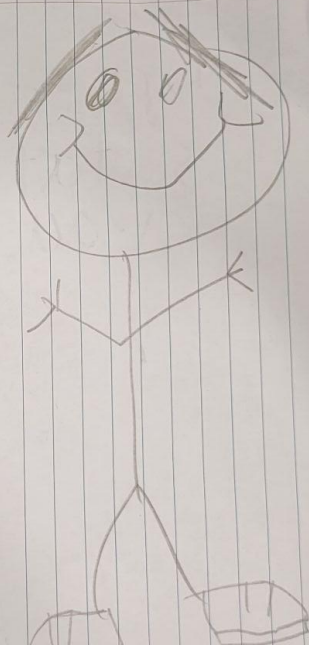# Leveling Up Your Scripting

Stephen Heindel

Dear Dad,
Good luck at the
"Bsides talk"!
I love you soooo
much"!
Love U,
Scott

GOOD
LUCK!

Introduction

- Joined BSides Discord ~8 months ago
- 11 years professional experience
- Used most low and high level languages
  - Assembly, C, C++, C#, Java, JavaScript, TypeScript, Python, Lua, Kotlin, Swift, Dart, MATLAB, Bash, PowerShell)
- Digital Logic, Circuit Design, PCB Layout
- Experienced with GCP (with cert), AWS, and Azure

Introduction

Goal

- "Better Scripting"
- Maintainability
    - Hand it off to another person
    - Use it on a new target
    - Modify it > 6 months after writing it
   - Debug it when it breaks

Goal

- It's easier to **WRITE** new code than to **READ** old code
    - Someone else gave you code and you don't understand it? Just write your own script
    - You moved from Windows to Linux and your program doesn't work? Just write it again
    - You installed a new version of a dependency and your interface is crashing? Time to re-write!

Goal

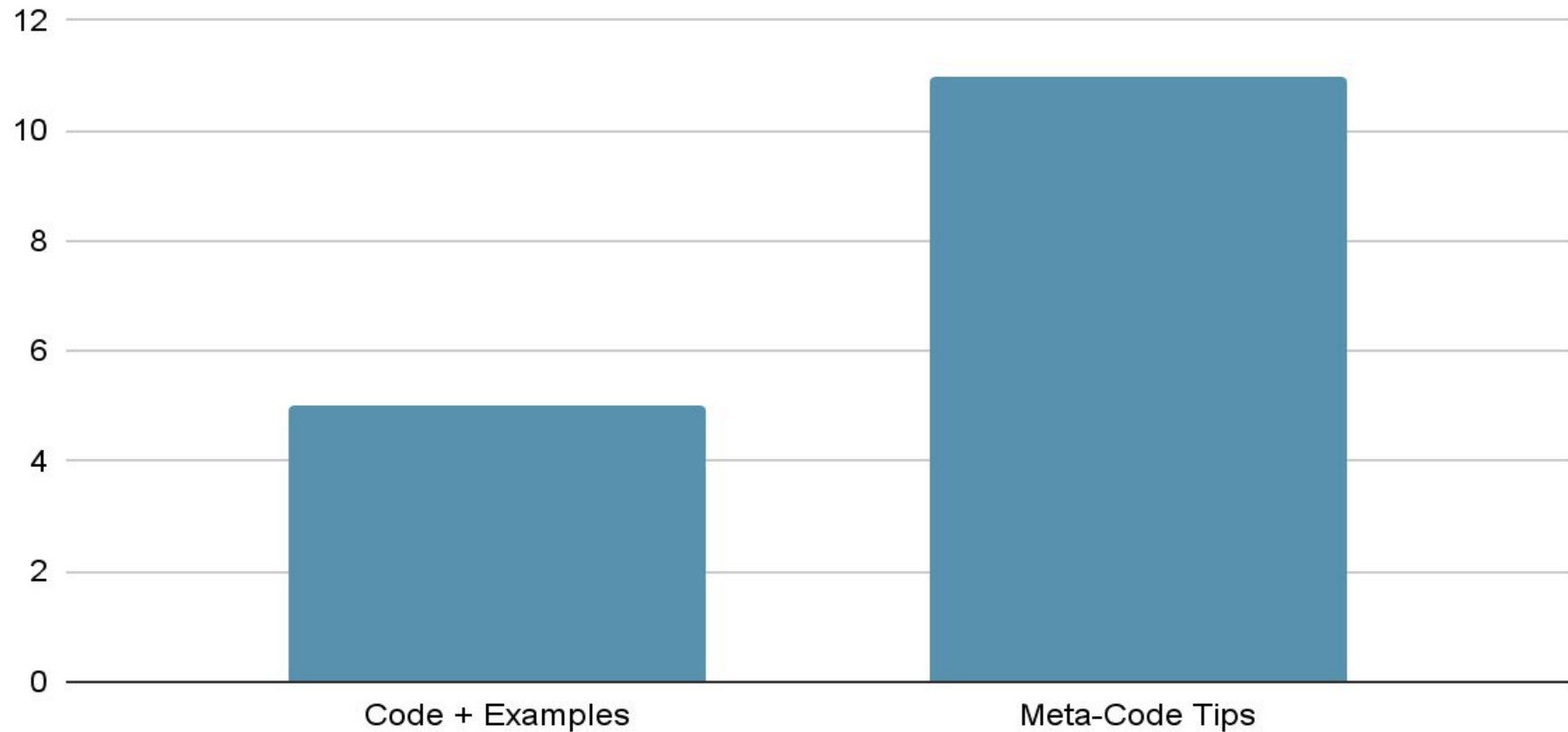- It's easier to **WRITE** new code than to **READ** old code
- Let's write more **readable** code!
  - Less Lines of Code
  - More Verbose Code
  - Less Obfuscated Code
  - Less Inter-Dependent code
  - Same way you read everything!
    - Left to right
    - Top to bottom

Python Skill (Source: BSides FW Discord Poll)
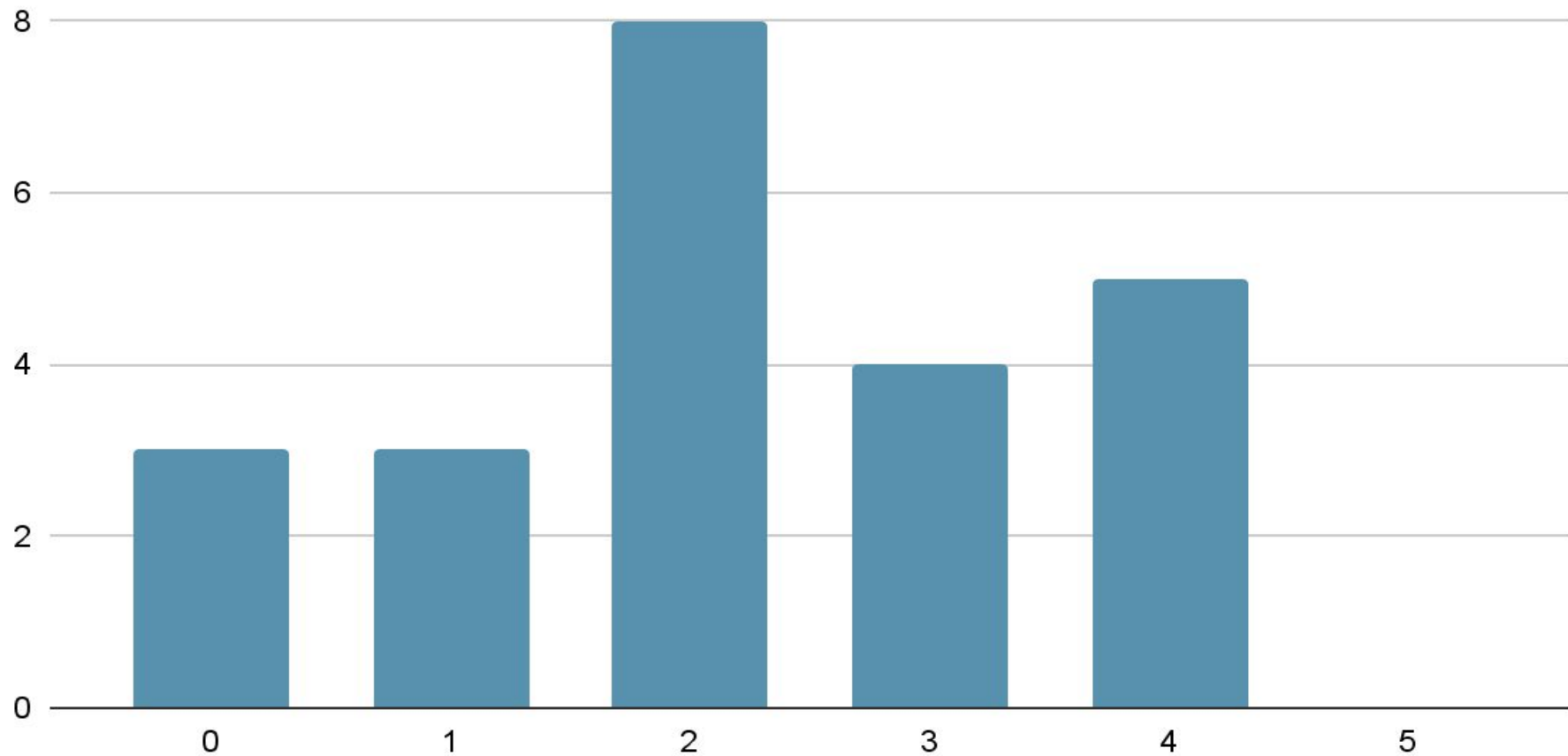
Intro - Language Choice

- Common choices
  - Powershell
  - Bash
  - Python

Intro - Language Choice

- Some rules to think about
  - Do I need to deal with arrays?
  - What is my execution target?
  - What am I most proficient in?
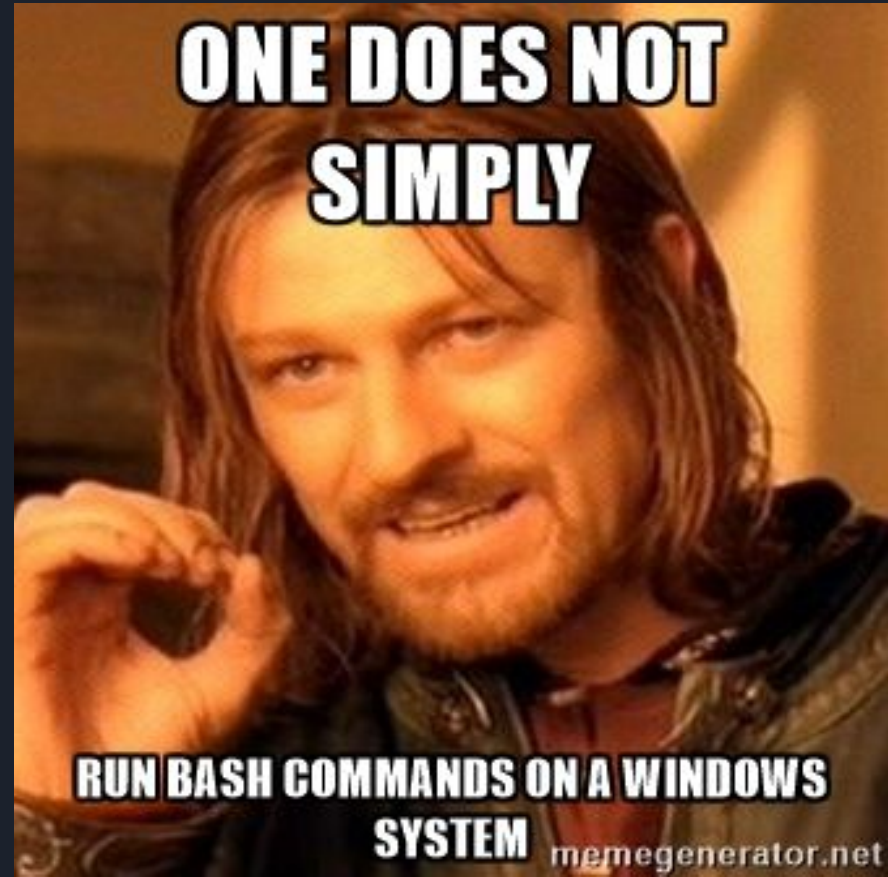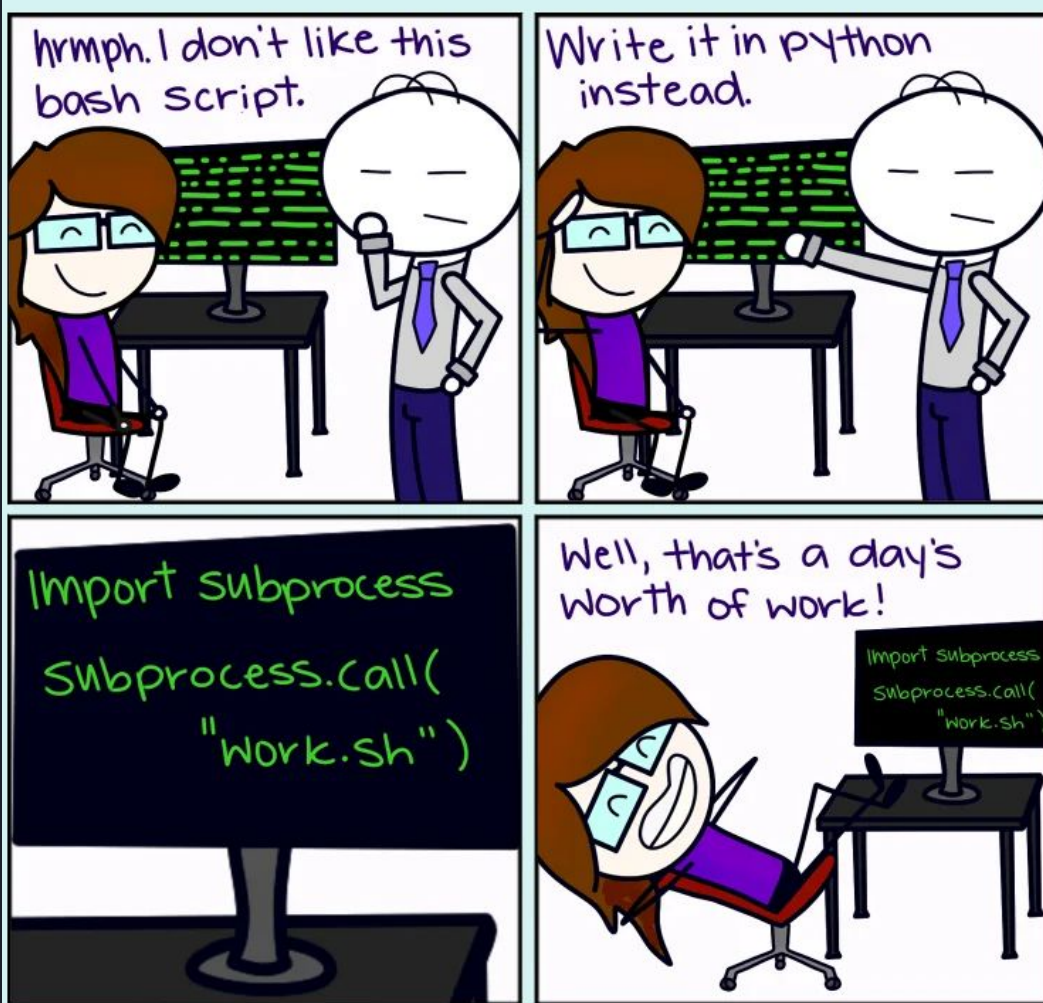
Language Choice

- Considers
  - Execution target?
    - User machines vs server
    - Linux vs Windows vs Mac
  - Arrays?
    -

Tooling - Editor/IDE

- VSCode
- JetBrains IDEs (e.g. PyCharm)
- Vi/Vim/NeoVim
- emacs
- Visual Studio

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Tooling - Style

- Consistent Style is Important
  - flake
  - pep8
  - ruff
- All available as separate VSCode Extensions or part of Python extension

Tooling - Generative AI

- CoPilot
- ChatGPT
- Llama AI
- Meta AI

Tooling - Generative AI

- **CoPilot**
- ChatGPT
- Llama AI
- Meta AI

Examples!

https://github.com/sheindel/fw-bsides-2024/

Tooling - Python Version Management

Generative AI Example

- Create a python function to do the following functionality: Read in a JSON file from the command line with an array of uniform JSON objects. Use the keys of the objects to create a CSV header row, and then convert each object into a row in the CSV data. Use the word EMPTY if there is ever a blank value. If something is a number, add 3 to it.

Libraries

- dateparser
- rich
- Typer
- streamlit

Examples

- Paths Operations
- Iterate Operations
- `with` Statements
- typehints
- argparse replacement
- f-strings

Robot	IP	State	% Disk Used	# Downloads	# Recovery	# Offline	Recovery Server Active
K-1	10.8.0.40	offline					
K-2	10.8.0.41	offline					
K-3	10.8.0.42	offline					
K-4	10.8.0.43	offline					
K-5	10.8.0.44	offline					
K-6	10.8.0.45	offline					
K-7	10.8.0.46	online	18%	19	10	0	Yes
K-8	10.8.0.47	offline					
K-9	10.8.0.48	online	17%	7	1	0	Yes
K-10	10.8.0.49	offline					
K-11	10.8.0.50	online	15%	1763	178	2	Yes
K-12	10.8.0.51	offline					
K-13	10.8.0.52	online	14%	3684	119	0	Yes
K-14	10.8.0.53	online	19%	4450	44	1	Yes
K-15	10.8.0.54	offline					
K-16	10.8.0.55	offline					
K-17	10.8.0.56	online	75%	2455	68	0	Yes
K-18	10.8.0.57	offline					
K-19	10.8.0.58	online	71%	2153	106	0	Yes
K-20	10.8.0.59	offline					
K-21	10.8.0.60	online	75%	4659	83	3	Yes
K-22	10.8.0.61	online	83%	2686	0	0	Yes
K-23	10.8.0.62	offline					
K-24	10.8.0.63	online	71%	2586	87	0	Yes