

The Art of the Discord Bot

Leveraging Homegrown Tools to Enhance the Hacker Experience

James Hurd

Roadmap

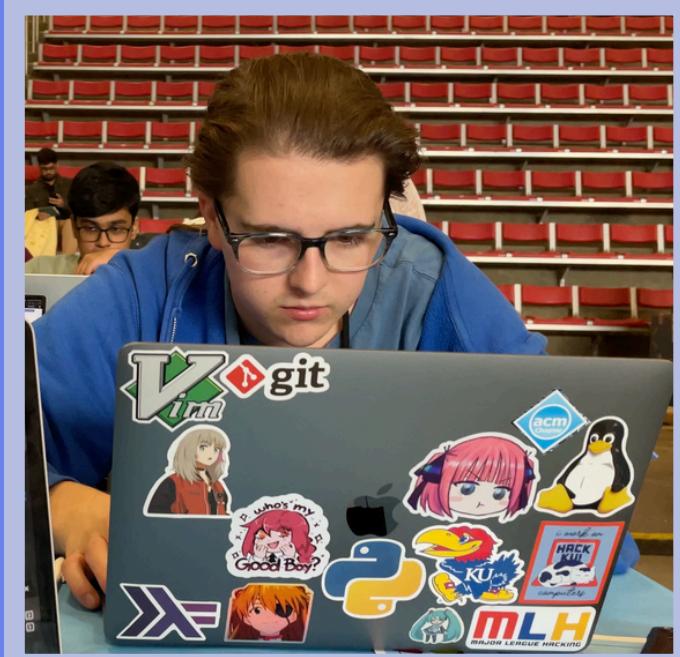


- Introductions
- Part I: Homegrown Tools?
- Part II: Building Robust Tools
- Part III: Helper Duck!

Feel Free to Ask
Questions at Any
Time!



Who am I?



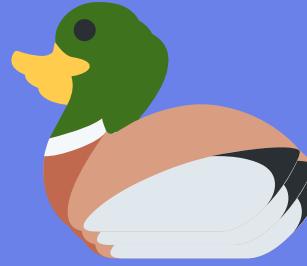
- CS @ University of Kansas
- Director of HackKU25
- Vice-Director of HackKU(23-24)
- Addicted to Programming
- Huge Nerd

Now time for a...



**Shameless
Plug!**

HackKU

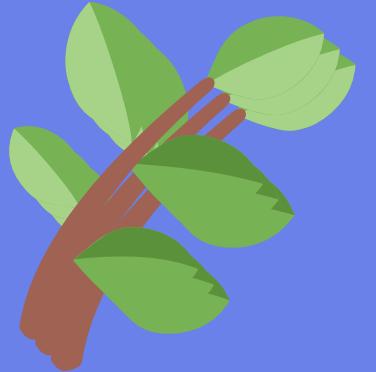


- Annually at the University of Kansas
- 36 hours
- ~430 participants in 2024
- HackKU25: April 4th - April 6th
 - Plans for travel reimbursement
 - hackku.org



Part I:

Homegrown Tools?



Homegrown Tools



Homegrown tools are tools built for *your event* by you!



@hackutd 🌸



@hackku 😍



@hackmit 🌐

Audience Participation

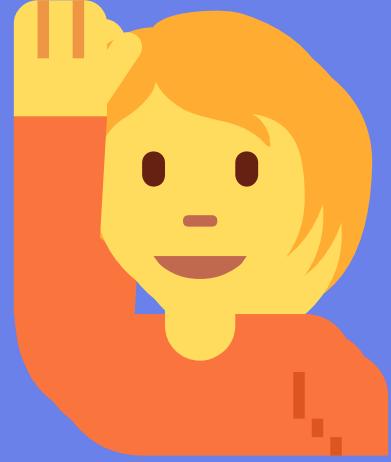


Does your event have any
homegrown tools?

Have you been to an event
with homegrown tools?

Have you made any for your
daily life?

Why should I?



- Automation 😎
- Enhanced hacker experience
- Theming
- Channel the hackathon spirit!
- If something breaks, you can fix it
- The “cool factor” 😎
- Don’t have to be super complex

Why shouldn't I?



- High pressure A yellow circular emoji with two dark brown almond-shaped eyes, a small dark brown curved line for a nose, and a thin dark brown horizontal line for a mouth. It has three dark brown sweat drops on its forehead, indicating stress or high pressure.
- It will probably break A yellow circular emoji with two dark brown almond-shaped eyes, a small dark brown curved line for a nose, and a thin dark brown horizontal line for a mouth. A single blue teardrop is falling from the bottom right corner of its eye area, suggesting despair or breaking.
- Why reinvent the wheel?
- inevetibility rule -- LOOK UP

Audience Participation



Any horror stories (either as
an organizer or participant)
about tools failing? What
about tools in your daily life?

To know if you should build your own
tool, you must first  look within ...



Do I have the time and bandwidth to make sure this tool is robust? 💪

Will I have time to mend this on the fly if it breaks during my event? 🧢

Can I handle the added pressure of using this in battle (aka your event)? 🎉

Will I be able to put out any fires that this tool breaking might cause? 🚒



Ask yourself these important questions! 🤔

If the answers are yes...

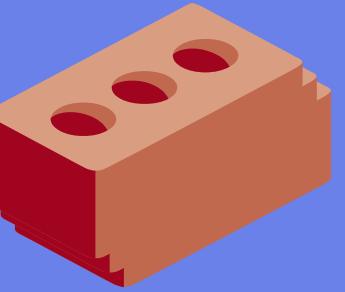
Then strap in!



Part II: *Creating Robust Tools*



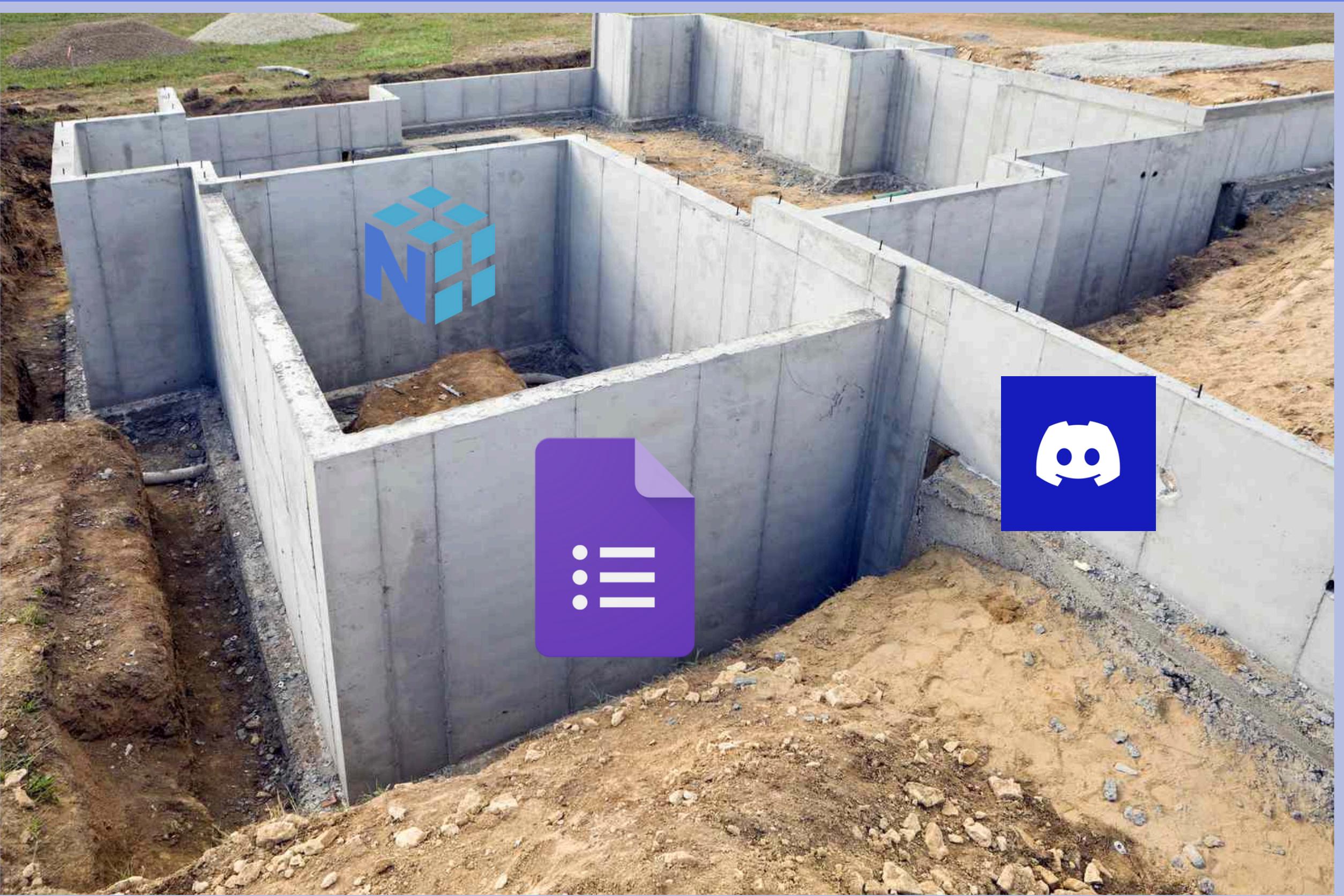
Baking Reliability In



- Use battle-tested libraries and platforms
- Minimize the number fragile components
- Assume your code is the weakest link



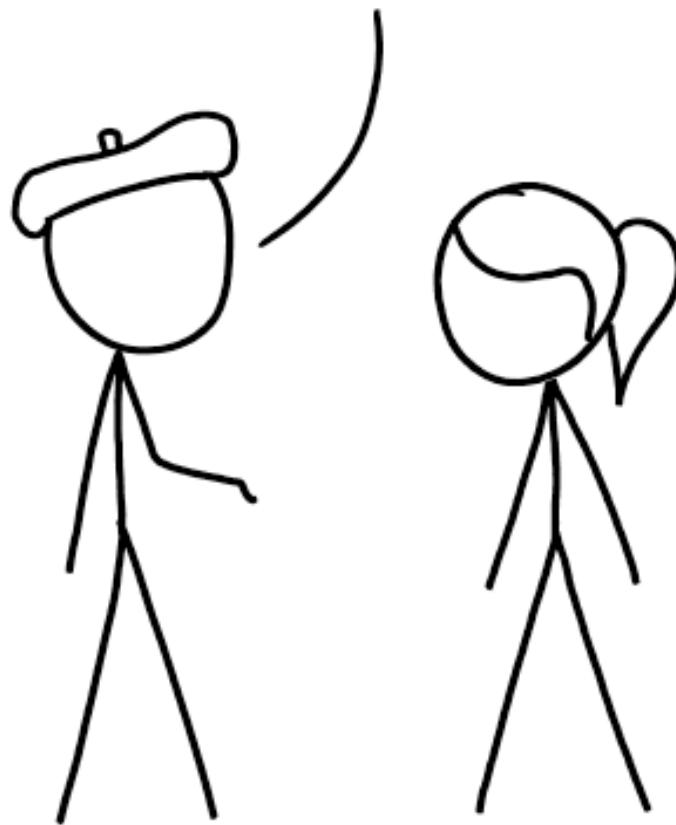






WE DON'T WANT TO REINVENT THE WHEEL,
SO EVERY DAY WE GOOGLE IMAGE SEARCH
"WHEEL", AND WHATEVER OBJECT COMES UP,
THAT'S WHAT WE ATTACH TO OUR VEHICLES.

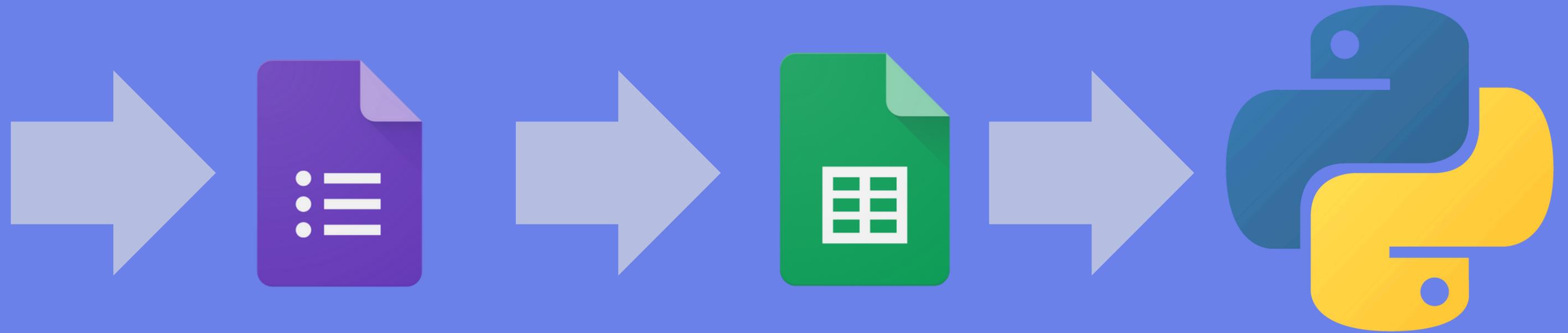
SURE, EXTERNAL¹ DEPENDENCIES
CARRY RISKS, BUT SO FAR THEY'VE
ALL BEEN PRETTY GOOD WHEELS.



Create Modular Tools

- Avoid monoliths!
- Opt for microservice-esque designs.
- Single point of failure? I don't know her. 
- Combine with proven off-the-shelf components.
- Enables effective contingency plans.

Example Time: Judging!



This is the high-level of the HackKU24 judging pipeline!
Notice where the most likely to fail component is...

Failure is Not an Option



Having a backup plan is a MUST.

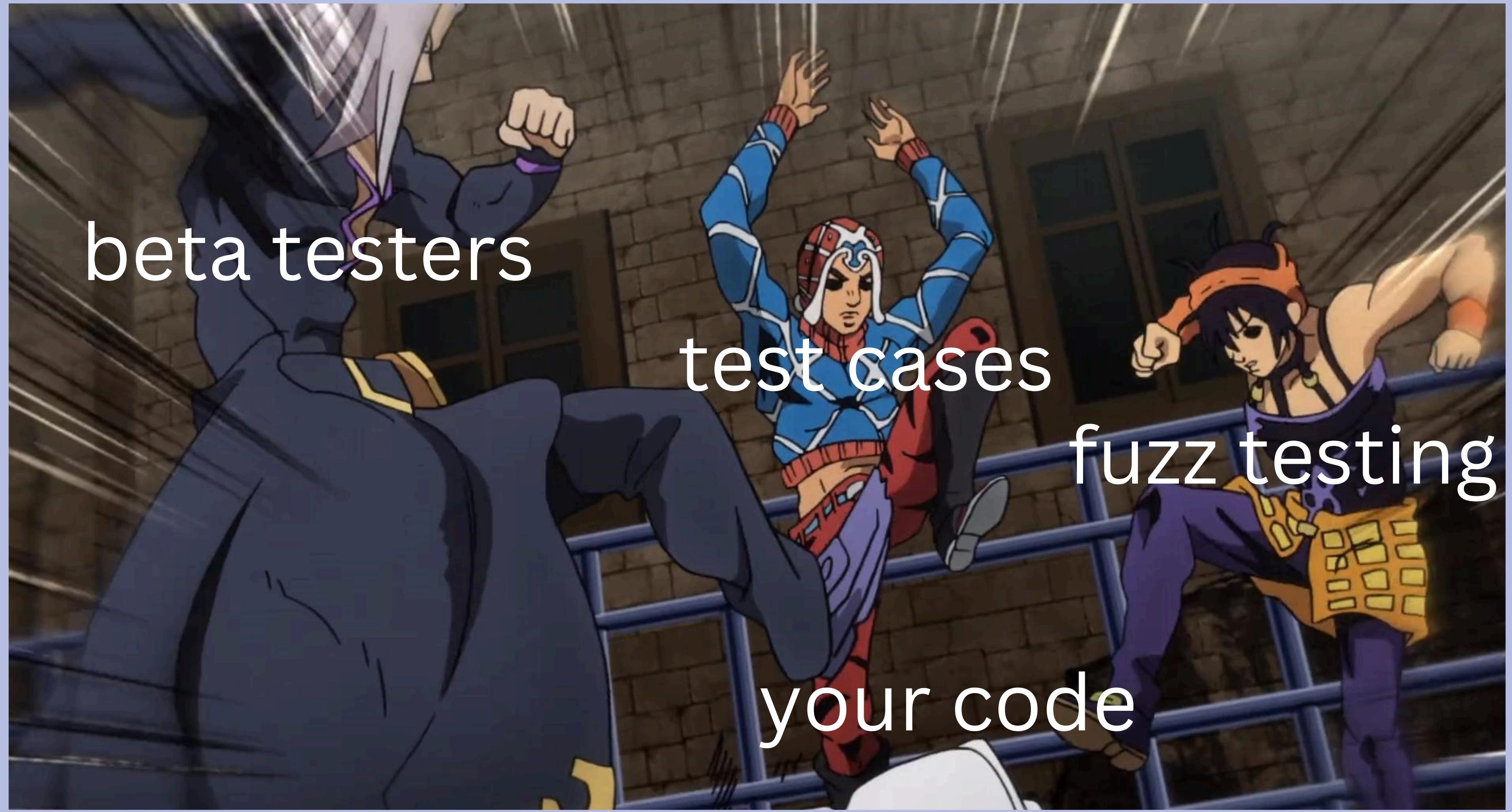
I don't care if you are John Carmack, expect your code to crash and burn.

And of course...

Test, test, test!



- Break it in any way you can.
- Employ beta testers!
- Fuzz-testing is a great option.



beta testers

test cases

fuzz testing

your code

one last thing...

1989

wave

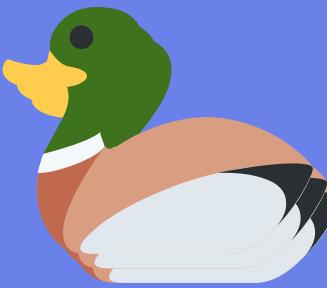
coast



You'll thank me 😊

Part III:

Helper Duck!



...Helper Duck?



HackKU's mentorship
ticketing system and
our most ambitious
homegrown tool yet!



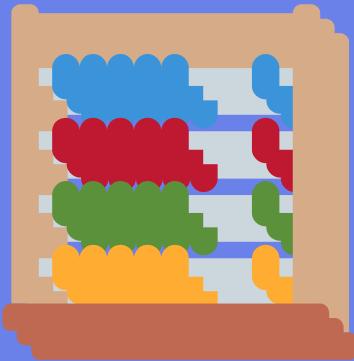
github.com/alexacallmebaka/helper-duck

The Problem

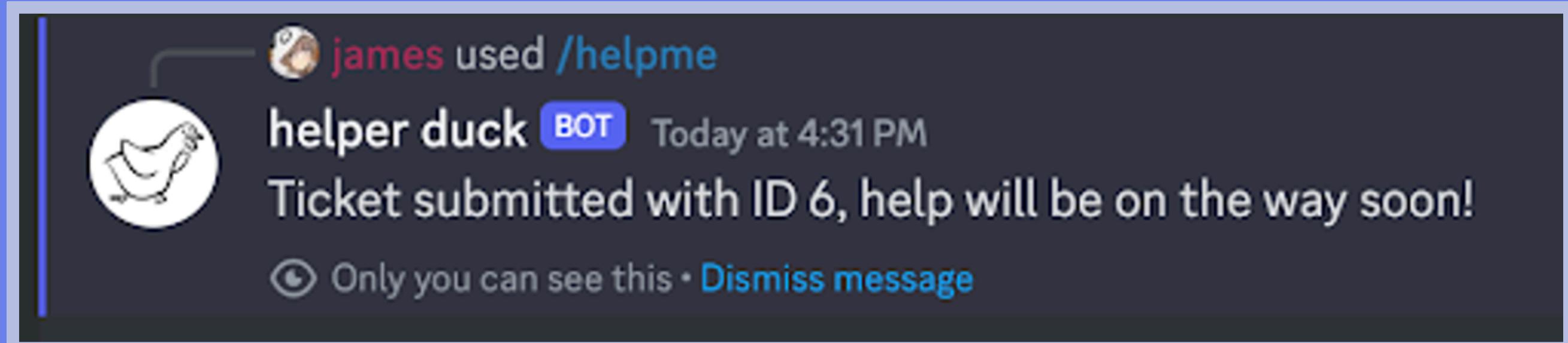
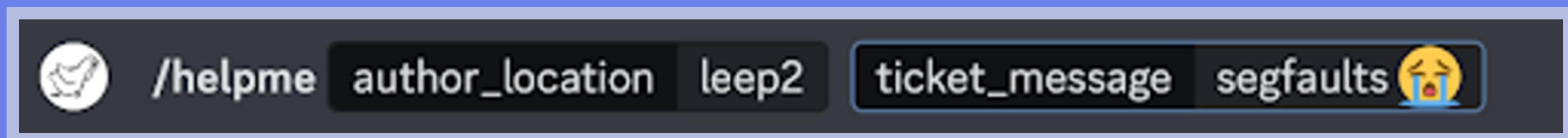


- People don't like asking for help from mentors in front of 400+ people
- From a mentors POV, the traditional system felt messy

The Solution



- Make a discord bot!
- User-friendly frontend
- Based on tickets



Better For Mentors!



helper duck BOT Today at 4:31 PM

New Ticket Opened! 💰

A hacker needs help. Use /claim to claim this ticket!

<u>ID #</u>	<u>Author</u>	<u>Location</u>
6	james	leep2
<u>Message</u>		
segfaults	😭	

Privacy





Ticket #6

Started by **helper duck**
@mention users to add them to this private thread.

April 8, 2024 NEW

- helper duck added **Arul** to the thread. Today at 5:03 PM
- helper duck added **james** to the thread. Today at 5:03 PM

 helper duck BOT Today at 5:03 PM
Greetings @james! @Arul is on the way to leep2 to help you resolve the issue in your ticket:
| segfaults 😭

Threads are ephemeral, and deleted after the ticket is closed.

Easy To Keep Track



james used /mytix

helper duck BOT Today at 5:22 PM

Your Tickets 🎟

Use /status with the ticket ID for more information on a given ticket.

ID #	Claimed 🤔	Closed 🎉
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Only you can see this • [Dismiss message](#)

Some Friendly Competition



james used /leaderboard

helper duck BOT Today at 5:21 PM



Mentor Leaderboard 🔥

Whoever closes the most tickets wins!

<u>Mentor</u>	<u># Claimed</u>	<u># Closed</u>
#1: Arul	8	8
#2: james	2	2
#3: Ephin	1	1

duck.jameskurd.net 

Thank You! ❤



jmh@ku.edu

hackku.org

jameshurd.net/talks/art-of-discord-the-bot