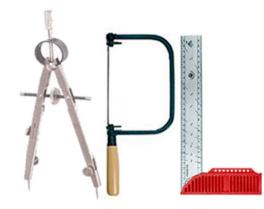


Elsinore 2023





Brian Becker

APL Tools Architect, Dyalog LTD



Elsinore 2023

APL Tools Update

Brian Becker

APL Tools Architect, Dyalog LTD



An APL Tool...

- is a software component that the user can:
 - embed in their APL application
 - use to develop their APL application
- is generally written in APL, but not always
- is not an application in and of itself

APL Tools at Dyalog

- 60+ workspaces delivered with Windows Dyalog
 - Core utilities, tutorials, games, demonstrations
- Built-in
 - included as user commands or]LOAD'able
- ~20 GitHub Repositories
- 2 Tatin APL Packages (so far)



Web Enabling Tools

- Jarvis JSON and REST web service framework
- HttpCommand send HTTP commands and process server response
- DUI/MiServer HTML web server and content creation
- SAWS SOAP/XML web service framework

Data Tools

- loaddata.dws read and write Excel, csv, XML
- newleaf.dws format and produce PostScript documents
- sharpplot.dws produce high quality SVG or PDF graphs
- Math eigen, domino, Fourier

Interface Tools

- conga.dws TCP/IP toolkit
- sqapl.dws SQL ODBC
- aplservice.dws run as a Windows service
- APLProcess spawn an interpreter in another process
- isolate.dws parallel execution in multiple APL processes
- pynapl Python/APL interface
- DUI cross platform UI

Development/Deployment Aids

- Link map workspace to folder structure
- DBuildTest framework to build and test applications
- Cider project management
- Tatin package management

Tool Availability

- To the extent possible, we try to support:
 - The latest 3 releases of Dyalog APL, plus future releases in the pipeline. Today that means 17.1, 18.0, 18.2, 19.0 and 20.0
 - All applicable platforms: Windows, Mac, Linux, Pi and AIX
 - Classic and Unicode
 - 32 and 64 bit
 - Containerized, headless, scripted

```
Releases o., Platforms o., Classic/Unicode o., 32/64
```



2024 Goals

- Work with customers to identify tools that will help them succeed
- Make it easier to find what tools are available
 - Website, blogs, forums
- Make tools easier to learn
 - Documentation, webcasts, samples and tutorials
- More comprehensive testing
 - broader test suites
 - CITA Continuous Integration Testing in APL



Specific 2024 Goals

- HttpCommand add features per customer needs, webcasts
- Jarvis "industrialize", finish documentation, webcasts
- WebSocketServer come up with a better name, publish version 1
- APLProcess document and publish release
- Packages publish more Dyalog packages on Tatin (you're not retiring that easily Morten ⁽³⁾)



HttpCommand

• Designed with APLers in mind to issue an HTTP request and return the response from the host in a manner useful to the user.

• Used for:

- Interacting with web services
- Downloading files from the web
- Scraping web pages
- Any HTTP interaction
- Demo now]demo /dyalog23/httpcommand



HttpCommand

```
url←'https://api.github.com/orgs/Dyalog/repos'
params←('per_page' 5) ('sort' 'pushed') ('direction' 'desc')
```

tr.Data.(name pushed_at)

HttpCommand	2023-10-14T20:13:50Z
Jarvis	2023-10-14T14:47:09Z
CITA	2023-10-13T12:44:56Z
link	2023-10-12T15:12:02Z
dyalog-jupyter-kernel	2023-10-11T15:53:12Z



Jarvis

- A few years ago, a customer wanted to make the APL functions their group had written available to other (non-APL) parts of the company.
- As often happens, Morten had an idea on how to address their need...
 (and asked me to make it happen)
- Over a weekend, I wrote the JSONServer, and it was well received.
- Some time later another customer wanted the capability to deliver a RESTful web service with JSONServer.
- JSONServer \rightarrow Json And Rest serVIce \rightarrow JARVIS



Jarvis

- Jarvis is a framework that makes it easy to expose your APL functionality as a web service.
- How easy? Let's see...
- Demo time]demo /dyalog23/jarvis



Suppose...

- You have a web application with a HTML/CSS/JavaScript client.
- If you use standard HTTP requests, the only way to get updated information from the server is to ask for it.
- Wouldn't it be nice if the server could "push" updated information in real time without the client having to ask for it.
- WebSockets can accomplish precisely that (and more)



Sneak Peek at WebSocketServer

- WebSocketServer is, well, a WebSocket server.
- What's a WebSocket? I'm glad you asked...
- WebSocketServer is designed to facilitate different modes of interaction
 - Publish/Subscribe (PubSub)
 - Asynchronous Remote Procedure Control (ARPC)
 - any others we think will be useful and implementable
- It *may* become integrated with Jarvis
- Demo time]demo /dyalog23/wss

Tools, Tools, and More Tools

- There are several other sources of tools in the APL community
 - Adám Brudzewsky <u>https://github.com/abrudz</u>
 - Kai Jeager <u>https://github.com/aplteam</u>
 - Tatin <u>https://tatin.dev</u>
 - Carlisle Group <u>https://github.com/the-carlisle-group</u>

Summary

- Our customers are our partners we're in this together
 - If you have a need, tell us. Jarvis exists today because a customer communicated a need to Morten...
 - Many features in our tools are in direct response to feedback from our customers.
 - Report bugs, suggest features, contribute code

