

DYALOC

2021



APL Media Update

Rich Park

- The Mission
- The Plan
- Watch, Read and Listen Now
- Coming Up...



The Mission

Improve the new APLer experience

Inclusivity helps everyone

Getting Started

Getting started with any new programming language can seem like a daunting task, and the Dyalog application development platform ships with enough features that you might appreciate some guidance to help you get started. The resources on this page are free of charge and aimed at APL novices.



APL Seeds

Events aimed at those who are just starting their APL journey.

[Download the materials from APL Seeds '21](#)



Basics

Resources to help you take your first APL steps:

- [Tips](#) is a page of "useful to know" suggestions from previous beginners.
- [Mastering Dyalog APL](#) by Bernard Legrand is a complete guide to the use of Dyalog, beginning with a thorough introduction to the APL programming language and progressing to worked examples. The book is available for purchase through [Amazon](#); a [free PDF download](#) and an [online revision](#) (currently under development) are also available.
- [TryAPL](#) offers an interactive environment that allows users to play with simple APL expressions. Its [Learn tab](#) includes tutorials in which various scenarios are explored.
- [APL Wiki](#) includes [simple examples](#) of APL in action (as well as some [more advanced ones](#)).
- [APL Cultivation](#) is a series of chat lessons that were run through the [APL Orchard](#) chat room.
- [APL Course](#) is a self-study introduction to Dyalog with exercises.
- [APL Tutor](#) is an online system that takes a complete novice through the terminology, conventions and functionality of APL (not specific to Dyalog's dialect) – it looks a little dated but is a useful introduction.

Getting Started

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Basics

Resources to help you

- [Tips](#) is a page of
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Getting Started

Mastering Dyalog APL

Training

Dyalog in Education

TryAPL

Stack Exchange Lessons

APL Problem Solving Competition

Join us online for

Dyalog 2021 -

Participation is free

Joining with a thorough book is available for purchase. (It) are also available.

onions. Its [Learn tab](#) includes

CLICK HERE TO REGISTER

The Plan

🟡 dyalog.tv



No.	Date	Presenter(s)	Title
38	18 Feb 2021	Adám Brudzewsky	Error Handling - Part 1 ↗
39	18 Mar 2021	Richard Park	Boolean scans and reductions ↗
40	15 Apr 2021	Adám Brudzewsky	Error Handling - Part 2 ↗
41	13 May 2021	Rodrigo Girão Serrão	Drawing the Mandelbrot Set ↗
42	10 Jun 2021	Adám Brudzewsky	Error Handling - Part 3 ↗
43	8 Jul 2021	Richard Park	Database Basics ↗
44	5 Aug 2021	Adám Brudzewsky	Error Handling – Part 4 ↗
45	2 Sep 2021	Richard Park	TryAPL v3 ↗
46	30 Sep 2021	Adám Brudzewsky	Error Handling – Part 5 ↗

The Plan

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- 🟡 dyalog.com

The Plan

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- 🟡 dyalog.com
- 🟡 mastering.dyalog.com



Mastering Dyalog APL

🔍 Search this book...

1. Introduction - Will You Play APL With Me?
2. Getting Started
3. Data and Variables
4. Some Primitive Functions
5. User-Defined Functions
6. First-Aid Kit
7. Execute & Format Control
8. Working on Data Shape
9. Special Syntax
10. Appendices

Powered by [Jupyter Book](#)



Mastering Dyalog APL

The “[Mastering Dyalog APL](#)” book is the *de facto* standard for people who are looking to learn Dyalog APL from a book. In today’s world technology changes rapidly, so a printed book about a programming language is at risk of becoming outdated.

! Attention

This online version is a **work in progress**. It is missing chapters and sections and the content here may undergo heavy revision.

The first edition of “Mastering Dyalog APL” is an excellent resource but is becoming more and more outdated as the years go by and Dyalog APL evolves. For that matter, an updated and more modern version of the book is being created out of Jupyter Notebooks (available in [this GitHub repository](#)) to provide for a more interactive learning experience for those who like to read and experiment. A [static online version](#) also exists, and a printed version will be made available for those of you who prefer to hold a paper book in their hands.

The first edition dates back to November of 2009 and was written by Bernard Legrand, with most grateful acknowledgements to the contributors:

- Kim S. Andreasen
- Daniel Baronet
- Gitte Christensen
- Peter Donnelly
- Morten Kromberg
- John Scholes
- Adrian Smith
- Tim JA. Smith

The Plan

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- 🟡 dyalog.com
- 🟡 mastering.dyalog.com
- 🟡 course.dyalog.com



The Plan

APL Course

About

First Steps

Dfns and Assignment

Selecting from Lists

The Outer Product

Shape Reshape

The Array Model

APL Course

A self-study introduction to Dyalog APL with exercises.

This course consists of a series of short instructional notes interleaved with problem sets. The first few sessions are accompanied by video tutorials.

Status

This site is a work in progress. Currently we are transferring content from [APL Workshop](#) while reviewing and updating it.

Table of contents

Status

Getting Started

Audience

Feedback



The Plan

- ◆ dyalog.tv
- ◆ dyalog.com
- ◆ mastering.dyalog.com
- ◆ course.dyalog.com
- ◆ Continue to support external APL efforts



Learn By Doing

Stefan Kruger's Book:

xpqz.github.io/learnapl

Dyalog APL Course (Work In Progress):

course.dyalog.com

$x \left(+ \neq x \div -1 \right) \div 1 \ 2 \ \vdash y$

Learning APL



Learn By Doing

Stefan Kruger's Book:

xpqz.github.io/learnapl

U01: Here's The Plan:
Learn APL, and Write a
Book About It
Stefan Kruger

Dyalog APL Course (Work In Progress):
course.dyalog.com



apl.wiki/learning_resources



Learn By Doing

Try
APL 3.0

- ◆ Open API
 - ◆ Save and Load "workspaces"
 - ◆ @tryaplbots
 - ◆ Improving Jupyter notebook support
- Webinar: Presenting TryAPL v3 (dyalog.tv)

apl.wiki



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Welcome to APL Wiki,

358 articles about APL that anyone can edit

APL is an [array-oriented programming language](#)^w. Its natural, concise [syntax](#) lets you develop shorter programs while thinking more about the problem you're trying to solve than how to express it to a computer.

Running APL

Traditionally a commercial language, quite a few implementations are now free without feature limitations, several can be tried online, and many are [open source](#).

[Running APL](#) · [Try APL online](#)

Hello world

Taking up a new programming language can be a daunting task. While it can appear cryptic at first, you can learn to [read](#), write and [remember](#) APL with little effort. There is plenty of material to help you in the process.

[Introductions](#) · [Learning resources](#) · [Language overview](#)

Who uses it?

APL is used by both hobbyists and application developers. There are active [user groups](#) all around the globe, many of these hold regular in-person meet-ups. There are also multiple online [forums](#).

[Case studies](#) · [Job listings](#) · [Community overview](#)

Contributing

APL Wiki is an online open-content [wiki](#)^w; that is, a voluntary association of individuals and groups working to develop a common knowledge resource. The structure of the project allows anyone with an Internet connection to alter [its content](#).

[How to contribute](#) · [New pages](#) · [Wanted pages](#)

Watch, Read and Listen Now



apl.wiki/campfire



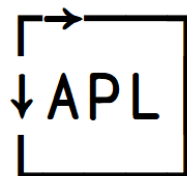
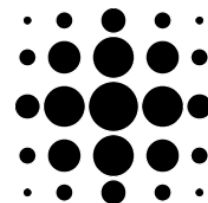
Harry Saal
Joel Wittenberg
Ron Murray
Len Shustek
Joey Tuttle
Gitte Christensen
Ray Polivka
Jon McGrew
Walter Fil
Andy Shiers
Geoff Streeter
Jim Brown



Improving Visibility

A vendor agnostic logo?

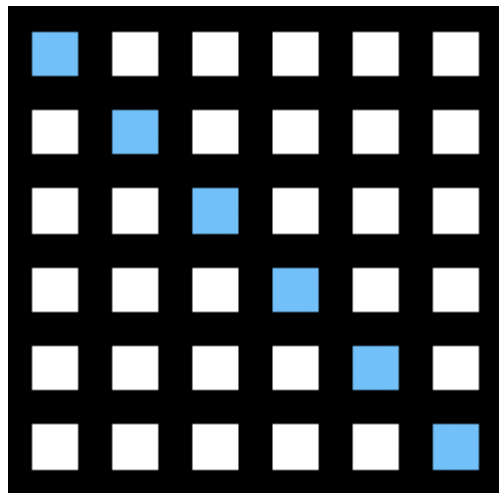
apl.wiki/APL_logo



Array Language Media



Watch, Read and Listen Now



The Array Cast

arraycast.com



Watch, Read and Listen Now

The Array Cast

arraycast.com

Adám Brudzewsky

Bob Therriault

Conor Hoekstra

Richard Park

Stephen Taylor

Attila Vrabecz

Eric Iverson

Gitte Christensen

Henry Rich

Marshall Lochbaum

Morten Kromberg

Watch, Read and Listen Now



A

Asher Mancinelli (asher bqn)

code_report

Conor Hoekstra (code report)

J

Jamie Raymond (jamie raymond apl)

y

Rodrigo Girão Serrão (rodrigo apl)

Isaac Wooden (yernab)



Michal Wallace (tangentstorm)

RP

Rich Park (rikedyp)



Watch, Read and Listen Now

dyalog.com/blog



Welcome to new team members

"Thank you"s and other community posts

Tips and tricks

News regarding recent releases

Competition entry highlights and commentary

Watch, Read and Listen Now

dyalog.com/blog

apl.wiki/Roger_Hui#Publications





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Roger Hui

Roger Kwok Wah Hui (December 29, 1953 – October 16, 2021^[1]) was a computer scientist and co-developer of the programming language **J**, and later **Dyalog APL**. He ran and maintained the **Jsoftware** website.

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- 1 [History](#)
- 2 [Death](#)
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 - 3.1 [APL conferences](#)
 - 3.2 [Dyalog user meetings](#)
 - 3.3 [Essays](#)
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At Dyalog '18



Roger Hui's Iverson Award

History

Hui's work was described at the APL85 conference in a paper, "DESIGN: A Financial Modelling System", written jointly with his supervisor, Fred Appleyard. The basic objects in the system were in "Direct Definition" ([Iverson](#), 1976, 1980), and [Falkoff](#) and Iverson's The Design of APL was cited. Hui left Alberta Energy shortly after being promoted to a non-APL and non-programming position, and was out of work, and had no access to computers, from September 1985 to April 1986. This gave him plenty of time for intense study of Iverson's Rationalized APL (1983) and [A Dictionary of the APL Language](#), as it was then named. In 1996, Hui received the [Iverson Award](#) for his work on the design, implementation, and commercial development of J.

Death

Hui's death was announced by [Eric Iverson](#) on October 16, 2021.^[1] It was subsequently noted in various media, including [Hacker News](#)^w (which displayed a black banner in his honour),^[2] [Reddit](#)^w,^[3] Jsoftwares's chat,^[4] and Dyalog news.^[5]

Publications

APL conferences

- [APL85](#): Design: a financial modelling system. With Fred Appleyard.
- [APL87](#): Some uses of { and }[⌘](#).
- [APL90](#): APL?[⌘](#). With [Kenneth E. Iverson](#), [E. E. McDonnell](#), and [Arthur T. Whitney](#).
- [APL91](#): Gerunds and representations[⌘](#). With [Robert Bernecky](#).
- [APL91](#): *Tacit definition*[⌘](#). With [Kenneth E. Iverson](#) and [Eugene E. McDonnell](#).
- [APL94](#): TAGS: trains, agendas, and gerunds. With [Kenneth E. Iverson](#).

Y **Hacker News** [new](#) | [past](#) | [comments](#)

- ▲ [L0phtCrack Is Now Open Source](#) (l0phtc 67 points by rbanffy 1 hour ago | [hide](#) | 25 comments)
- ▲ [NixOS on Framework Laptop](#) (kvark.githu 184 points by kvark 5 hours ago | [hide](#) | 106 comment)
- ▲ [Roger Hui has died](#) (jsoftware.com) 264 points by z0a 7 hours ago | [hide](#) | 19 comments
- ▲ [HTTP is obsolete – it's time for the dist](#)

Hacker News honouring Roger Hui with a black bar across the top banner. [⌘](#)

- [Symmetries of the Square](#)
- [Quicksort](#)
- [Bernoulli Numbers](#)
- [Inverted Table](#)
- [Kakuro](#)
- [Power Set](#)
- [RNG](#)
- [Extended Precision Functions](#)
- [Linear Recurrences](#)
- [Roman Numerals](#)
- [Trains](#)
- [Nurikabe](#)
- [Negative Rank](#)
- [Cayley's Theorem](#)
- [Boxed Array Display](#)
- [Kronecker Product](#)
- [Order Statistics](#)
- [Memo](#)
- [Queens and Knights](#)
- [Symmetric Array](#)
- [moo](#)
- [Goldbach Conjecture](#)
- [Index in Nub](#)
- [Incunabulum](#)
- [Self-Upgrading Permutations](#)
- [Birthday Problem](#)
- [Tolerant Comparison](#)
- [Vier Neun](#)
- [QR Decomposition](#)
- [Do While](#)
- [Josephus Problem](#)
- [Tree Sum](#)
- [Fibonacci Sums](#)
- [Combination Index](#)
- [Boolean Array Size](#)
- [N Queens Problem](#)
- [Self-Downgrading Permutations](#)
- [Tower of Hanoi](#)
- [Gray Code](#)
- [Next Binary String](#)
- [English Grammar](#)
- [Roll on BIGINTs](#)
- [Divisors](#)
- [Sorting versus Grading](#)
- [Scalars](#)
- [In-Place Operations](#)
- [Gaussian Integers](#)
- [Primes Less Than n](#)
- [Text Formatting](#)
- [Transpose](#)

Other talks

- [Functional Conf 2016: A Tour de Force of APL in 16 Expressions](#)
- [Functional Conf 2017: Tests, Derivations, Proofs](#)
- [HOPL IV: APL Since 1978](#) ([paper](#))

External links

- [Roger Hui](#)^W
- [Jsoftware website](#)
- [ACM Digital Library](#)
- [Memorial website](#)
- [Dyalog blog posts by Roger Hui](#)
- [Dyalog Forum posts by Roger Hui](#)

References

- ↑ **1.0** **1.1** Eric Iverson. Roger Hui - 1953 - 2021. Jsoftware programming forum. 2021-10-17.
- ↑ Hacker News. Roger hui has died. 2021-10-17.
- ↑ Reddit. Roger Hui (1953 - 2021). apljk subreddit. 17 Oct 2021.
- ↑ Raul Miller. Roger Hui - 1953 - 2021. Jsoftware chat forum. 2021-10-17.
- ↑ Dyalog Ltd. Roger Hui. Dyalog news. 2021-10-18.

APL community ^{[[edit](#)]}

[\[Expand\]](#)

Categories: [People](#) | [Jsoftware employees](#) | [Dyalog Ltd. employees](#) | [I.P. Sharp Associates employees](#) | [Designers](#) | [Executives](#) | [Implementers](#)

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The APL Orchard



<https://apl.chat> — Learn, teach, ask, code, golf, & discuss usage. See https://apl.wiki/APL_Orchard for access and info,

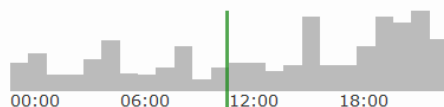


<https://aplcart.info> for simple how-to questions. [edit](#)

apl array-manipulation j tips

first message 2017-01-24

last message 12 minutes ago



16

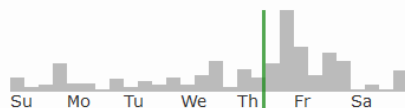
today

88

yesterday

112

per day



873

this week

695

last week

573

per week

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331

191740

The APL Farm on **Discord**

discord.gg/cYbMMw5D

reddit.com/r/apljk



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Explore Collectives

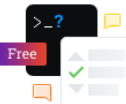
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TEAMS

Stack Overflow for Teams – Collaborate and share knowledge with a private group.



Create a free Team

What is Teams?

Questions tagged [apl]

Ask Question

APL (named after the book A Programming Language) is an interactive array-oriented language. It is based on a mathematical notation developed by Kenneth E. Iverson. Do not use this tag for Alexa Presentation Language; use [alexapresentation-language] instead.

Watch tag

Ignore tag

[Learn more...](#) [Improve tag info](#) [Top users](#) [Synonyms](#)

268 questions

Newest

Active

Bountied

Unanswered

More

Filter

1 How to make mutual recursion in APL?

vote

1 answer

40 views

I'm trying the following mutual recursion example in Dyalog APL Win10: even ← { (odd ω-1) ∨ ω=0 } odd ← { (even ω-1) ∧ ω>0 } even 7 WS FULL It looks like the ∨ and ∧ doesn't ...

[recursion](#) [logical-operators](#) [apl](#) [mutual-recursion](#) [dyalog](#)

asked Oct 29 at 20:54
 Miroslav Popov
 2,800 • 1 • 29 • 50

4 Cannot use user commands in Dyalog APL

votes

2 answers

47 views

I just installed Dyalog-APL 18.0 on my windows(Windows 10) machine and when I tried using jbox on -style=max on the IDE I got the following error: FILE ACCESS ERROR: C:/Users/<User>/Documents/...

[runtime-error](#) [file-access](#) [apl](#) [dyalog](#)

asked Oct 27 at 18:35
 MrV
 169 • 1 • 7

1 Unexpected value of expression involving assignment

vote

1 answer

39 views

I saw this logic and wonder why the result is one rather than zero: $P \leftarrow 1 \ 1 \ 0 \ Q \leftarrow 0 \ 0 \ 1 \ \vee / P \wedge \leftarrow Q \ 1$ On the other hand the following results in zero: $P \leftarrow 1 \ 1 \ 0 \ Q \leftarrow 0 \ 0 \ 1 \dots$

[apl](#) [dyalog](#)

asked Oct 13 at 9:32
 August Karlstrom
 9,377 • 7 • 34 • 55

1 SYNTAX ERROR (change nameclass on assignment) in APL

vote

1 answer

37 views

When I try to assign to a name in Dyalog APL, I get one of these error messages: SYNTAX ERROR: Can't change nameclass on assignment SYNTAX ERROR: Invalid modified assignment, or an attempt was made ...

[syntax-error](#) [variable-assignment](#) [assign](#) [apl](#) [dyalog](#)

asked Oct 9 at 20:37
 Adám
 4,254 • 17 • 31

The Overflow Blog

- Our new and enhanced Microsoft Teams integration
- Intel joins Collectives™ on Stack Overflow

Featured on Meta

- Now live: A fully responsive profile
- Please welcome Valued Associates #999 - Bella Blue & #1001 - Salmon of Wisdom
- 2021 Community Moderator Election Results

Hot Meta Posts

- 85 Should there be a warning for code containing bidirectional Unicode text?
- 14 Should I edit my question or ask a new one, if an answer is correct, but I...
- 73 Intel collective owns [x86] and [x86-64]

Custom Filters

[Create a custom filter](#)

Watched Tags



Watch tags to curate your list of questions.

[Watch a tag](#)


Coming Up...

- ✧ User Groups
 - ✧ apl.wiki/community
- ✧ BAA + Dyalog Webinars
 - ✧ dyalog.com/dates-for-your-diary.htm
 - ✧ BAA Open Session - Thursday 18th November
- ✧ sigapl.org
 - ✧ NYCJUG Meeting - Tuesday, November 9th, 2021
 - ✧ APL Germany / GSE APL meeting - November 22-23rd, 2021
- ✧ APL Seeds '22

APL Seeds '21

Will You Play APL With Me?

Rodrigo Girão Serrão

How an APL Prototype Helped Designing a Service

Martin Janiczek

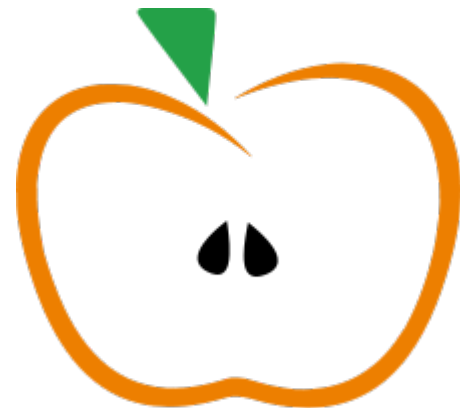
Algorithms as a Tool of Thought

Conor Hoekstra

Simulation and Gaming with APL

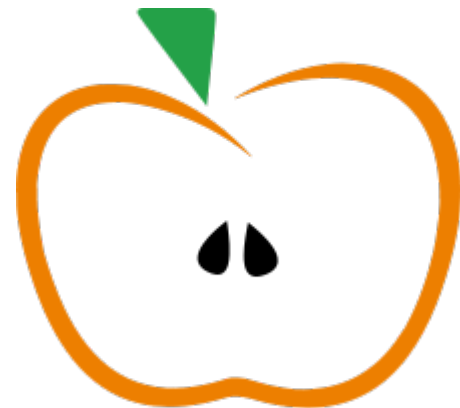
Tomas Gustaffson

dyalog.tv/APLSeeds21



APL Seeds '22

- Spring 2022
- New and prospective APL users
- What is your APL story? We'd love to hear
- aplseeds@dialog.com



APL (and array-language) Media

