

DIALOG

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Development Masterclass

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Overview

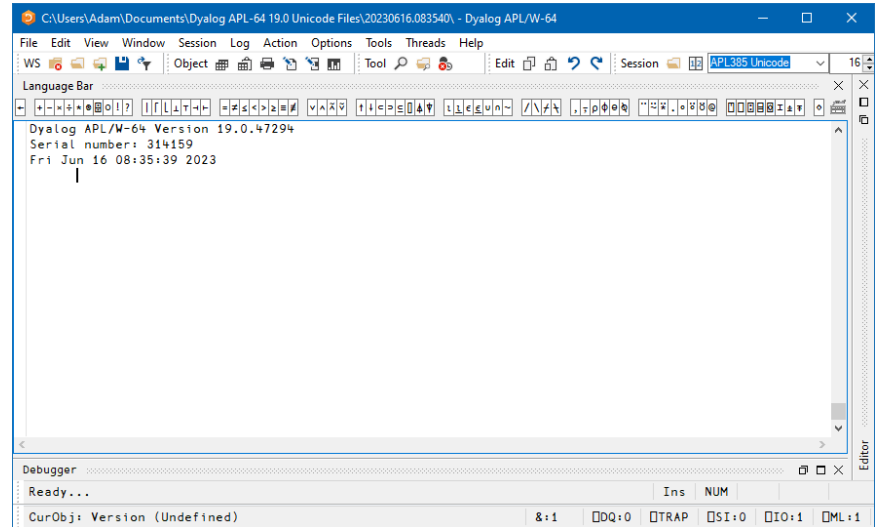
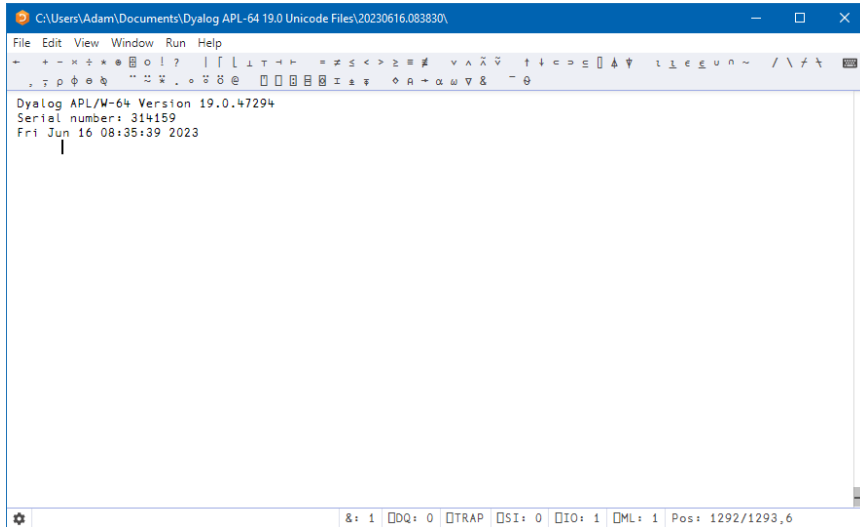
The interactive session

Searching code

Tracing and stopping code



RIDE vs the Windows IDE



User Commands for Output

For the whole session:

`]box`

`]rows`

`]output.find`

For a single expression:

`]display`

`]view`

`]repr`

Don't forget to save your session: `□SE.FileWrite`



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User Commands for Output

For the whole session:

```
]box
```

```
]rows
```

```
]output.find
```

For a single expression:

```
]display
```

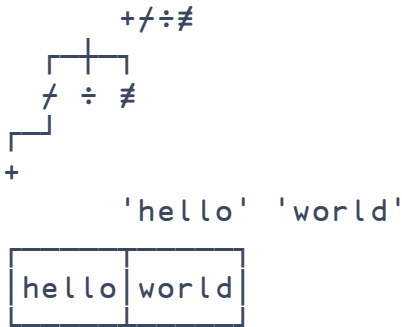
```
]view
```

```
]repr
```

Don't forget to save your session: `SE.FileWrite`

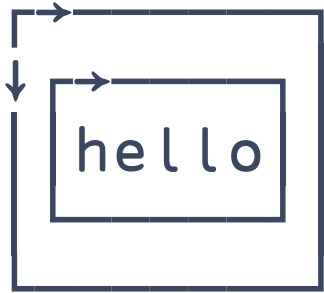
Task: Make your session look like this

A grid of boxes containing the words "hello" and "world" in a repeating pattern. An orange callout box highlights the code `99 99p'hello' 'world'`.



Discussion: What happened here?

```
]display 'hello'
```



Task preparation

- ◆ `]get -u github.com/dyalog-training/2023-SP2`
- ◆ `]box off`
- ◆ `]rows off`
- ◆ `]output.find off`



Task: What's wrong with a?

a				
6	17	23	18	11
15	4	13	3	20
21	12	5	10	9
16	14	25	8	19
2	7	22	24	1

a ÷ 2
DOMAIN ERROR

a ÷ 2

^

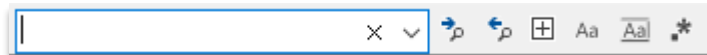
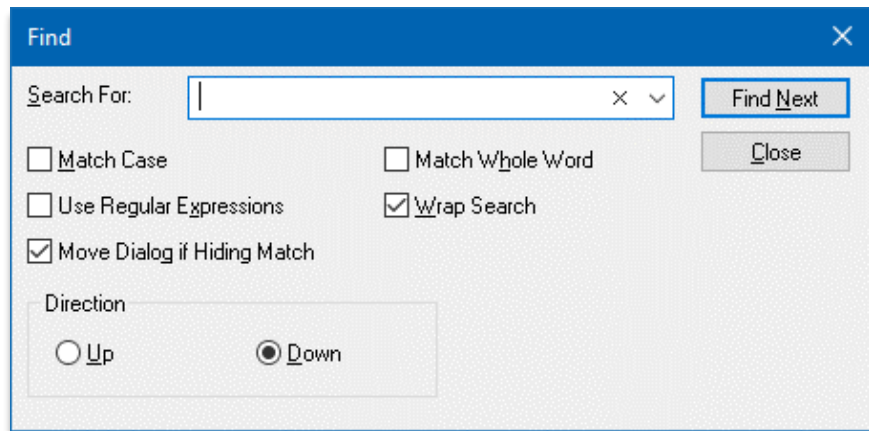
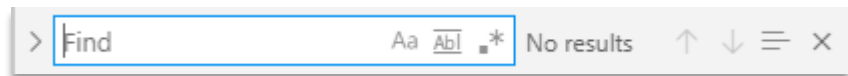
pa

5 5

<your experiments>



Basic Search



Task: Find something

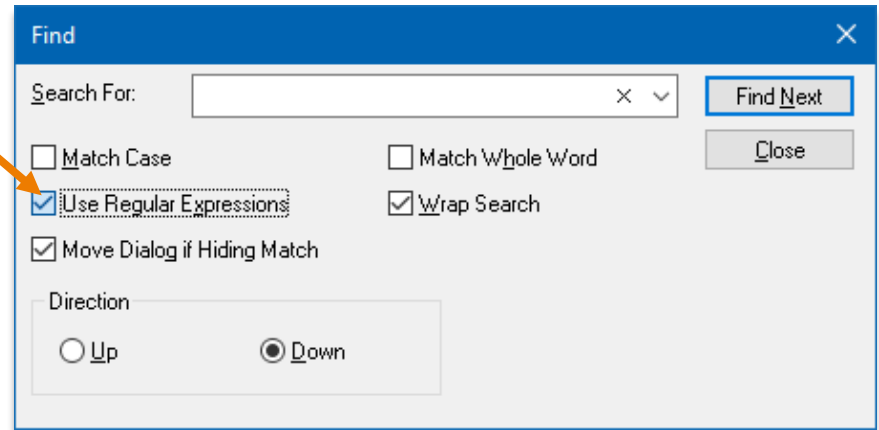
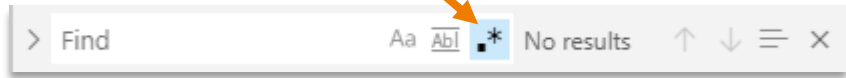
Note: `SE.SALTUtils.delify` is a tacit function, so you can't just do `)ed SE.SALTUtils.delify`

Task:

- `)ed SE.SALTUtils`
- Find where `delify` is *defined*
- Can you find it with one search action?



Basic Regular Expressions



Basic Regular Expressions (“regex”)

`.` any character

`\d` any digit

`\w` any word character

`\s` any space character

`[]?` zero or one `[]`

`[]*` zero or more `[]`

`[]+` one or more `[]`

`\[]` normal* meaning of `[]`

* Special: `.` `|` `\` `?` `*` `+` `()` `{ }` `[]` `^` `$`



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Basic Regular Expressions (“regex”)

.	any character	[]?	zero or one []
\d	any digit	[]*	zero or more []
\w	any word character	[]+	one or more []
\s	any space character	\[]	normal* meaning of []

* Special: . | \? *+ () { } [] ^ \$

Tasks: Use regex in search

□SE.Dyalog.Utils has a comment about □R.

What does it say?

User commands are] followed by one or more letters.

Highlight the user command names in □SE.Dyalog.Utils



Basic Tracing

```
▽ r←Example y;z;num
  'It begins!'
  num←0
  10÷num
  SubFn←{
    ω←ω
    φω
  }
  z←SubFn¨100ρ□A
  r←SubFn¨y
```

▽



Basic Tracing



Tracing Code

- ▶ ↻ Normal execute
- ↓ ⚡ Trace into
- ← ← Skip back
- → Skip over
- > ▶ Continue running
- ⊗ ⊗ Back out (↶ in RIDE 4.5)

Mode Switching

- Esc Session to Tracer
- ✎ 📄 Tracer to Editor
- ⊗ ⊗ Editor to Tracer (save changes)
- Shift Esc Editor to Tracer (discard changes)



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Basic Tracing



Tracing Code

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Mode Switching

- Esc Session to Tracer
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(save changes)
- Shift Editor to Tracer
(discard changes)
- Esc

Task: Basic Tracing

```
▽ r←Example y;z;num
  'It begins!'
  num←0
  10÷num
  SubFn←{
    □←ω
    φω
  }
  z←SubFn¨100ρ□A
  r←SubFn¨y
```

▽

Trace into
Example 'Hello' 'World'

Stop at $\phi\omega$
where ω is 'World'

Do not edit the function!



Task: Practice Debugging

Using the supplied materials, try running

```
ProcessDNA fastaData
```

It will error. Fix the bug!

Hint: It is just a constant number that's wrong



Stop and Trace points demo



Task: Print the Hailstone Sequence

```
Hailstone 14 15 16
1 1 1
```

Print the sequence without modifying the function:

```
Hailstone 15
Hailstone[3] 46
Hailstone[5] 23
Hailstone[3] 70
Hailstone[5] 35
Hailstone[3] 106
Hailstone[5] 53
Hailstone[3] 160
```



Discussion: Custom trace printout

```
MyTrace ← {□ ← α '@' □ TS}
```

```
□ se.onSessionTrace ← 'MyTrace'
```

```
Hailstone 15
```

- What are the values of α and ω ?



Task: Collect the Hailstone sequence

Gather the values into a variable:

```
r ← 0
```

```
{ } Hailstone 15
```

```
r
```

```
46 23 70 35 106 53 160 80 40 20 10 5 16 8 4 2 1
```



Task: Conditional stop

RandyT's `rand` gives numbers, but one is strange

- What value in `rand` causes it?
- Make RandyT stop only when it reaches that value

Bonus tasks if you finish the above:

- Do the same for RandyD
- How do you resume execution from there?



Summary: What did you learn?

1. Navigate session
2. Tweak output
3. Interpret boxed display
4. Searching, incl. regex
5. Tracing
6. Navigating the stack
7. Stop and Trace points
8. Tweaking trace output
9. Conditional stops

