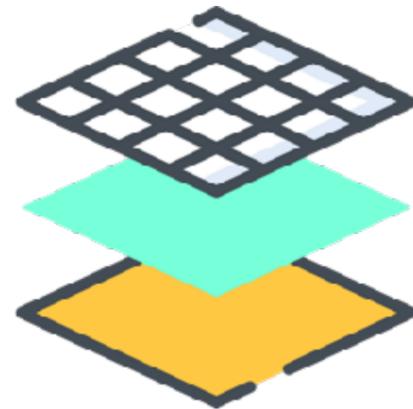
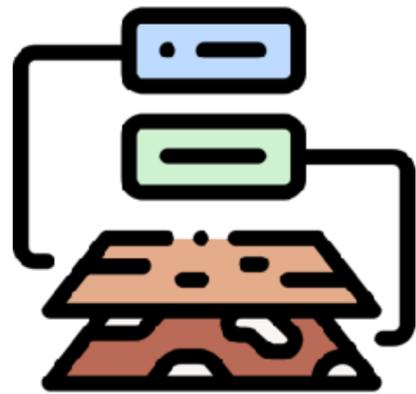


# How Low (Level) Can You Go?





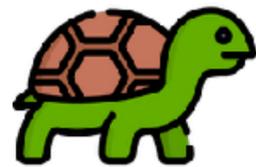
# André D. Henry

**Sr. Manager, Engineering @HARRY'S**

- \* Software Engineer, Network Engineer, CTO
- \* Code, Math, Science & Electronics
- \* I probably made it explode at some point



# Why Are We Here?



# Cut Through The Hype



**Kelsey Hightower**  
@kelseyhightower



Hype cycles don't last long when people understand how things actually work.

1/24/23, 10:28 AM

**Foundational Knowledge is worth a  
Thousand Tools.**

**—Lucas Kostka**



# Computers Need Humans (*Still?*)



**Kelsey Hightower**   
@kelseyhightower · [Follow](#)



Where are the low level system engineers? Specifically the people writing C or C++ hacking on kernels, device drivers, and file systems.

Code schools don't seem to be teaching this stuff and some universities have moved up the stack.

Are we even training the next generation?

6:03 PM · May 3, 2022



7.2K



Reply



Copy link

[Read 788 replies](#)



@7Grok

# Develop Great Technologists



**Peter Vukovic**  
@pvukovic



## Why Are T-shaped Software Engineers Important?

Because they change the conversation from "who knows how to do this" to "what needs to be done".

T-shaped engineers deliver more value to their team and equip themselves with the skills that make them precious and promotable. [pic.twitter.com/LKDjusupZ](https://pic.twitter.com/LKDjusupZ)

3/15/22, 5:28 AM

## T-Shaped Software Engineers

T-shaped engineers have deep knowledge of one area and a working knowledge of other areas their team needs, enabling them to deliver more value.



An example of a T-shaped back-end engineer

Expertise area

Back-end Engineering

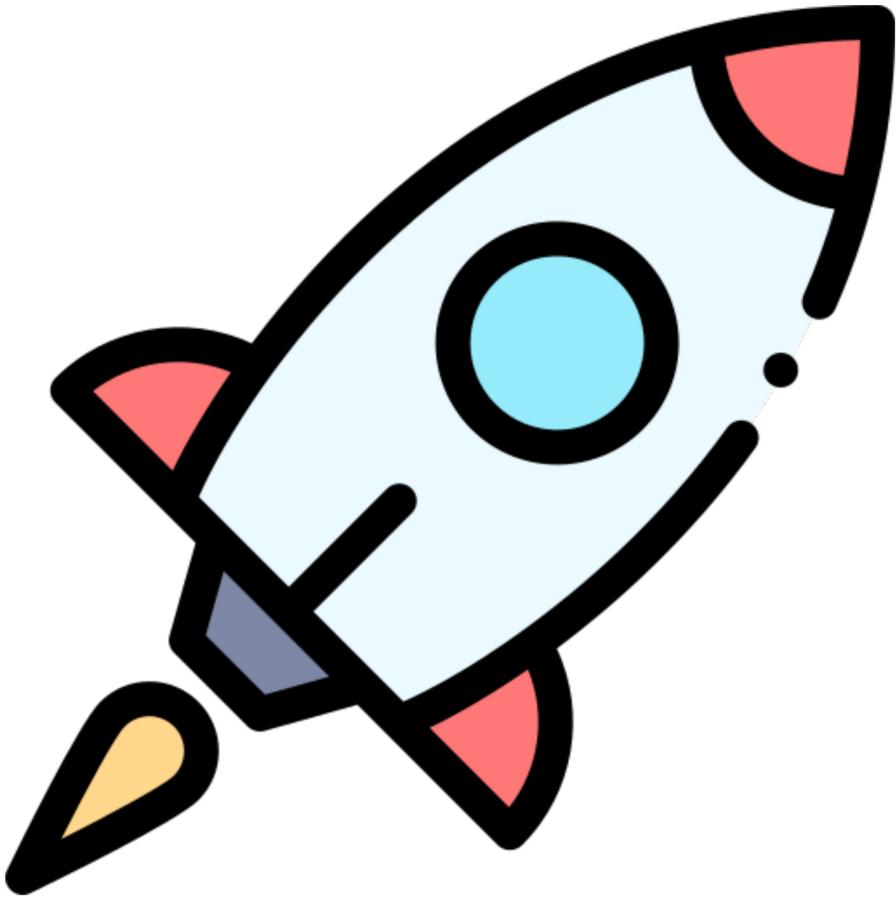
@pvukovic

2022

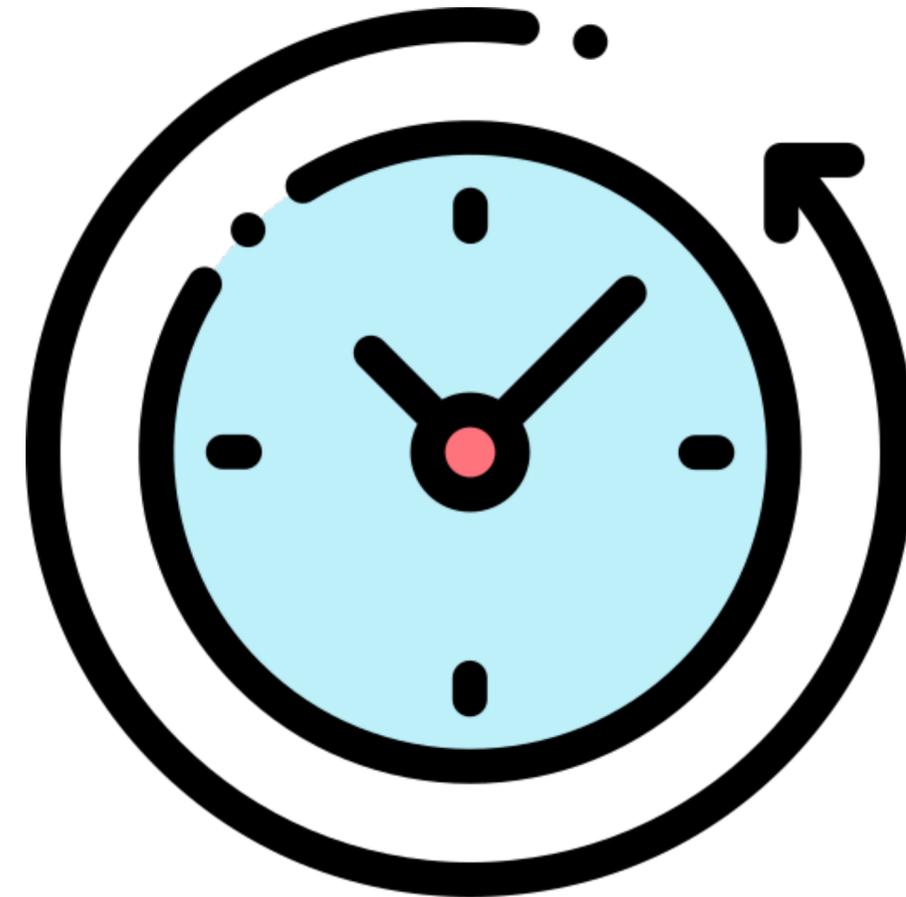


@7Grok

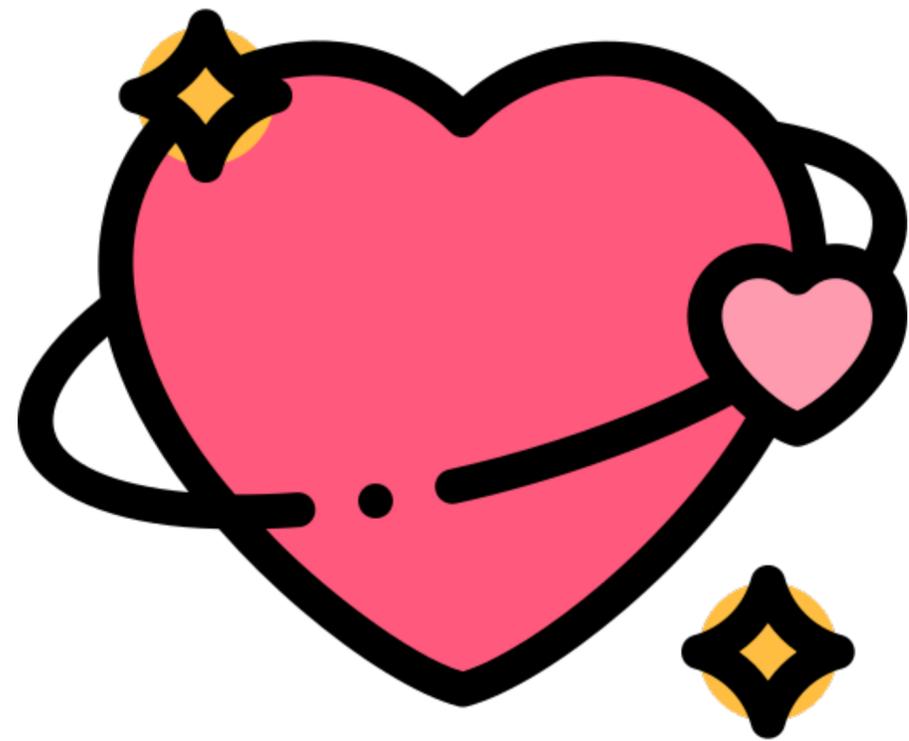
# Competitive Advantage



# Story Time



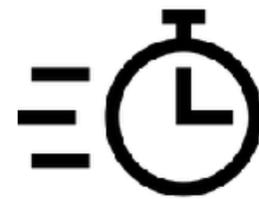
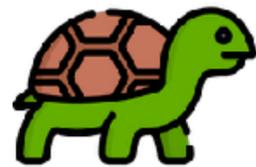
# Sparked A Love Of Technology



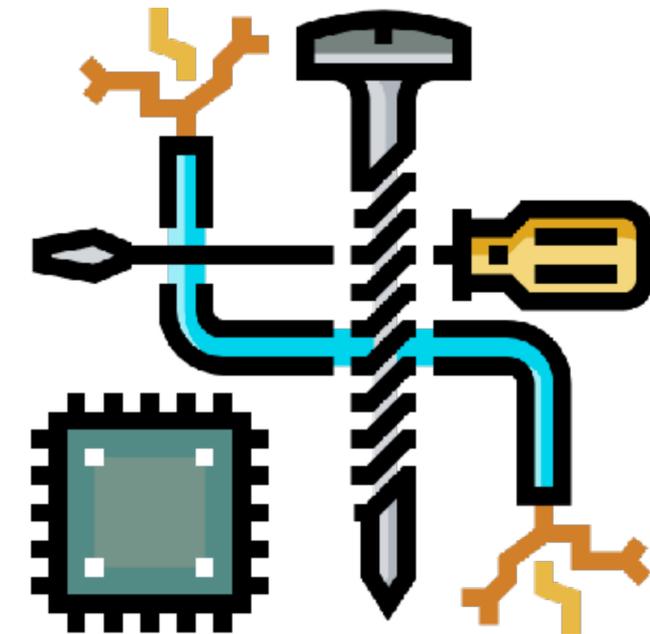
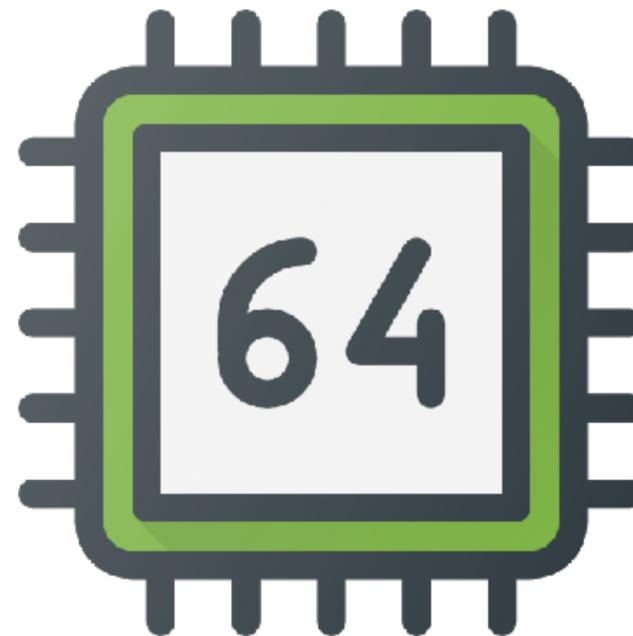
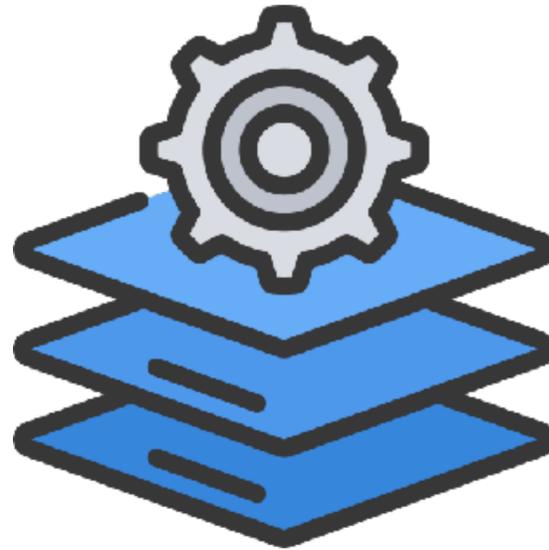
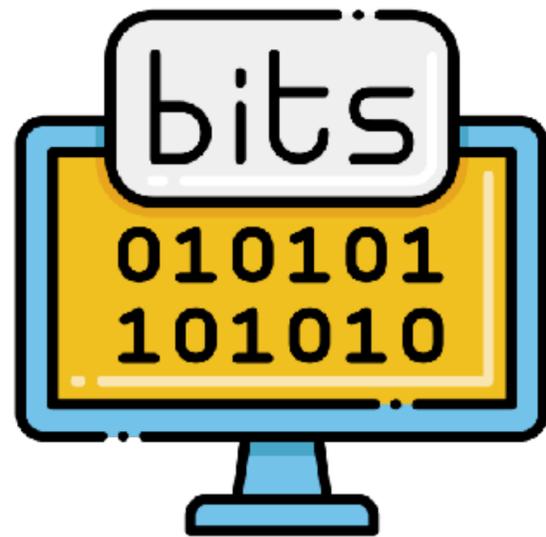
# Fast Forward To The Future



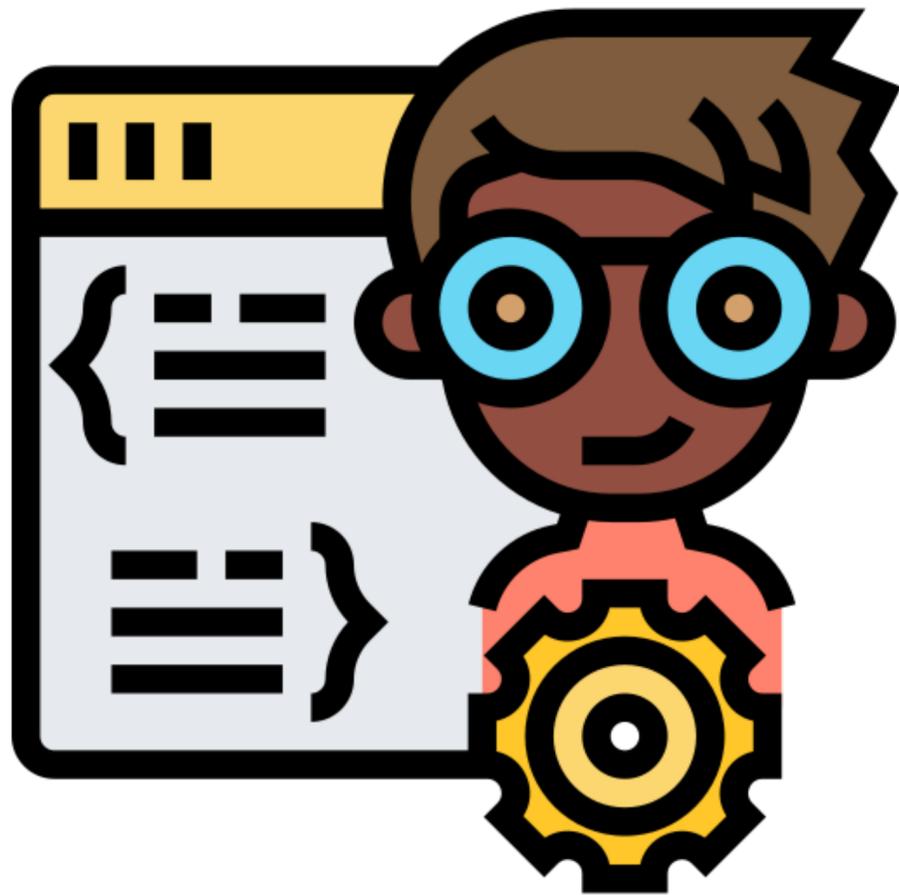
# What Is Low Level?



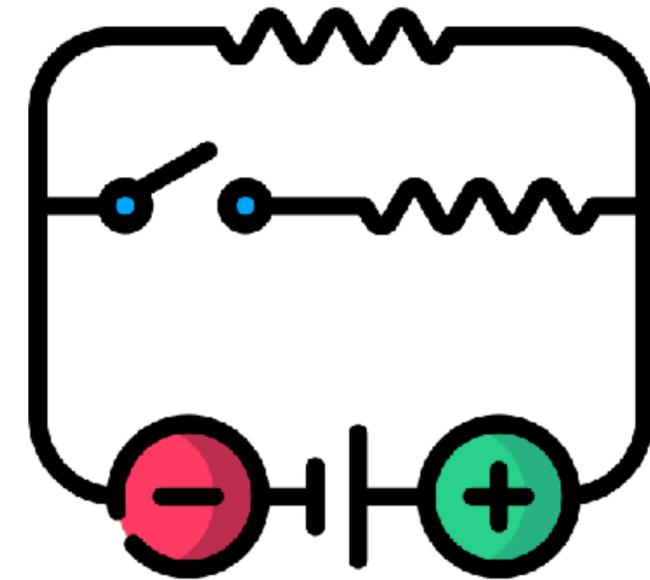
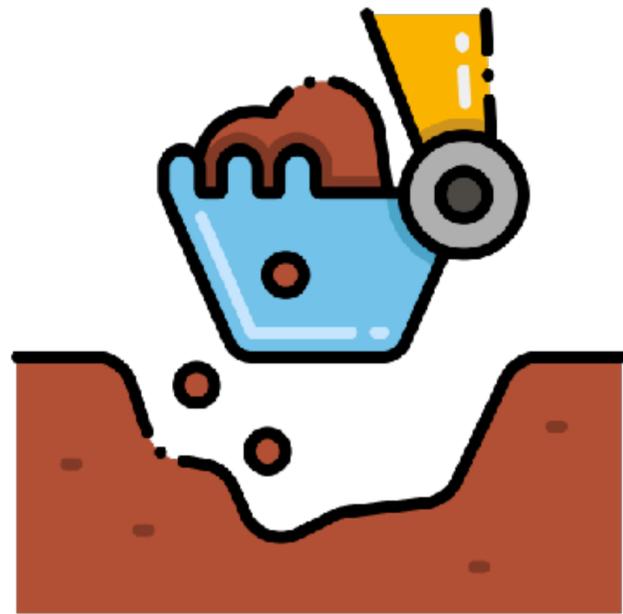
# Let's Get Down



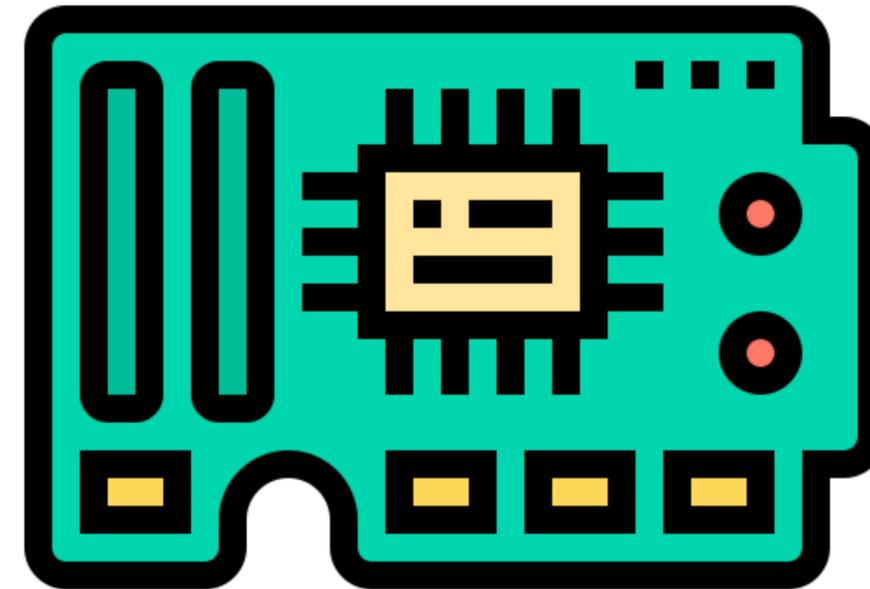
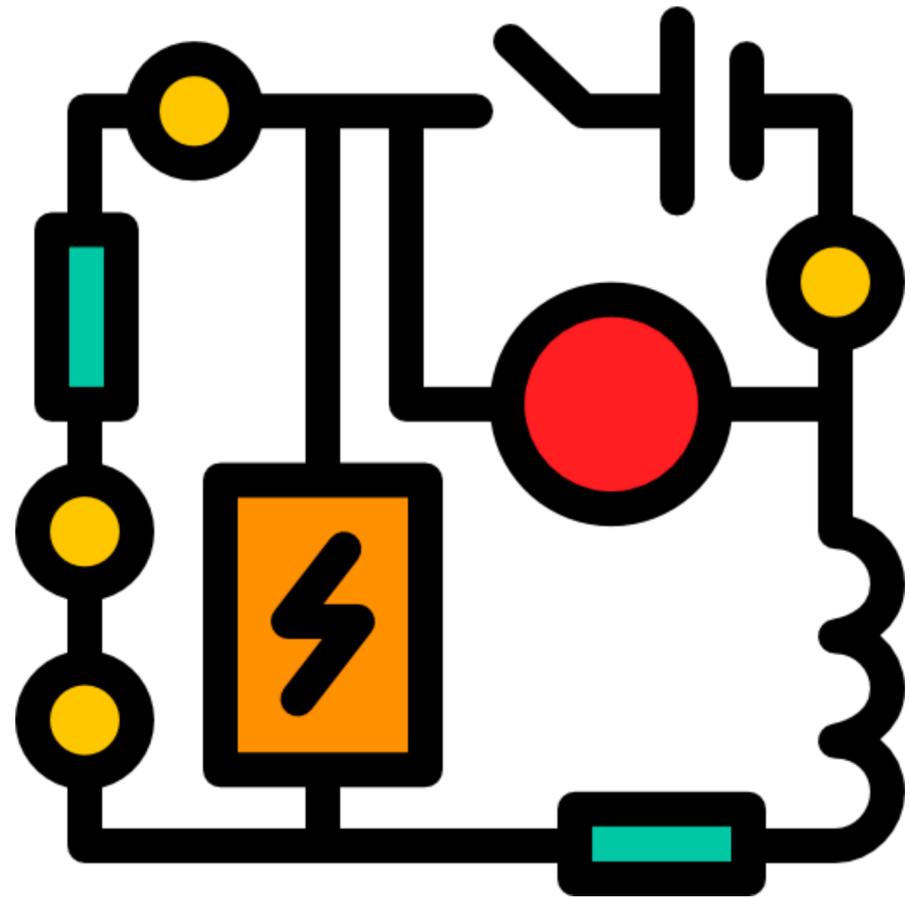
# For Another Time...



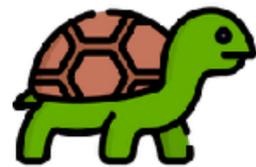
# How Low?



# Inside The Machine



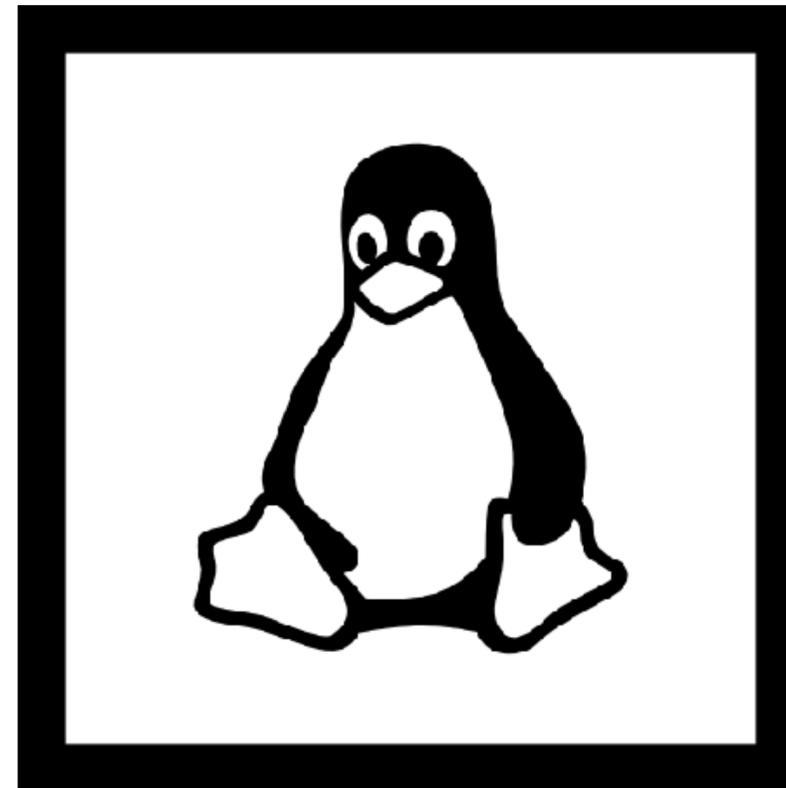
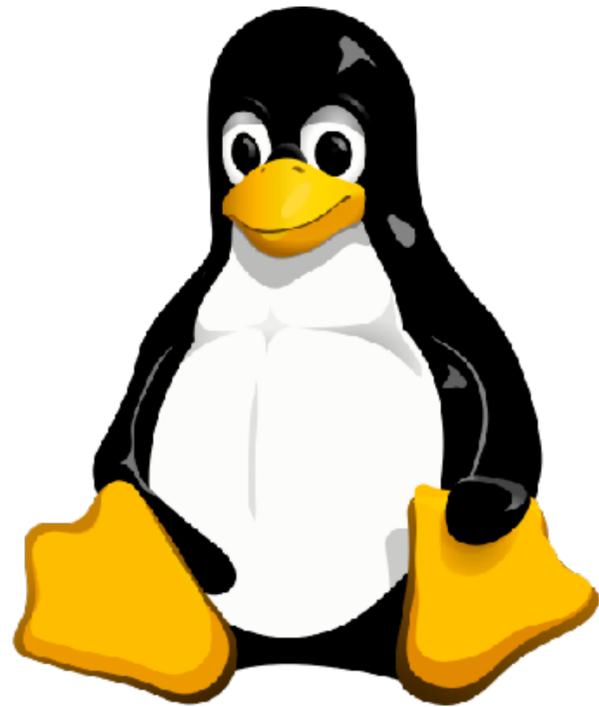
# Lots To Explore, So Little Time



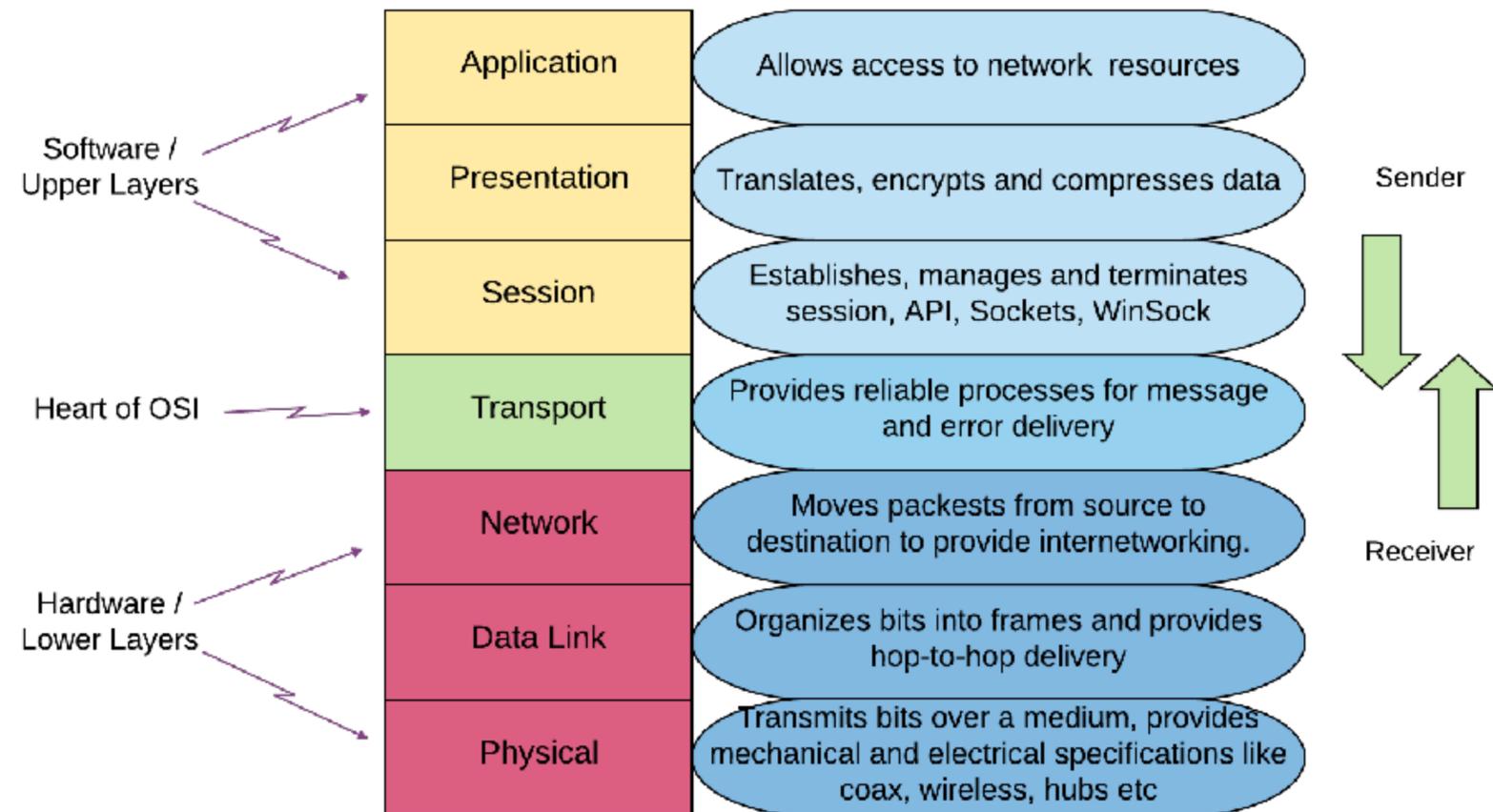
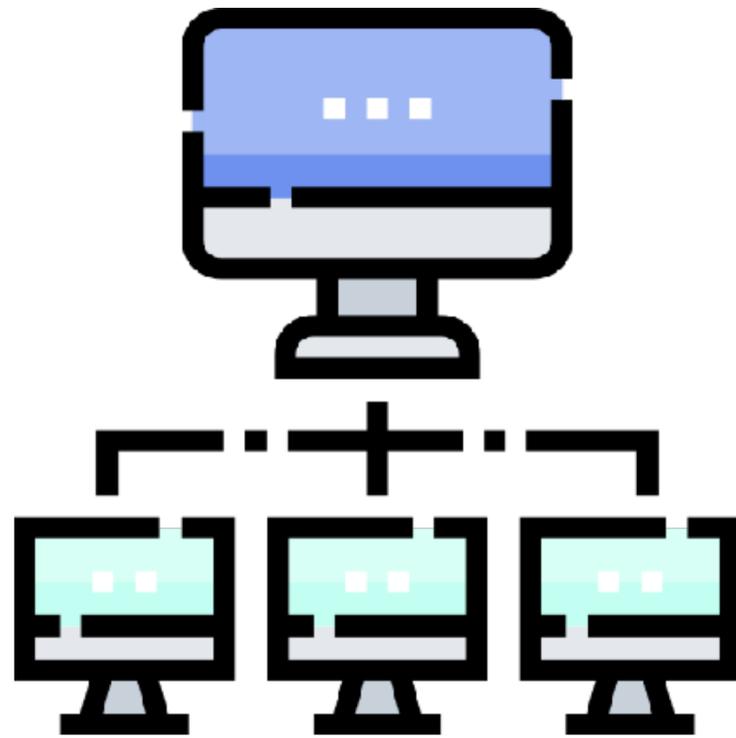
# Open Source Projects



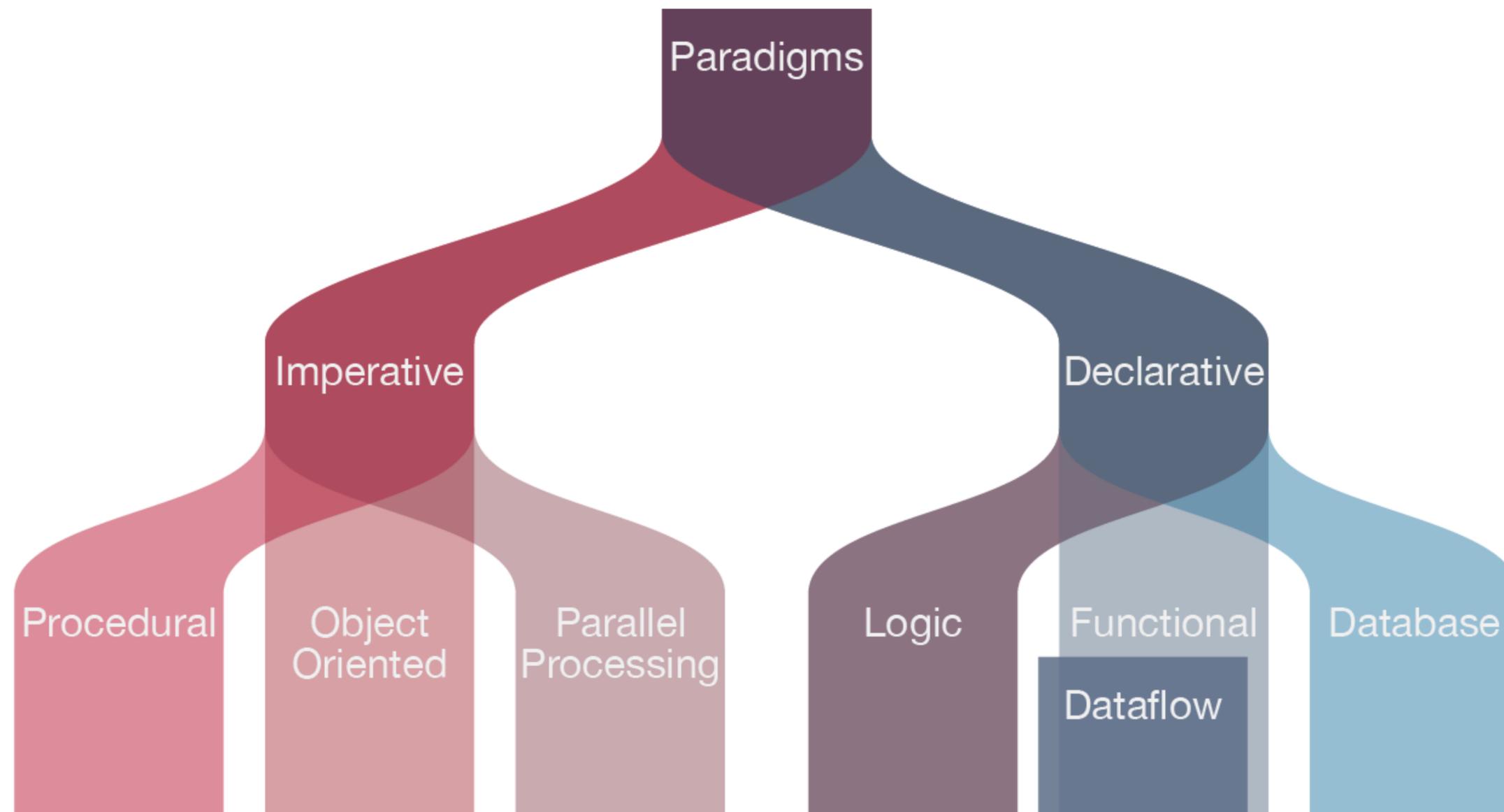
# Linux Internals



# Networking



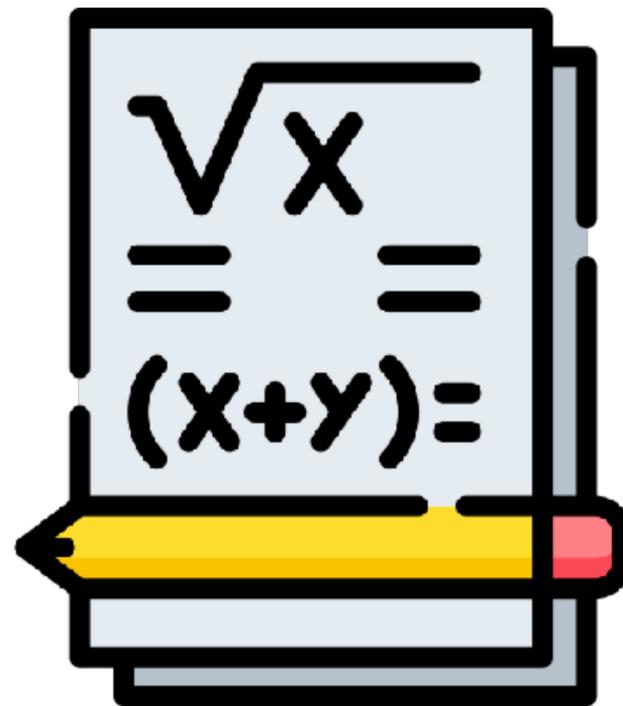
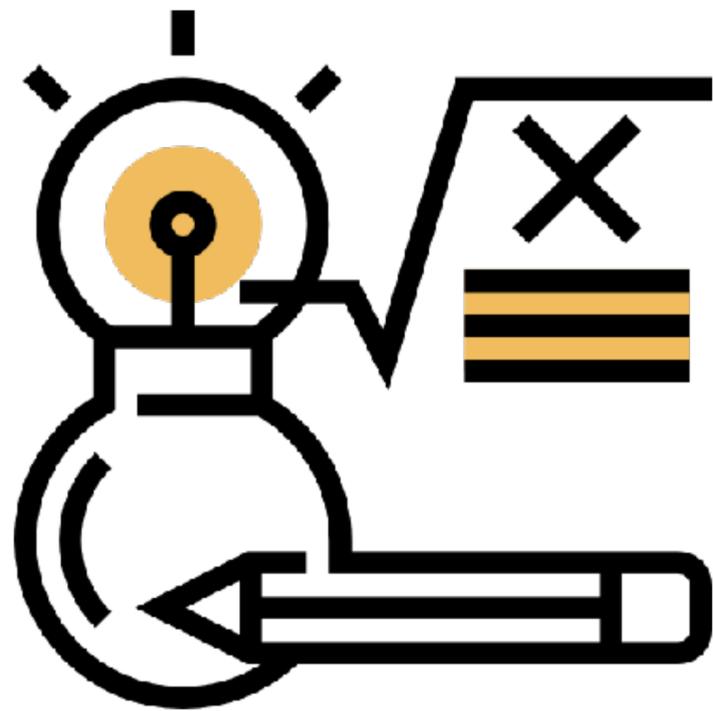
# A New Programming Paradigm



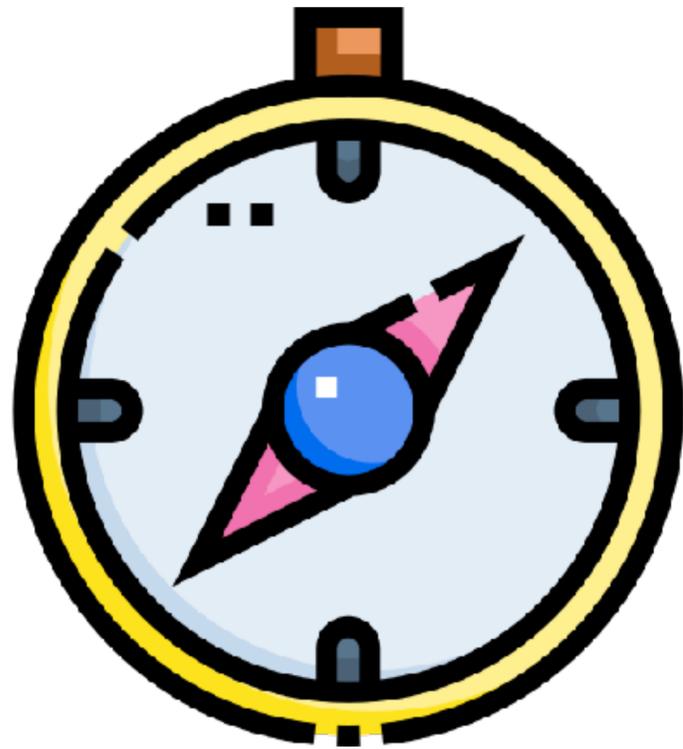
# Learning Erlang



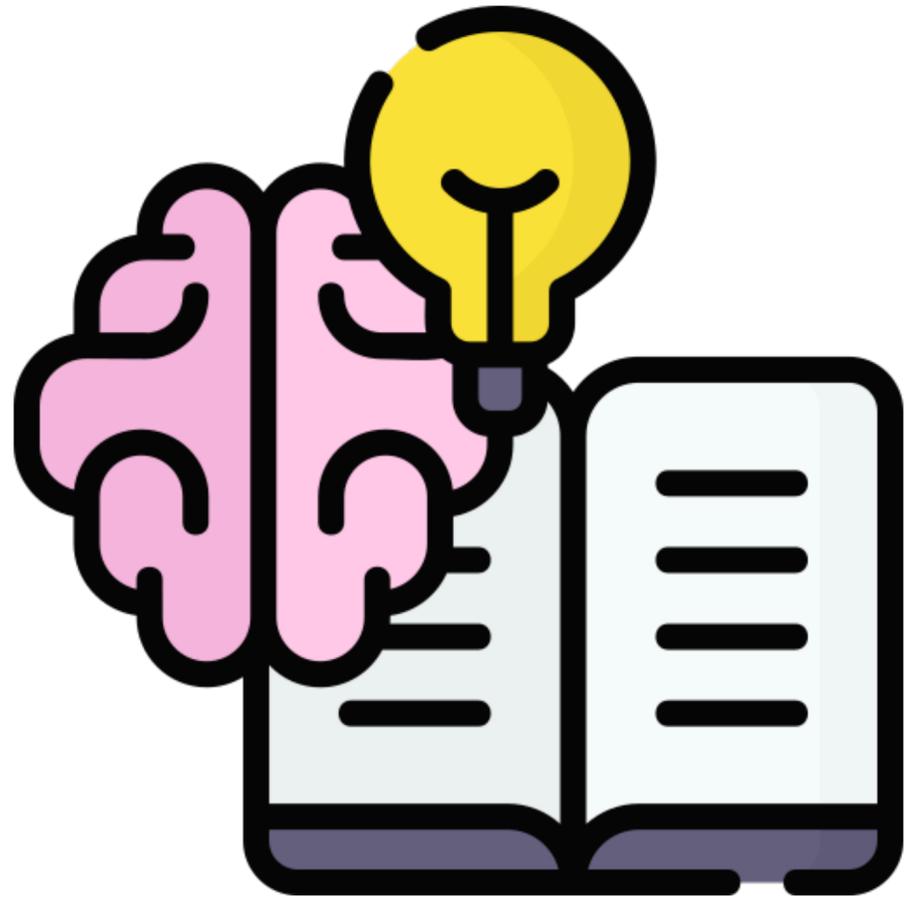
# Some Theory



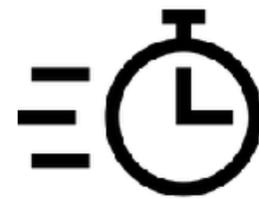
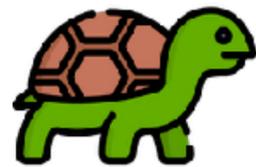
# None Of The Above!



# Your Own Systems



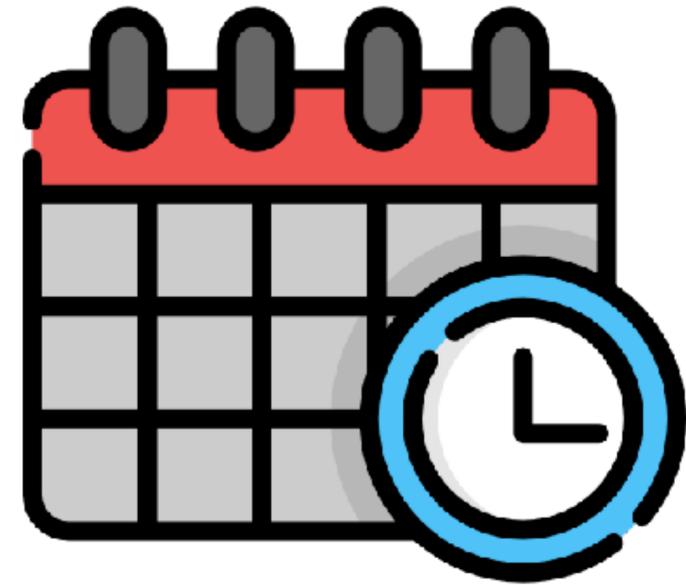
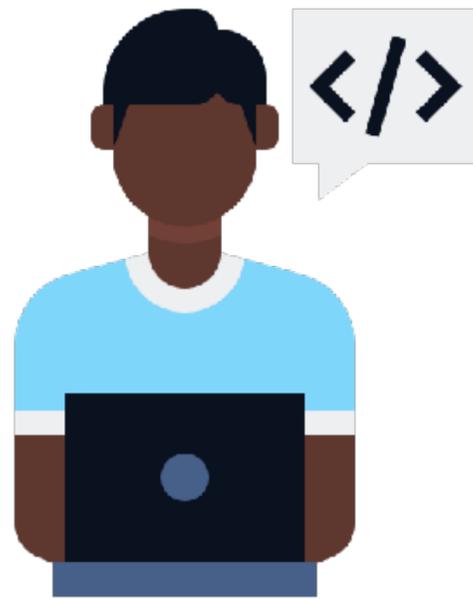
# How?



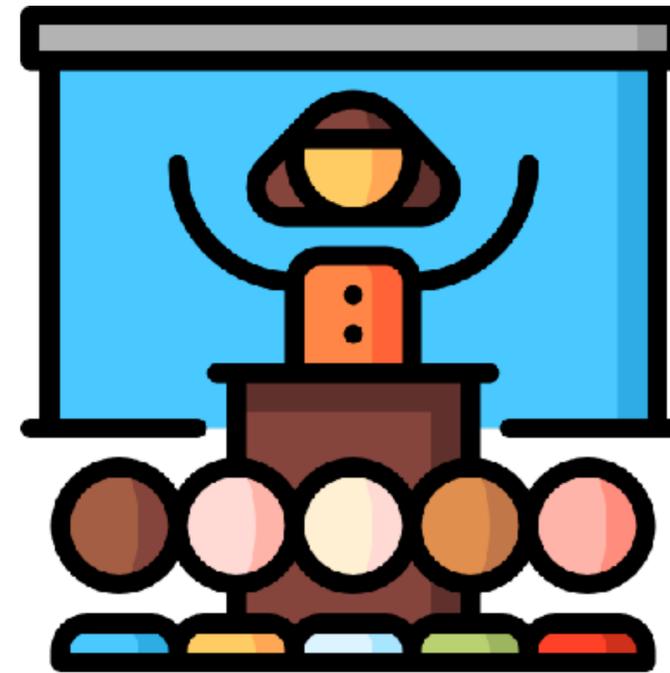
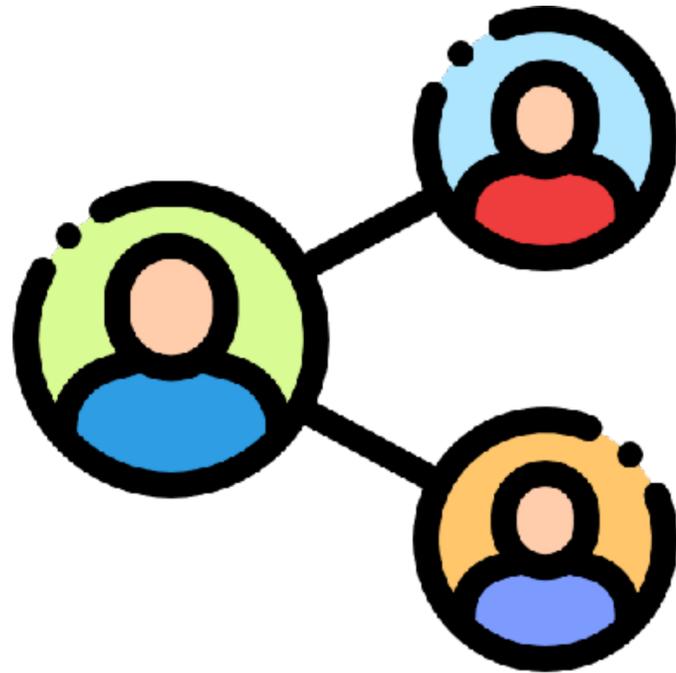
# Guidance and Direction



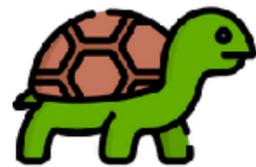
# Make The Time



# Encourage Sharing



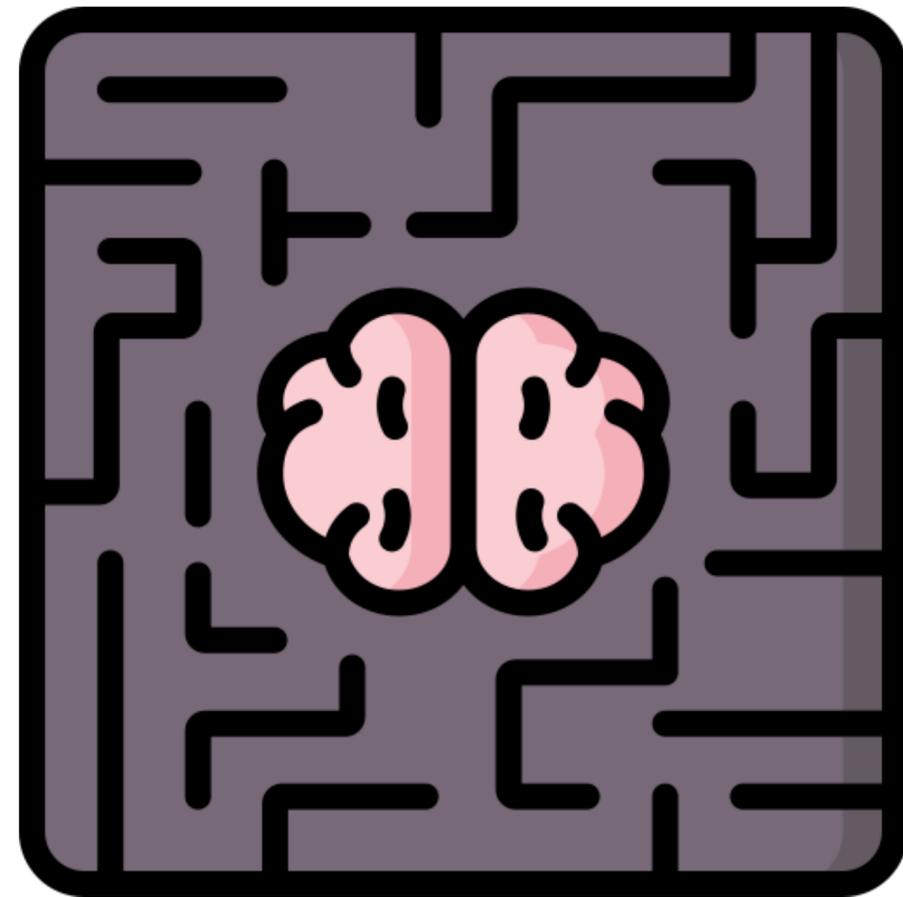
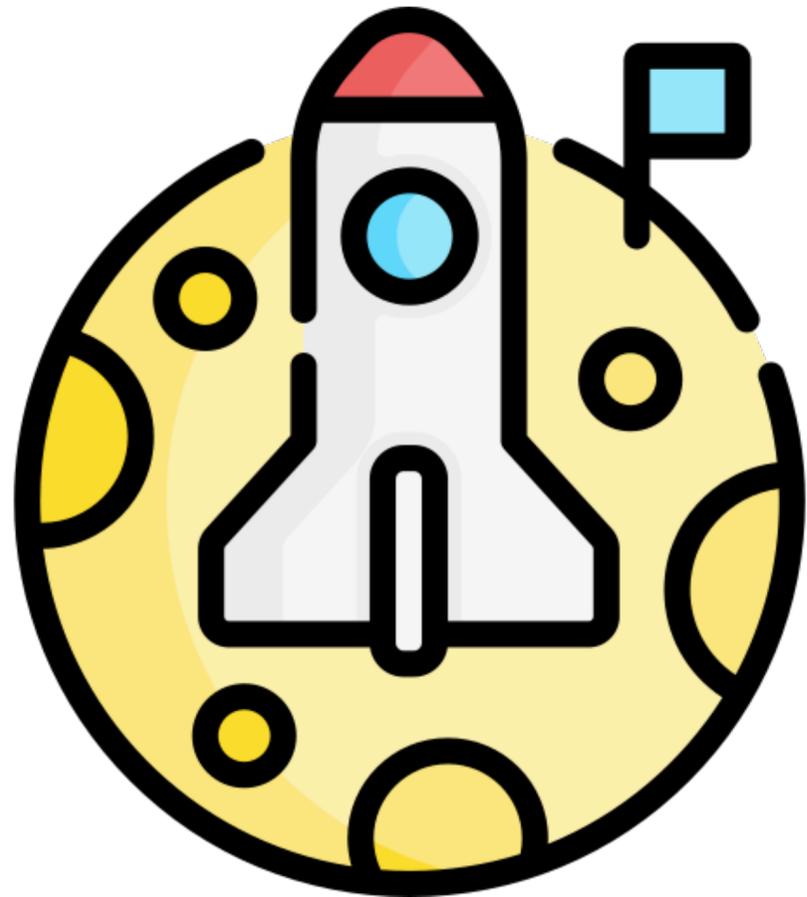
# Pitfalls!



# If We Train, They Will Leave



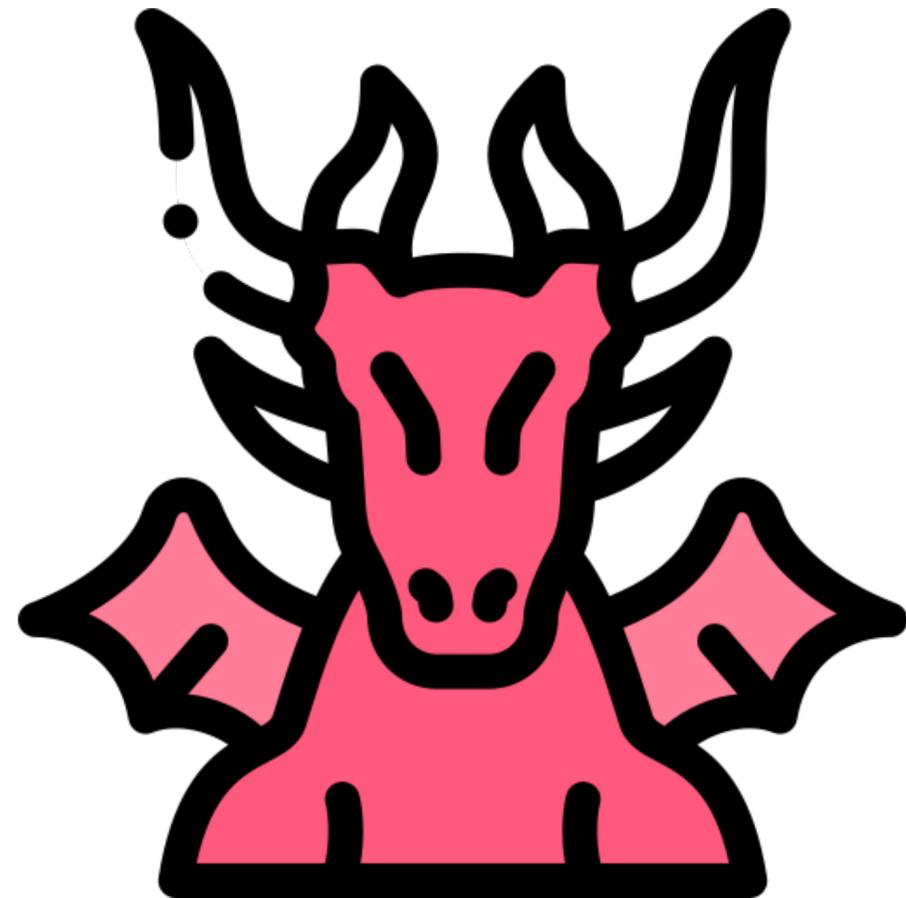
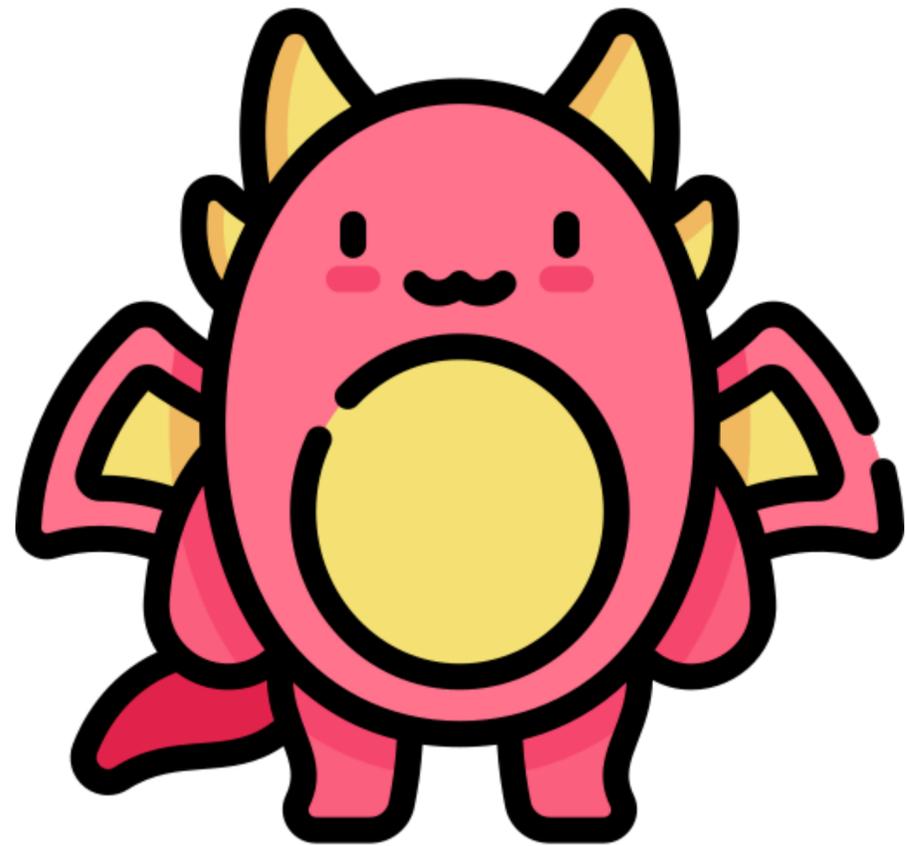
# Keep It Simple



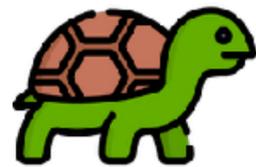
# Time Limits



# DON'T Put It In Prod



# Resources



# The Internet!



A screenshot of a Twitter profile card for Julia Evans (@bOrk). The profile picture is a circular portrait of a woman with curly hair and glasses. The background of the header is a pixelated map of the world in shades of orange and red. A "Follow" button is visible in the top right corner. The profile name is "Julia Evans" with a verified badge, and the handle is "@bOrk". The bio reads "programming and exclamation marks. she/her. zines at [wizardzines.com](http://wizardzines.com)". The location is "Montreal", the website is "jvns.ca", and the account was joined in "June 2007". The card shows "653 Following" and "201K Followers".

**Julia Evans**   
@bOrk

programming and exclamation marks. she/her. zines at [wizardzines.com](http://wizardzines.com).

 Montreal  [jvns.ca](http://jvns.ca)  Joined June 2007

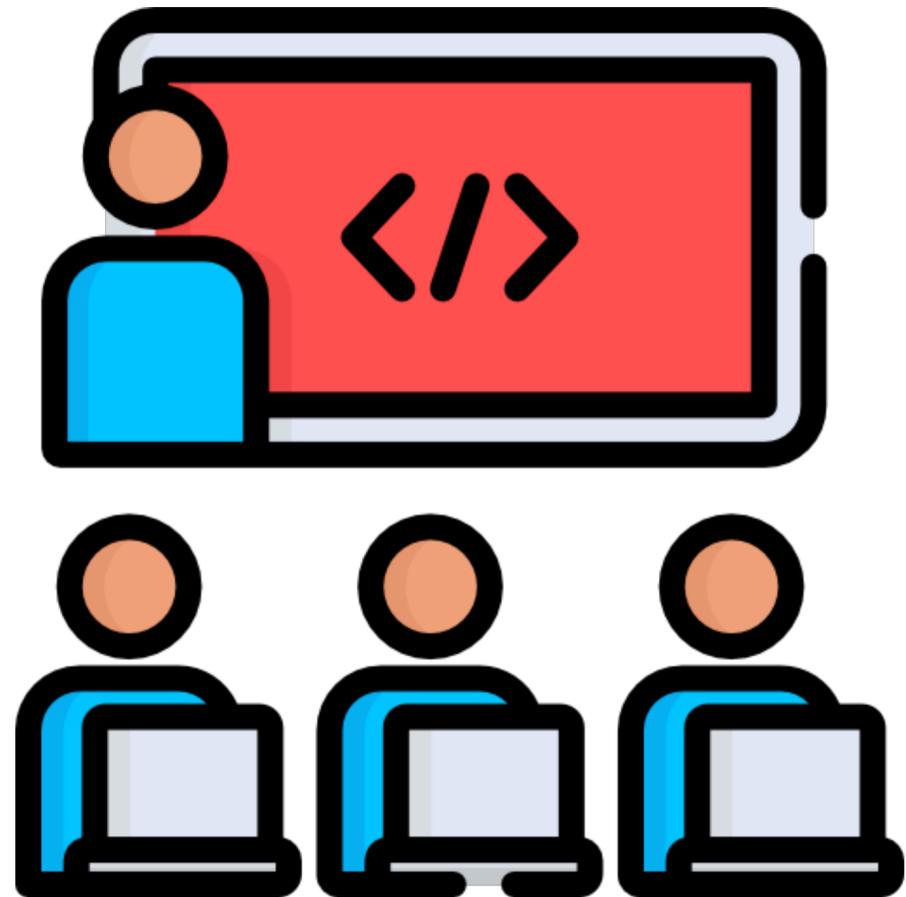
653 Following 201K Followers



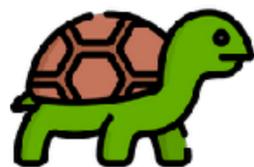
# Your Team



# Take A Class



# Thank You & Safe Travels!



# References



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- Lucas Kostka - [https://lucaskostka.com/posts/foundational\\_knowledge](https://lucaskostka.com/posts/foundational_knowledge)

