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2	4

testcon

# Summer of LabVIEW 2024

## LabVIEW Challenges for Fun and Training

Presented by DNatt & DBomm

# About DNatt

- 25+ years at NI
  - 3 years in AE (TSE)
  - 18+ years in LabVIEW R&D
  - 4 years in TSE (again)
- 7-time Undeclared World's Fastest LabVIEW Programmer
- Quick Drop!
- Presentation library: <https://www.dnatt.org>



## About DBomm

- Needs a haircut
- Jumps out of planes
  - Usually with a parachute
- Star of at least one Kishi Bashi music video
- Misses all his NI TSE pals immensely
- Loves working with PPLs
- Mercilessly mows down colleagues in hallways with his one wheel
- Thinks rockets are kinda cool
- Would rather be at Cidercade right now
- Created his own Channel Wire type called the “Bommanator”
- Enjoys being inches away from certain death (i.e. rides a motorcycle)
- Has released 4 vipm.io packages since you started reading this slide
- Loves presentation slides full of text (But only wrote this bullet on this slide!)



# Summer of LabVIEW

Goal: Grow LabVIEW programming prowess and excitement

- Creating LabVIEW challenges that are:
  - approachable to beginners
  - interesting to experts
- Learning useful LabVIEW programming topics like:
  - algorithms
  - data structures
  - frameworks
- Providing year-round fun for:
  - user groups
  - internal competitions
  - practice!




*LabVIEW developer figuring out where to gain skills.*

# History - Summer of LabVIEW 2022



- Limited to NI Sales & Support organization
- CASH PRIZES for 1st/2nd/3rd place
  - Additional cash prizes for “special” awards
- June - Wordle
- July - Maze
- August - SquareBattle
- Internal NI webpage for contest submissions
  - Written with the G Web Development Module with the server written in LabVIEW




**Summer of LabVIEW**
[Challenges](#)
[Help!](#)
Welcome, Derrick!

## Wordle

**Description**

Given an unknown 5-letter word, your LabVIEW code must guess the word in as few tries as possible given information about which letters in each guess are in the target word. The goal is to pass hundreds of random 5-letter words through your code and have the **smallest average number of guesses**.

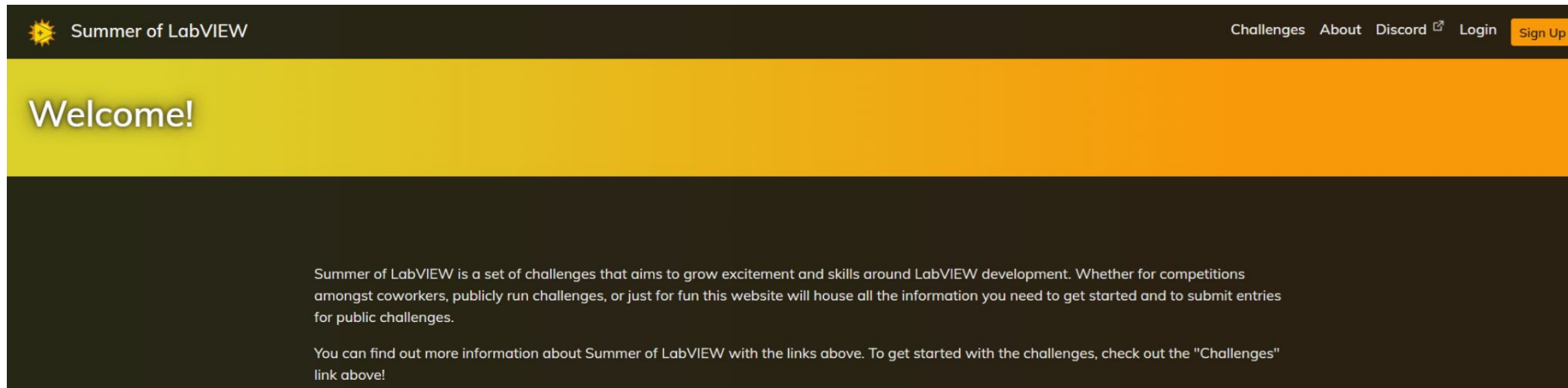
You can only have one entry waiting to be scored for each challenge. If you have a submission listed below that is not scored yet, it will be skipped for scoring when you upload a new submission for this challenge.

**Your Submissions**

ID	Submitted	Run	Score	Info
5	2022-05-30T16:41:05.387Z			Not run yet.

# History - Summer of LabVIEW 2023

- Open to the worldwide LabVIEW community
- Official badges for prizes
- SquareBattle Reprised
- Redesigned external page for contest submissions
  - [www.summeroflabview.com](http://www.summeroflabview.com)



- Winners announced and demonstrated at GDevCon NA 2023



# Summer of LabVIEW 2024

- Open to the worldwide LabVIEW community
- All new public challenges to participate in. Plural!
- Will be running 4 challenges varying from 3 to 4 weeks each
- Submission page is still [www.summeroflabview.com](http://www.summeroflabview.com)

# Word Search

May 26 - June 22

## Inputs

Letter grid (2D string array)

Word list (1D string array)

## Output

Word/Index pairs (map)

**DEMO**

Word Search Grid

R	B	L	U	E	W	
E	G	N	A	R	O	
D	B	C	E	W	L	
L	L	D	K	V	L	
P	U	R	P	L	E	
N	E	E	R	G	Y	

Word List

YELLOW
ORANGE
PURPLE
BLUE
GREEN
RED

Solutions

Size: 6

Word: BLUE

Letter Indices

Row	0	0	0	0	0	0
Column	1	2	3	4	0	0

Word: GREEN

Letter Indices

Row	5	5	5	5	5	0
Column	4	3	2	1	0	0

Word: ORANGE

Letter Indices

Row	1	1	1	1	1	0
Column	5	4	3	2	1	0



# Word Search Introduction Video



[https://www.youtube.com/watch?v=GZb\\_ybhlg70](https://www.youtube.com/watch?v=GZb_ybhlg70)

# Word Search Details

Download NOW at:

<https://bit.ly/solwordsearch>

- GOALS
  - Primary Goal - Write a solver that works!
  - Secondary Goal - Write a solver that is *fast*.
- PARAMETERS
  - Multiple **large** word searches
  - **Lowest** average solve time across all puzzles
  - Solve time of  $\infty$  for incorrect solutions
- LEARNING AREAS
  - Maps
    - <https://bit.ly/dnattcollections>

# Wordle

June 23 - July 13

Write a solver for The New York Times' **Wordle** game.

J	U	M	P	S
P	L	A	N	E
C	I	D	E	R
W	H	E	E	L
W	I	R	E	S
N	O	M	A	D

## Inputs

Results of previous guess

Previous Guess Result

-++-+

## Output

Next guess

New Guess

crazy

DEMO

Solver VI

C:\temp\Wordle Engine\Solvers\DNatt

Simple Solver.vi

Word to Test

barge

Results

Run 001 - Target word = barge, solved in 08 Guesses

Guess 01: crane - Result: -\*\*~+

Guess 02: marse - Result: -++~+

Guess 03: parle - Result: -++~+

Guess 04: barde - Result: +++~+

Guess 05: barye - Result: +++~+

Guess 06: barbe - Result: +++~+

Guess 07: barre - Result: +++~+

Guess 08: barge - Result: +++++

# Wordle Details

- GOALS
  - Primary Goal - Write a solver that works!
  - Secondary Goal - Write a solver that *takes the fewest guesses*.
- PARAMETERS
  - Multiple words
  - **Lowest** average guess count across all words
  - Guess count of  $\infty$  for incorrect solutions
- LEARNING AREAS
  - DQMH
    - <https://bit.ly/dnattdqmhintro>
  - Sets
    - <https://bit.ly/dnattcollections>

# Reversi

July 14 - August 3

Created by Quentin Alldredge

Every turn you're provided a grid of available moves and the board layout. Choose the best move to fill the board with your color.

Enclose opponent's discs between two discs of your color to change their discs to your color.

Choose which implementations to face against each other or run a round-robin of all available implementations.

Control the play speed to carefully watch moves or run through an entire game very quickly.

The image displays the Reversi game interface and its underlying LabVIEW block diagram. The top window, titled "Reversi", shows the game mode set to "Challenge Matches (All Players)", games per match set to 1, and the current turn as Black. It includes a "Wait per Turn (ms)" slider and a "Stop" button. The game board is an 8x8 grid with pieces placed on it. To the right, "Running Stats" and "Win Count" tables are visible.

The bottom window, titled "NonOOPPlayer.lvlib:ReversiPlayer.vi Block Diagram", shows the LabVIEW code. It includes a "Board" input, a "Possible Moves" input, and a "Player Color" input. The diagram features several callout boxes explaining the board state, move selection, and player color logic. A "#TODO" box indicates where to implement player AI logic.

The right side of the image shows a detailed view of the 8x8 board layout with rows and columns numbered 0 to 7.

The bottom right window, titled "NonOOPPlayer.lvlib:ReversiPlayer.vi", shows the front panel of the VI. It includes a "Board" display, a "Possible Moves" display, a "Player Color" dropdown set to "Black", and error indicators for "error in" and "error out". A red warning box states "Do not change the connector pane!".

Black Player	White Player	Black Score	White Score	Winner
Generic Player	Diagon Alley	7	11	

Player	Games Played	Win Count
Generic Player	1	0
Human	1	1

DEMO



# Formula G

August 4 - August 31

The challenge ships with working logic that can only reach a moderate speed, develop smarter handling and see if you can beat it!

Your VI is given the car position/speed and 10 distance measurements around the car.

This challenge is “real-time” (25Hz) so it’s helpful to not take a lot of processing time!



## DEMO



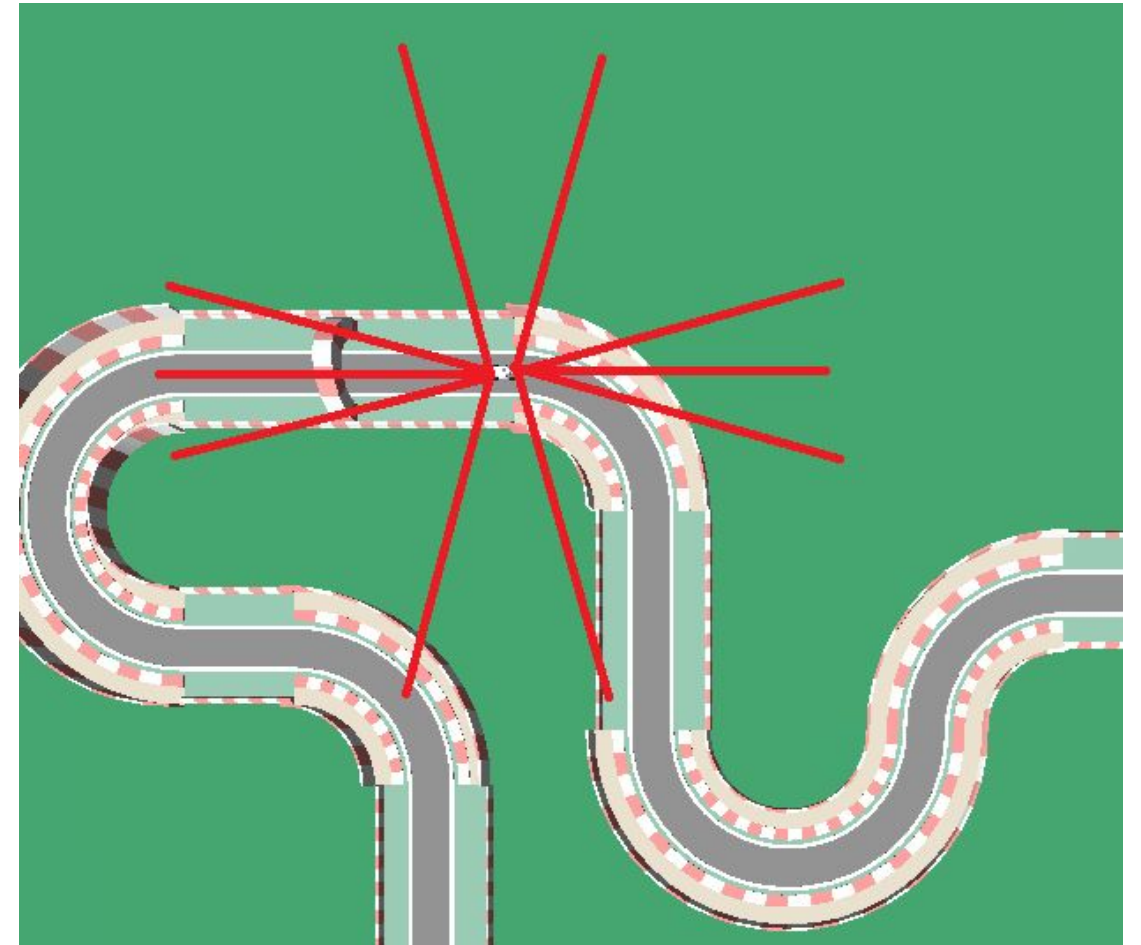
# FormulaG Details

Your code is given 10 distance measurements around the car along with the car's position and speed information.

Simple: the example code steers towards the further wall based on the left and right distances to the front.

Insane: model the car's dynamics, build a map of the course as it drives conservatively at first, and plan out the best course to follow at max speed.

Challenges will be scored against new map layouts so don't hard-code logic for the example map!



# 2024 Challenges

## MAY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22 TODAY	23	24	25
26 Word Search						

## JUNE

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23 Wordle	24	25	26	27	28	29
30						

## JULY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14 Reversi	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

## AUGUST

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4 FormulaG	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

# Finale!

Us slackers still need to finalize this...

Tentatively:

Mid September we'll have a live online event to show off entries collected throughout the Summer and announce the official winners. (Pending any tie breakers, identifying cheaters, coming up with bonus challenges...)

# How to Join



<https://summeroflabview.com>

Create an account at:  
<https://summeroflabview.com>



There is a link to the Discord  
server from the website.

# How else can you help?

Run challenges at your local user groups and companies

Help out with challenge ideas! (Existing future plans: Maze solver, Lunar lander, Battleship)

You can make your own or add them to DBomm's backlog

Requirements for challenges:

- Packaged on VIPM
- Provides project template
- Supplies example implementation

If any of this interests you, post on the Discord!