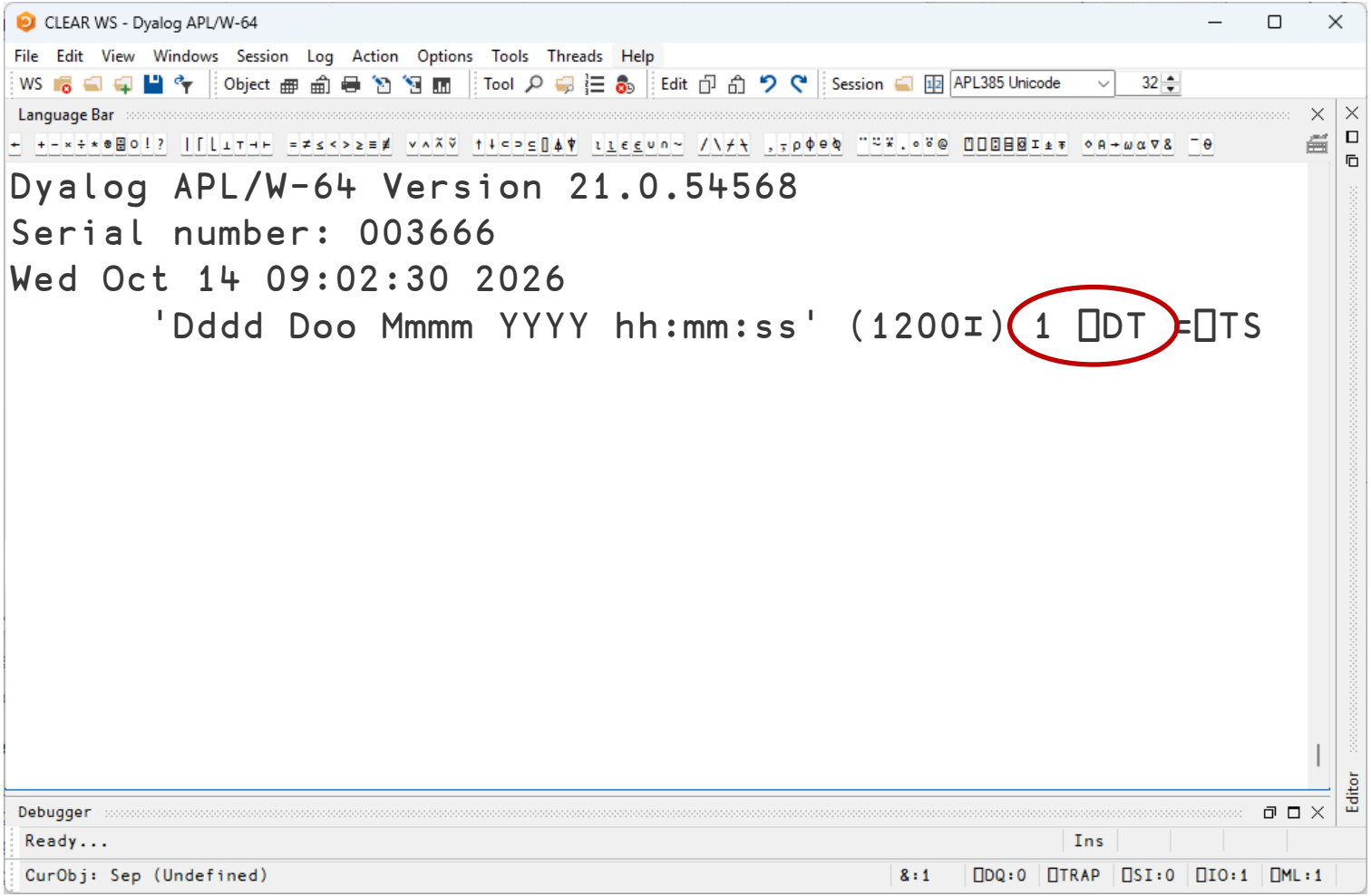
```
__it___ddd Doo _mmm
lunedì 14 settembre

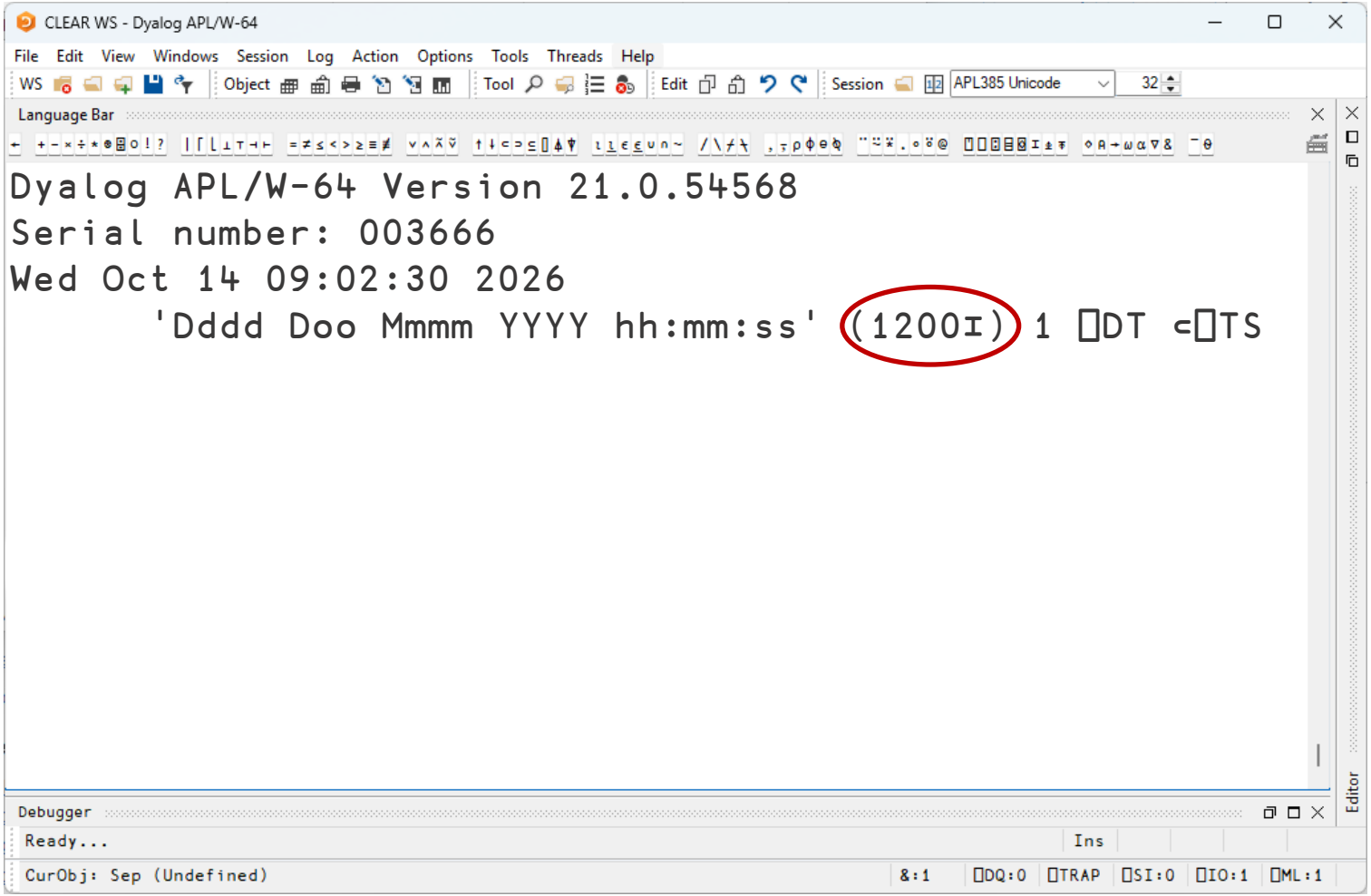
__en___ddd Doo _mmm
Monday 14th September
```

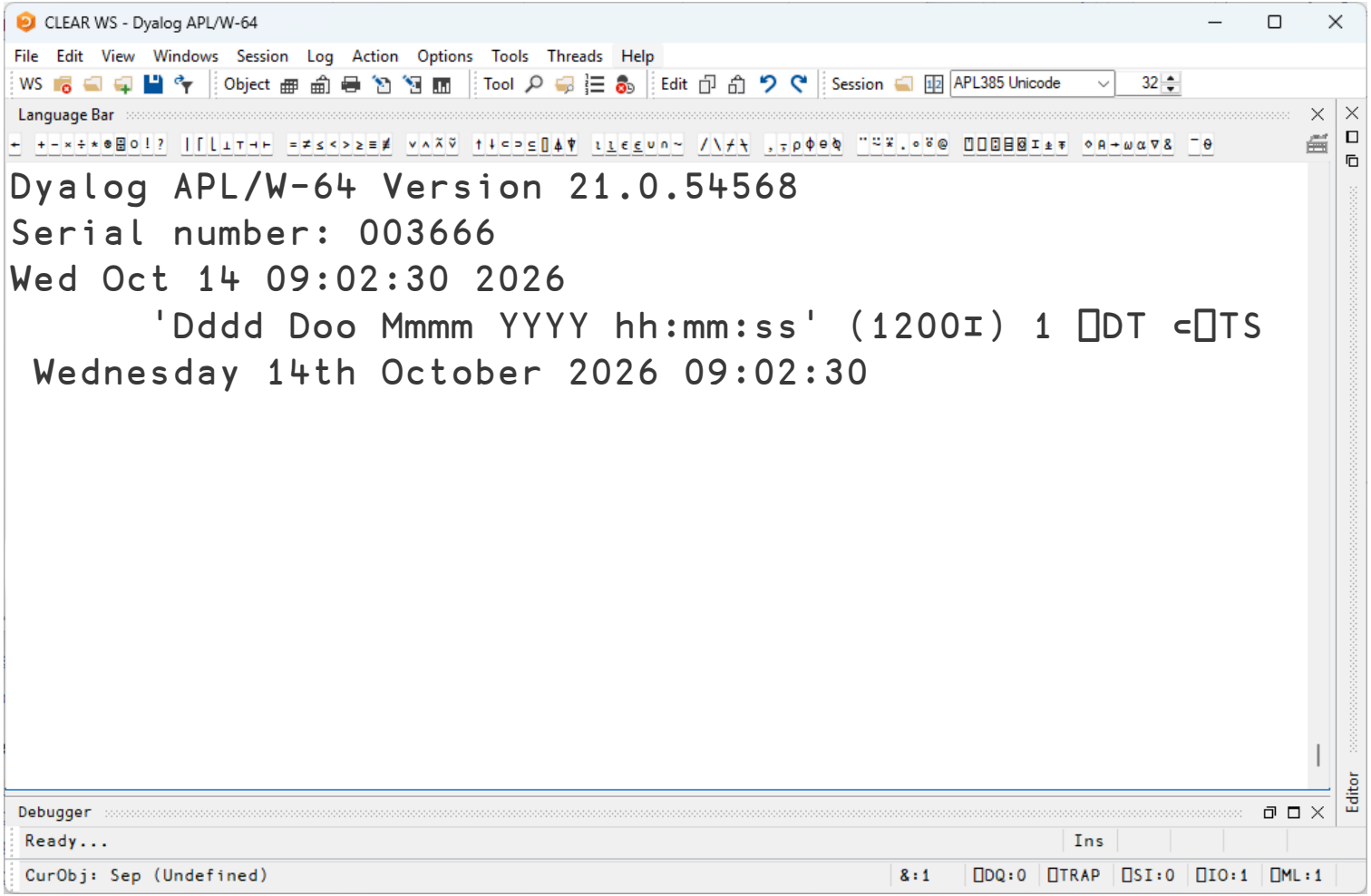
November 2026

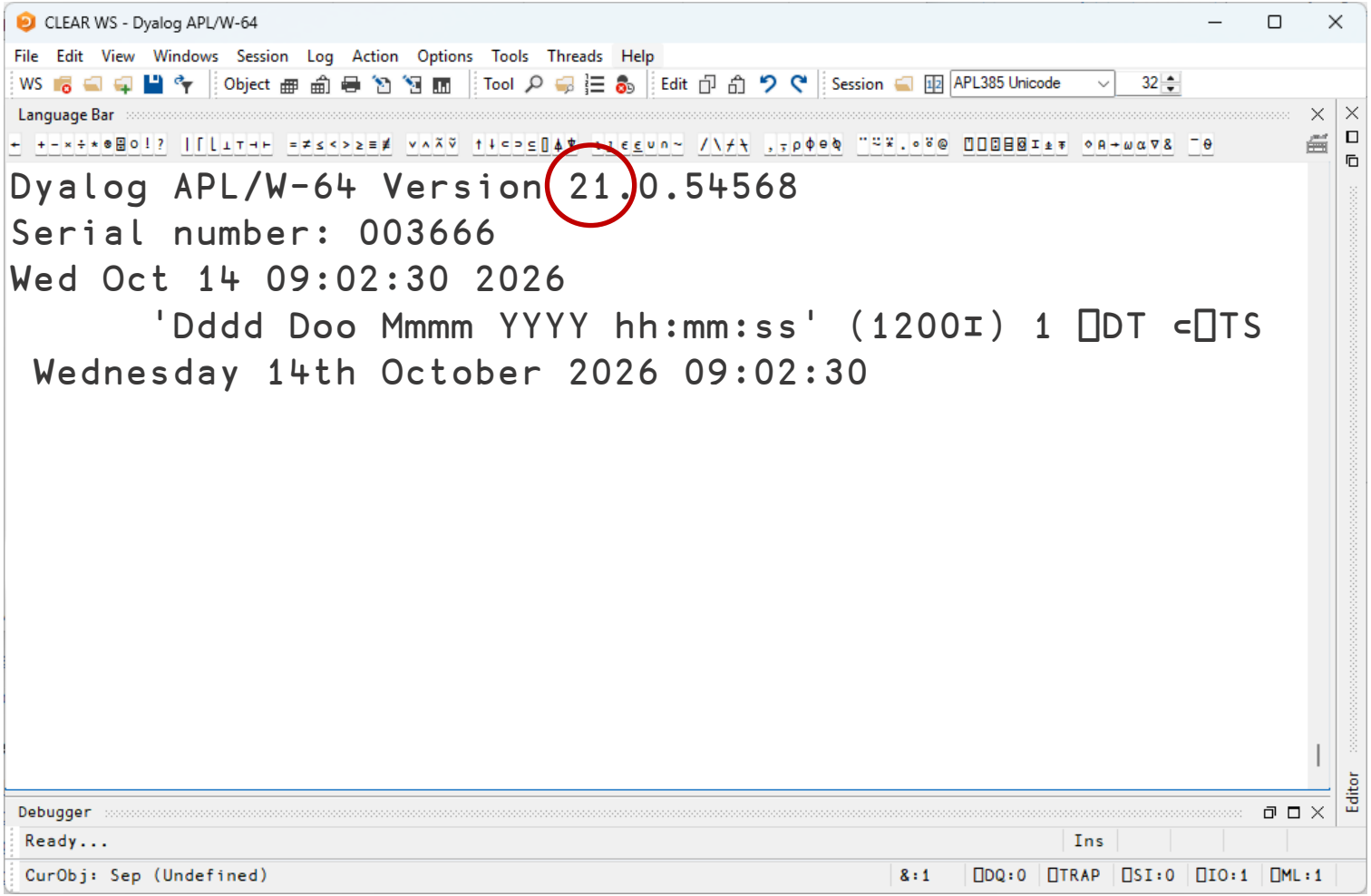

CLEAR WS - Dyalog APL/W-64
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WS Object Tool Edit Session APL385 Unicode 32
Language Bar
Dyalog APL/W-64 Version 21.0.54568
Serial number: 003666
Wed Oct 14 09:02:30 2026
'Dddd Doo Mmmm YYYY hh:mm:ss' (1200⌶) 1 ⎕DT ⊂⎕TS
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

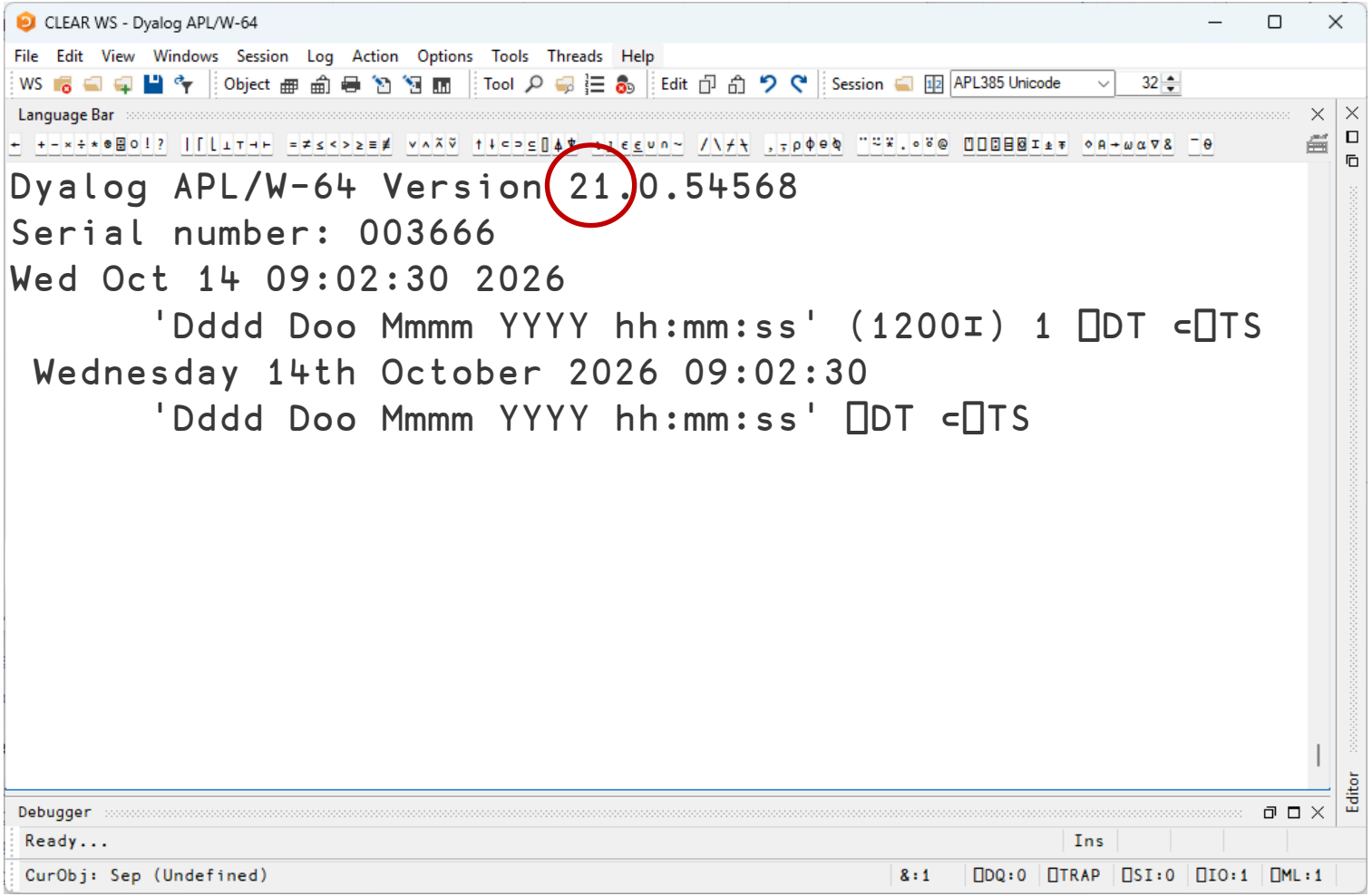

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⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

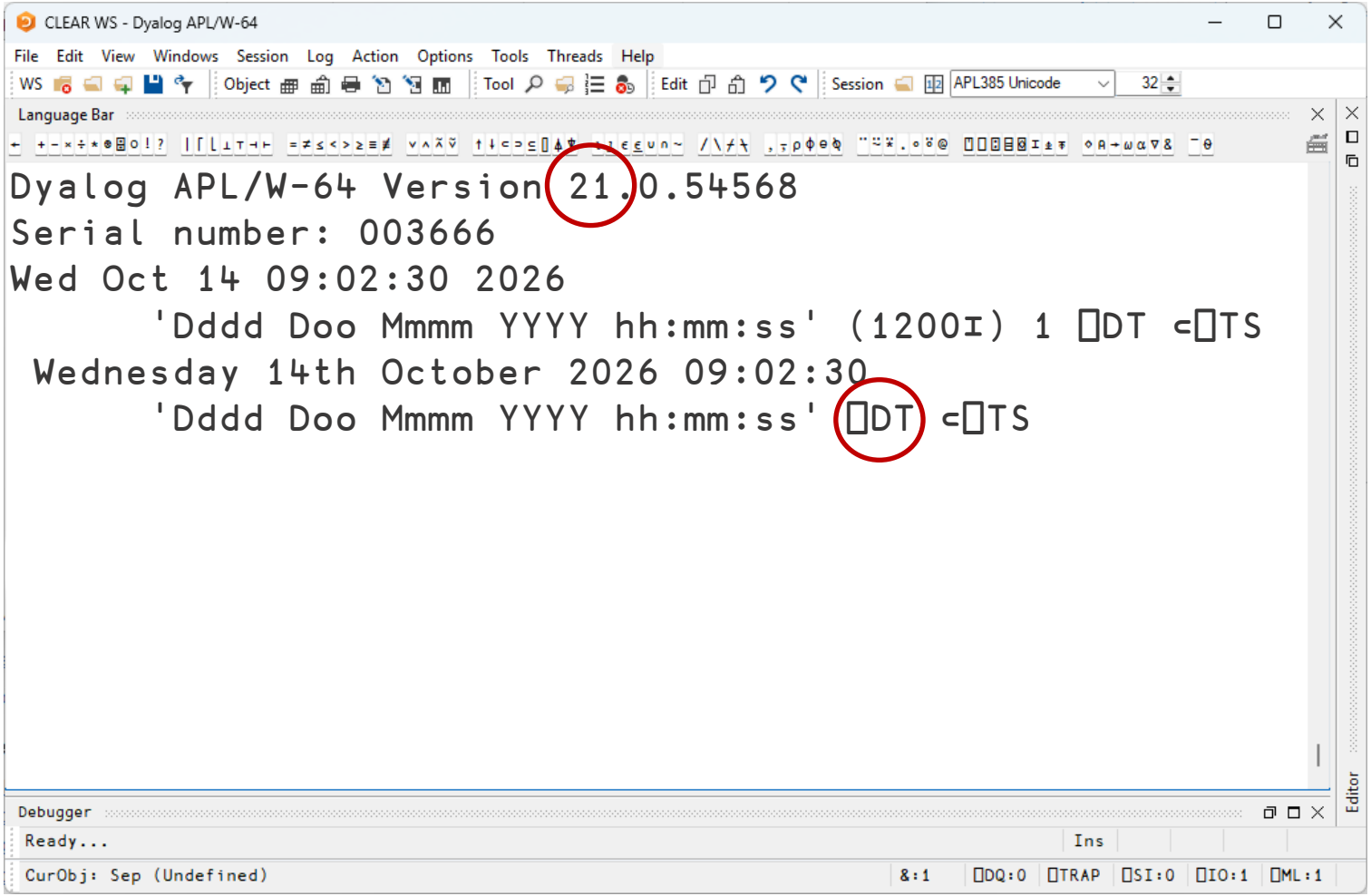

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'Dddd Doo Mmmm YYYY hh:mm:ss' (1200⌶) 1 ⎕DT ≡⎕TS
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⎕ML:1
Editor

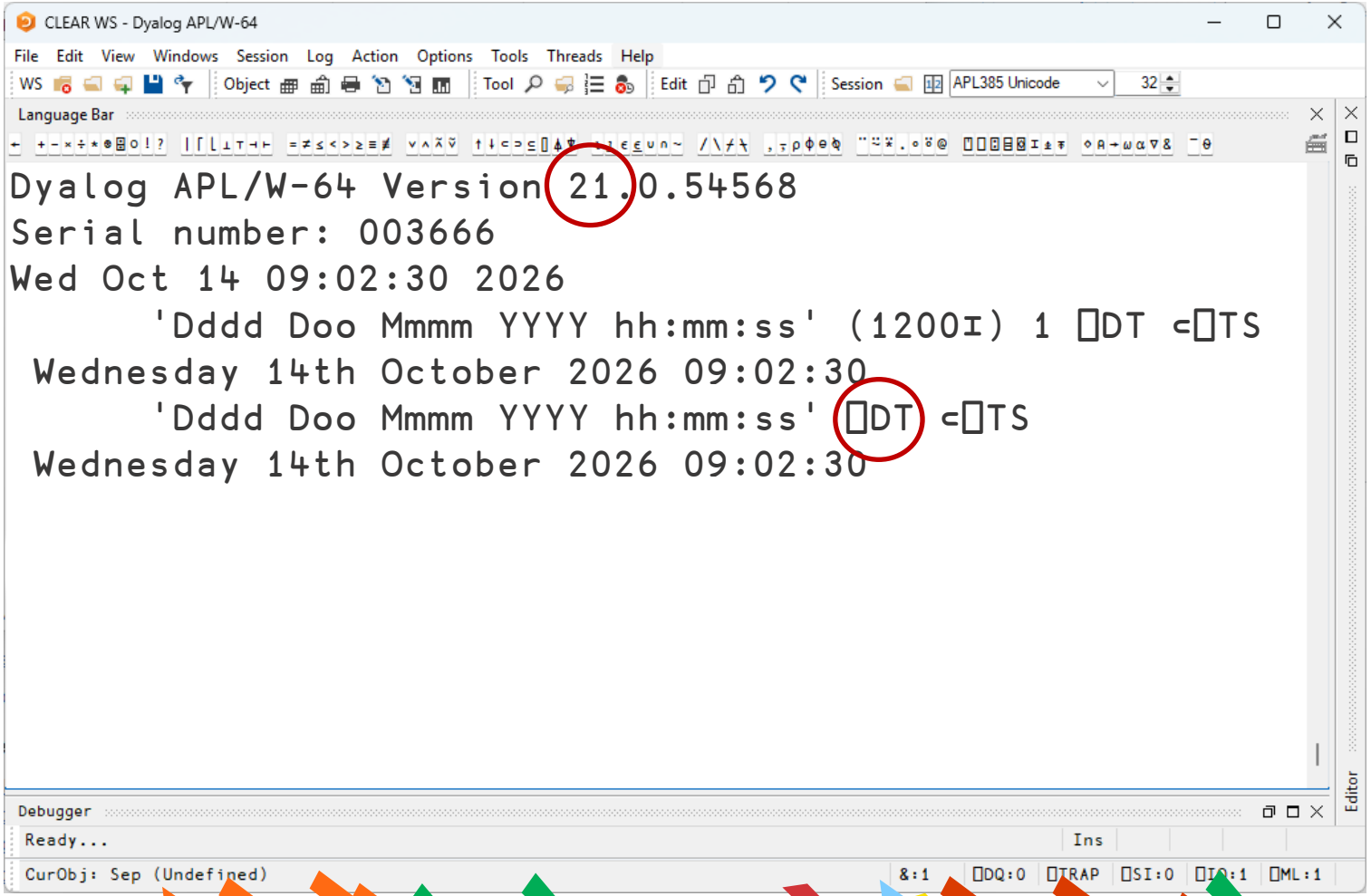

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Wednesday 14th October 2026 09:02:30
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
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'Dddd Doo Mmmm YYYY hh:mm:ss' ⎕DT ⊂⎕TS
Debugger
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Wednesday 14th October 2026 09:02:30
'Dddd Doo Mmmm YYYY hh:mm:ss' ⎕DT ⊂⎕TS
Debugger
Ready...
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CurObj: Sep (Undefined)
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⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor



WorkplaceBuddy.com

Why not ⍙DT from the start?

- We wanted to be sure the pattern design is ok 
  - … and I-Beam could be amended if required

> **! Warning**
>
> Any service provided using an 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.

1200I / ⍬DT compatibility

Any valid use of

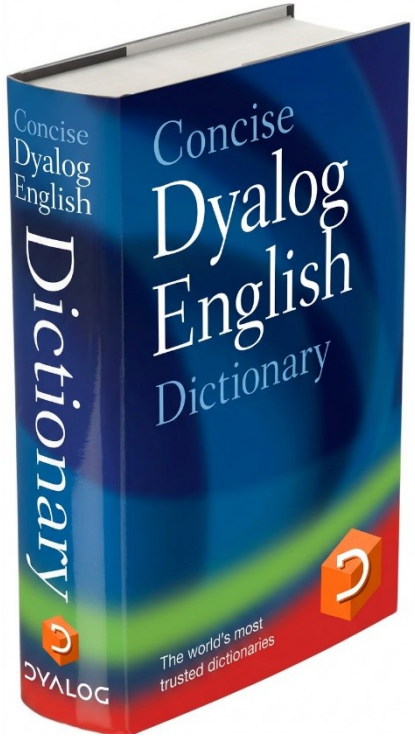
(1200I)

can be replaced by

⍬DT

(including the variant options)

In v21.0, `1200⌶` is *deprecated*



deprecate /ˈdɛprɪˌkeɪt/ ■ **v.** to indicate that a supported feature is no longer recommended for use.

But …

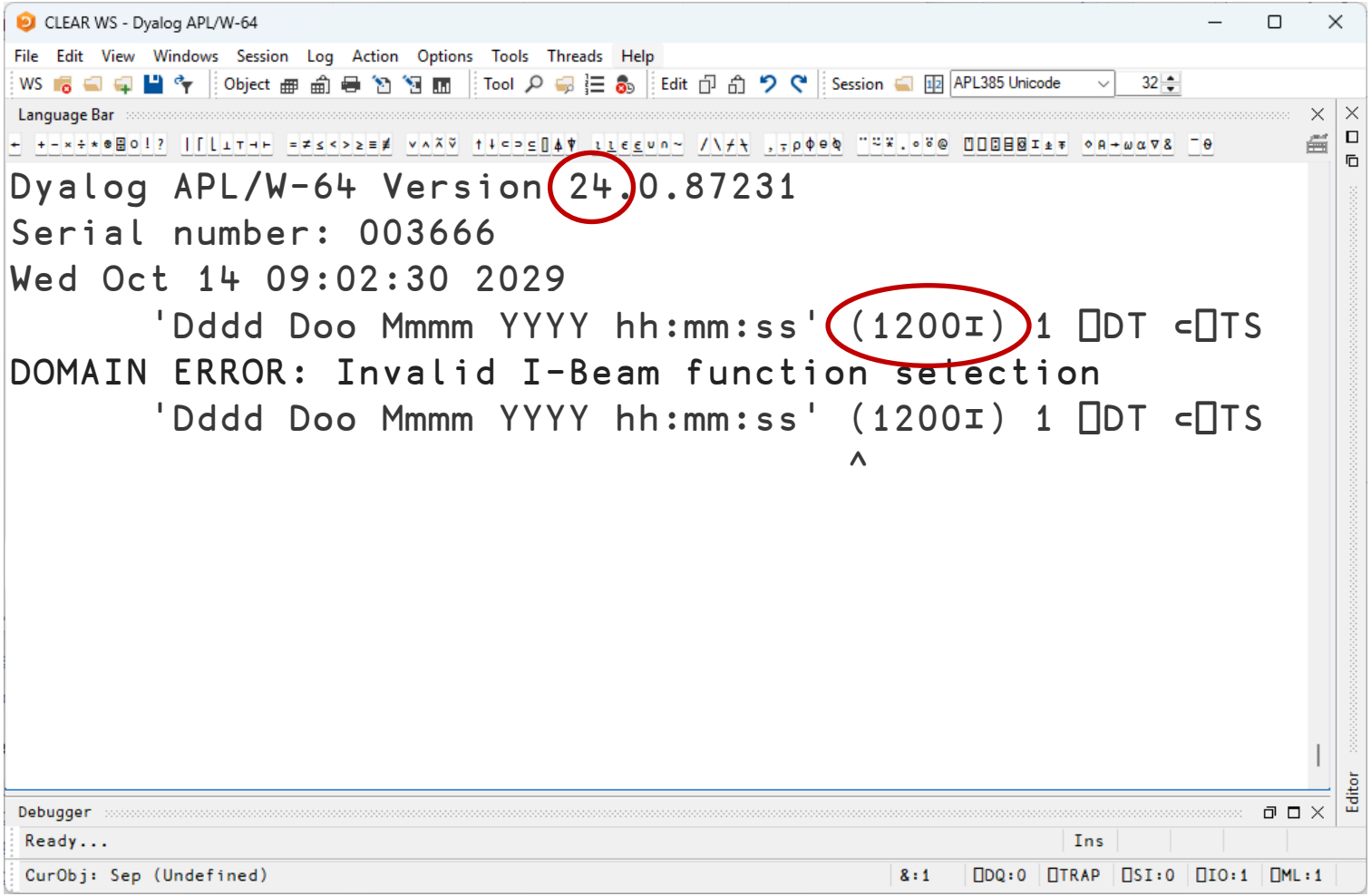
More time passes ...



2026 2027 2028

Photos by Imitat on Unsplash

Sometime
in 2029


CLEAR WS - Dyalog APL/W-64
File Edit View Windows Session Log Action Options Tools Threads Help
WS Object Tool Edit Session APL385 Unicode 32
Language Bar
Dyalog APL/W-64 Version 24.0.87231
Serial number: 003666
Wed Oct 14 09:02:30 2029
'Dddd Doo Mmmm YYYY hh:mm:ss' (1200⌶) 1 ⎕DT ⊂⎕TS
DOMAIN ERROR: Invalid I-Beam function selection
'Dddd Doo Mmmm YYYY hh:mm:ss' (1200⌶) 1 ⎕DT ⊂⎕TS
^
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

In v21.0, `1200I` is also *scheduled for future removal*

- Both `1200I` and `⍞DT` will be supported in new releases until v20.0 goes out of support
- **Find and replace all uses of `1200I` before 2029!**

Why are features **deprecated**?

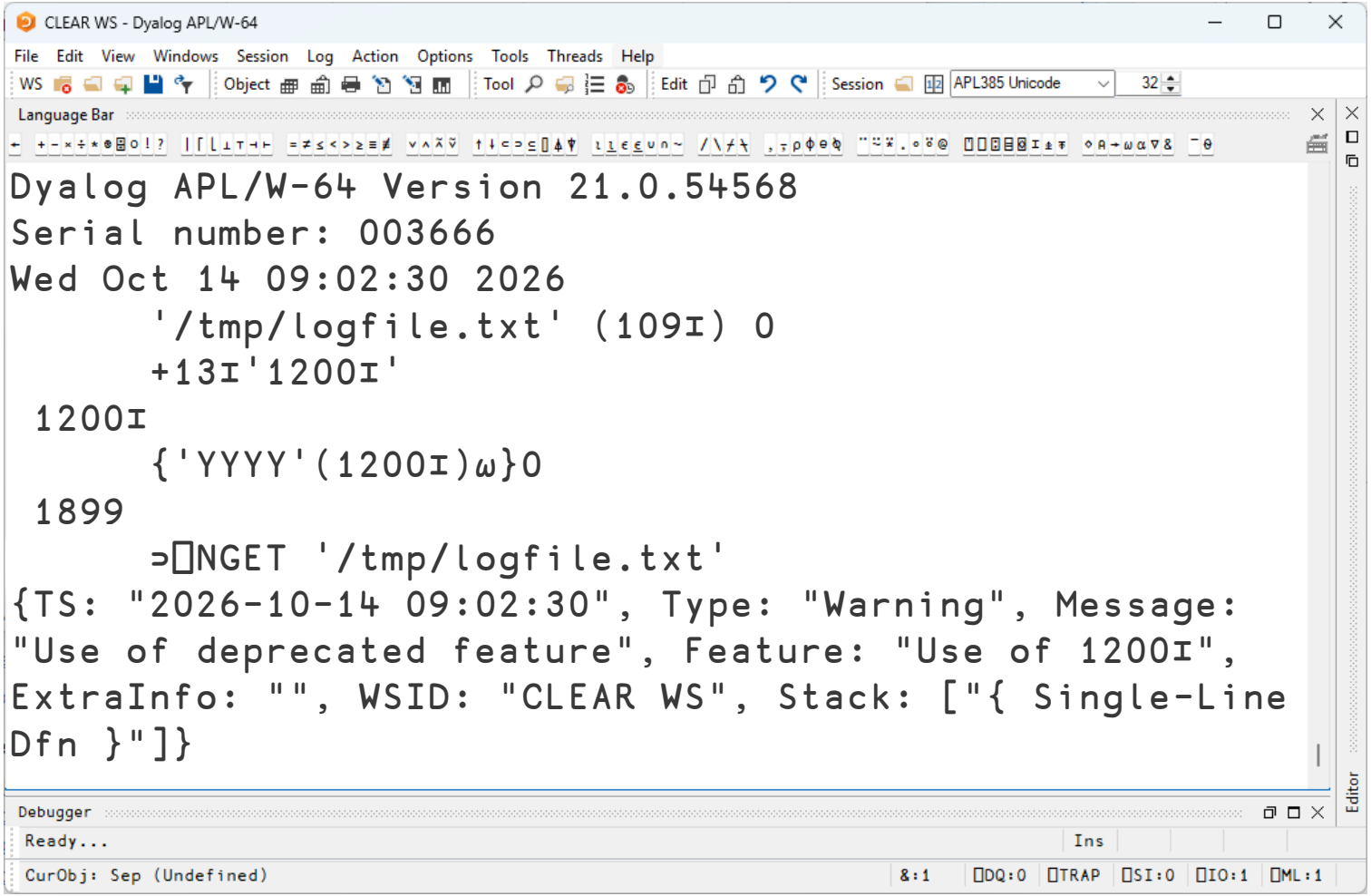
- Superior alternative
  - ⎕TC was superseded by ⎕UCS
- Always planned to be temporary
  - 7159⌶ became ⎕JSON
- Obsolete
  - Windows XP support

Why are features **removed**?

- Most often, they are not
- Sometimes there is good reason to, e.g.:
  - Impractical to test and support
  - Preventing ongoing development
  - Cleaning up temporary features

Finding deprecated features scheduled for future removal

- Specify a log file using `109I`
- Enable logging of feature usage using `13I`
- Run application
- Look at log file


CLEAR WS - Dyalog APL/W-64
File Edit View Windows Session Log Action Options Tools Threads Help
WS Object Tool Edit Session APL385 Unicode 32
Language Bar
Dyalog APL/W-64 Version 21.0.54568
Serial number: 003666
Wed Oct 14 09:02:30 2026
'/tmp/logfile.txt' (109I) 0
+13I'1200I'
1200I
{'YYYY'(1200I)⍵}0
1899
⎕NGET '/tmp/logfile.txt'
{TS: "2026-10-14 09:02:30", Type: "Warning", Message: "Use of deprecated feature", Feature: "Use of 1200I", ExtraInfo: "", WSID: "CLEAR WS", Stack: ["{ Single-Line Dfn }"]}
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
DQ:0
TRAP
SI:0
IO:1
ML:1
Editor

```
{
  "TS": "2026-10-14 09:02:30",
  "Type": "Warning",
  "Message": "Use of deprecated feature",
  "Feature": "Use of 1200⌶",
  "ExtraInfo": "",
  "WSID": "CLEAR WS",
  "Stack": [
    "{ Single-Line Dfn }",
  ],
}
```

Features scheduled for future removal as of **v20.0**

- **Small-span component files** have been impossible to create since v14.0 and read-only since v17.0. Remaining support will be **removed from 2030**.
- **External variables** are small-span component files - will be opt-in from v22.0 and **unsupported from 2029**.
- **J0C0 component files** have not been created by default since v13.1 and will become **read-only from v21.0**.

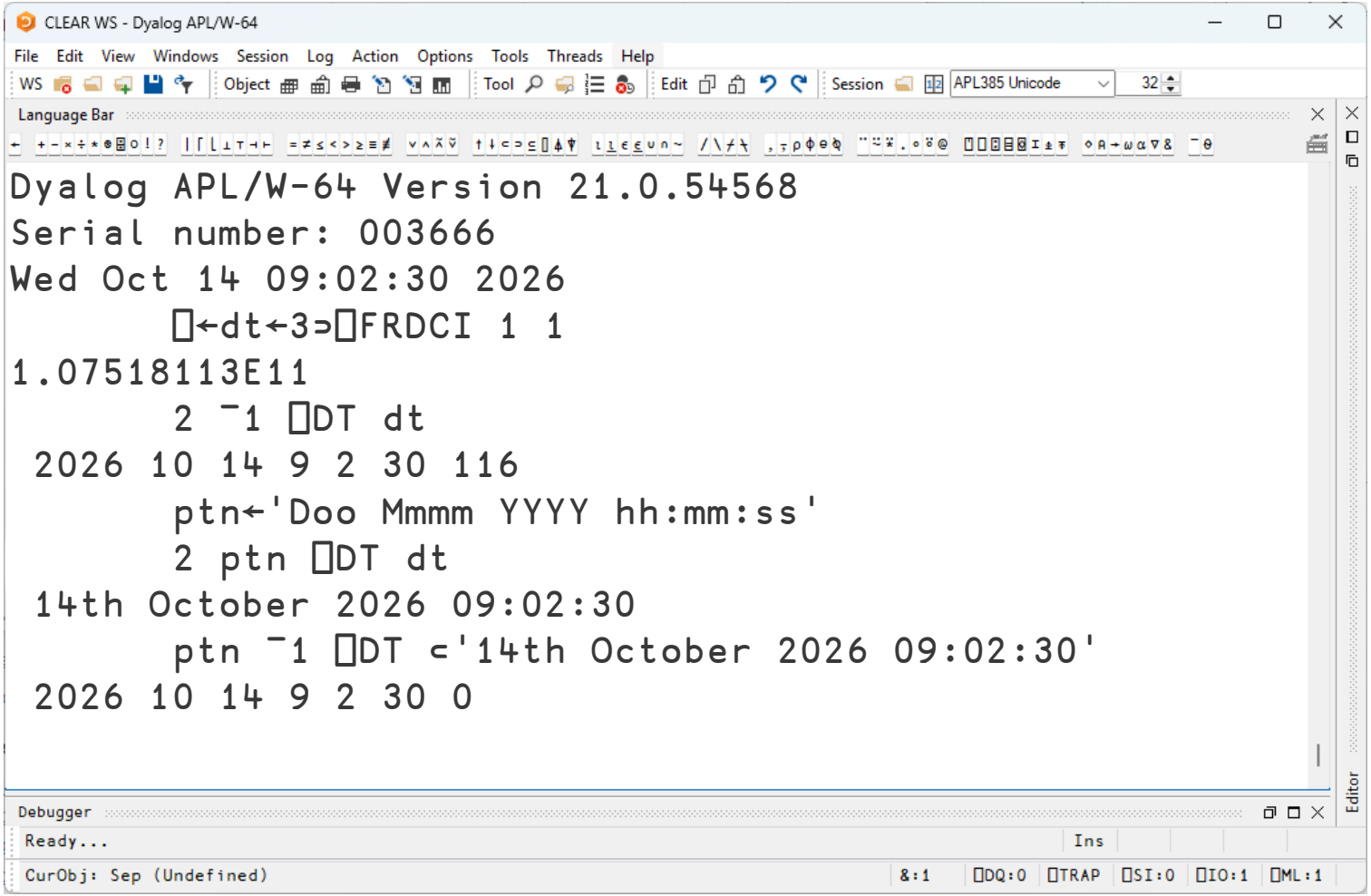
Features scheduled for future removal identified in **v20.0**

- `S32` – use of small-span component files
- `□XT` – use of external variables
- `J0C0` – writes to J0C0 component files

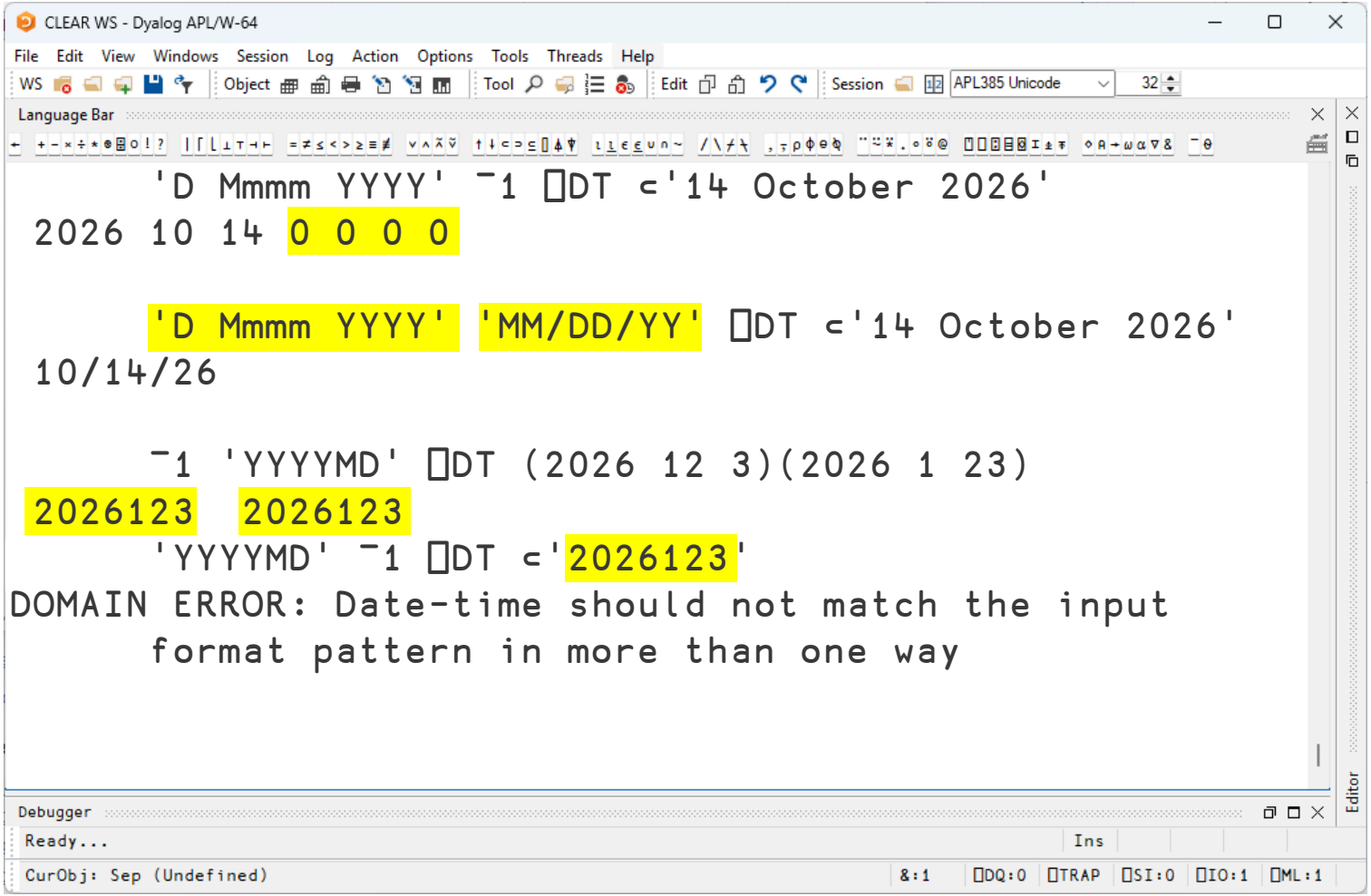
Features scheduled for future removal identified in **v21.0**

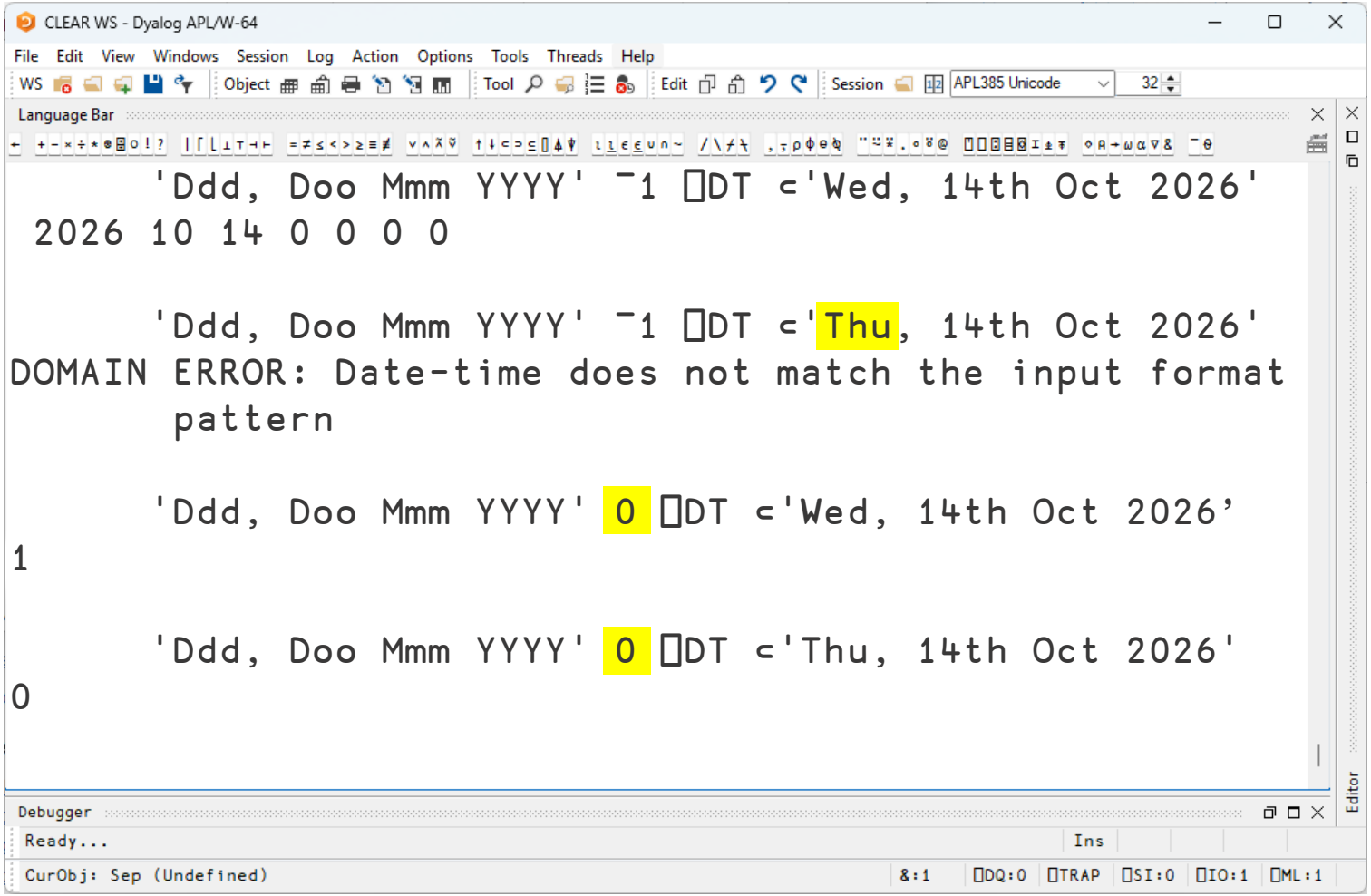
- `S32` - use of small-span component files
- `□XT` - use of external variables
- `1200I` - replaced by `□DT`
- `739I` - replaced by `□SYSTEM.Directories.Temp`
- `43I632` - replaced by new syntax using `[` and `]`

November 2026



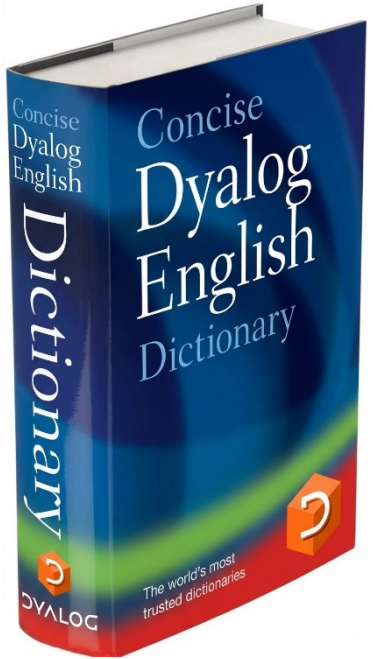
WorkplaceBuddy.com


CLEAR WS - Dyalog APL/W-64
File Edit View Windows Session Log Action Options Tools Threads Help
WS Object Tool Edit Session APL385 Unicode 32
Language Bar
'D Mmmm YYYY' ⍕1 ⎕DT ⊂'14 October 2026'
2026 10 14 0 0 0 0
'D Mmmm YYYY' 'MM/DD/YY' ⎕DT ⊂'14 October 2026'
10/14/26
⍕1 'YYYYMD' ⎕DT (2026 12 3)(2026 1 23)
2026123 2026123
'YYYYMD' ⍕1 ⎕DT ⊂'2026123'
DOMAIN ERROR: Date-time should not match the input
format pattern in more than one way
Editor
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1


CLEAR WS - Dyalog APL/W-64
File Edit View Windows Session Log Action Options Tools Threads Help
WS Object Tool Edit Session APL385 Unicode 32
Language Bar
'Ddd, Doo Mmm YYYY' ⍕1 ⎕DT ⊂'Wed, 14th Oct 2026'
2026 10 14 0 0 0 0
'Ddd, Doo Mmm YYYY' ⍕1 ⎕DT ⊂'Thu, 14th Oct 2026'
DOMAIN ERROR: Date-time does not match the input format pattern
'Ddd, Doo Mmm YYYY' 0 ⎕DT ⊂'Wed, 14th Oct 2026'
1
'Ddd, Doo Mmm YYYY' 0 ⎕DT ⊂'Thu, 14th Oct 2026'
0
Debugger
Ready...
Ins
CurObj: Sep (Undefined)
&:1
⎕DQ:0
⎕TRAP
⎕SI:0
⎕IO:1
⎕ML:1
Editor

Recap

- Dyalog has published a dictionary?!



Recap

- The functionality of `1200I` has been added to `⎕DT`
- `⎕DT` can also convert *from* formatted text
- `1200I` has been deprecated and will be removed in future
- `109I` and `13I` can log uses of `1200I` (etc.)