

CS-121:

Week 2

Class Communications?

1. Discord
2. Email
3. Email & Discord



Upcoming

- Project 1: Due by end-of class on Thursday
- Lab 2: Starts Wed. at 2:30pm
- Project 2: Starts Thursday at 3pm

Feedback

- Request a Code Review
- Office Hours
- Final grade + feedback will be given within 1 week of the project deadline



Thinking like a programmer



Thinking like a
programmer
computer

How do computers "think"?

- They **don't**... you do and they follow your instructions
- Literally: They do exactly what you tell them to do
- Linearly: One instruction (line) at a time

Your Functions

- `clap(x)`: Clap your hands x times
- `slam(x)`: Slam your hands on the table x time
- `raise_hand(which_hand)`: Raise your hand (left or right)
- `say(something, volume)`: Say something out loud at a certain volume

Program 1:

👉 clap(3)

slam(2)

raise_hand("left")

say("Sssssssssssss!", "whisper")

Program 1:

clap(3)

👉 slam(2)

raise_hand("left")

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Program 1:

```
clap(3)
```

```
slam(2)
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👉 raise_hand("left")
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say("Sssssssssssss!", "whisper")
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Program 1:

```
clap(3)
```

```
slam(2)
```

```
raise_hand("left")
```

```
👉 say("Sssssssssssss!", "whisper")
```

Program 2:

```
👉 raise_hand("right")  
raise_hand("left")  
say("Touchdown!", "loud")
```

Program 2:

```
raise_hand("right")
```

```
👉 raise_hand("left")
```

```
say("Touchdown!", "loud")
```

Program 2:

```
raise_hand("right")
```

```
raise_hand("left")
```

```
👉 say("Touchdown!", "loud")
```

Program 3:


Load variables into memory

 message = "Hello, world!"


slam_count = 1

clap_count = 3

Program 3:

```
# Load variables into memory  
message = "Hello, world!"  
 slam_count = 1  
clap_count = 3
```

Program 3:

```
# Load variables into memory  
message = "Hello, world!"  
slam_count = 1  
 clap_count = 3
```

Program 3:

👉 `clap(clap_count)`
`slam(slam_count)`
`say(message, "loud")`

Program 3:

```
clap(clap_count)
```

```
👉 slam(slam_count)
```

```
say(message, "loud")
```

Program 3:

```
clap(clap_count)
```

```
slam(slam_count)
```

```
👉 say(message, "loud")
```



Feel the power

- We ran this "mind program" with 14 of us at once
- Real programs can millions of times per second on millions of computers
- Computers are powerful, but they are not smart, you are smart.

**Thinking like a programmer is
about breaking down a
problem into executable
steps**

**A problem well-stated is a
problem half-solved**

What are my inputs? What are my outputs?

Input $\xrightarrow{???$ Output



Example Problem: Raffle Ticket

- You have a list of raffle tickets
- You need to pick a random ticket
- You need to announce the winner

Input: List of Raffle Ticket Numbers

Output: Winning Ticket Number

```
import random
```

```
tickets = ["#A123", "#A124", "#A125", "#A126", "#A127"]
```

```
winning_ticket = random.choice(tickets)
```

```
print(f"The winning ticket is: {winning_ticket}")
```

```
const tickets = ["#A123", "#A124", "#A125", "#A126", "#A127"];  
const winningTicket = tickets[Math.floor(Math.random() * tickets.length)];  
  
console.log(`The winning ticket is: ${winningTicket}`);
```

```
using System;

class Program
{
    static void Main()
    {
        var tickets = new string[] { "#A123", "#A124", "#A125", "#A126", "#A127" };
        var winningTicket = tickets[new Random().Next(tickets.Length)];

        Console.WriteLine($"The winning ticket is: {winningTicket}");
    }
}
```



```
let tickets = ["#A123", "#A124", "#A125", "#A126", "#A127"]  
let winningTicket = tickets.randomElement()!  
  
print("The winning ticket is: \"(winningTicket)\")
```

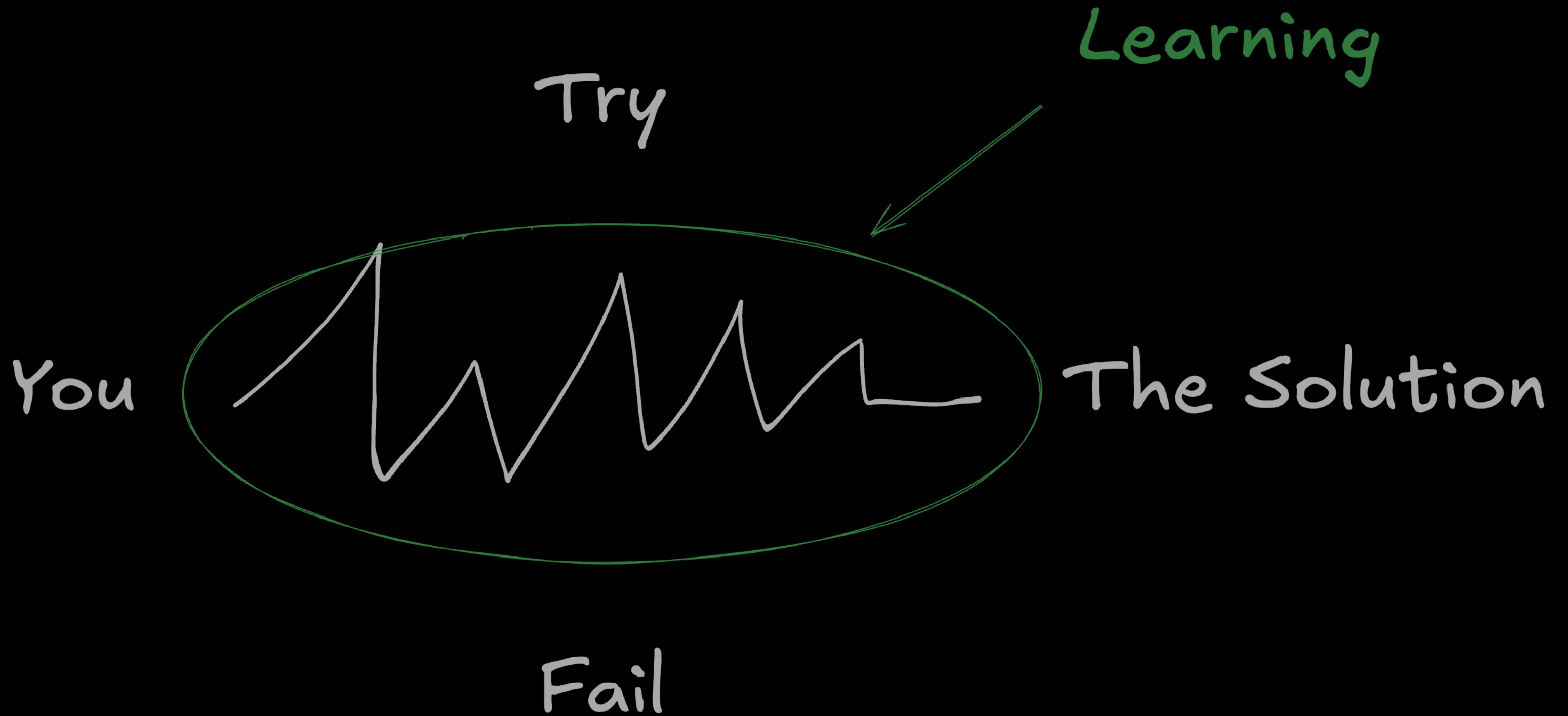


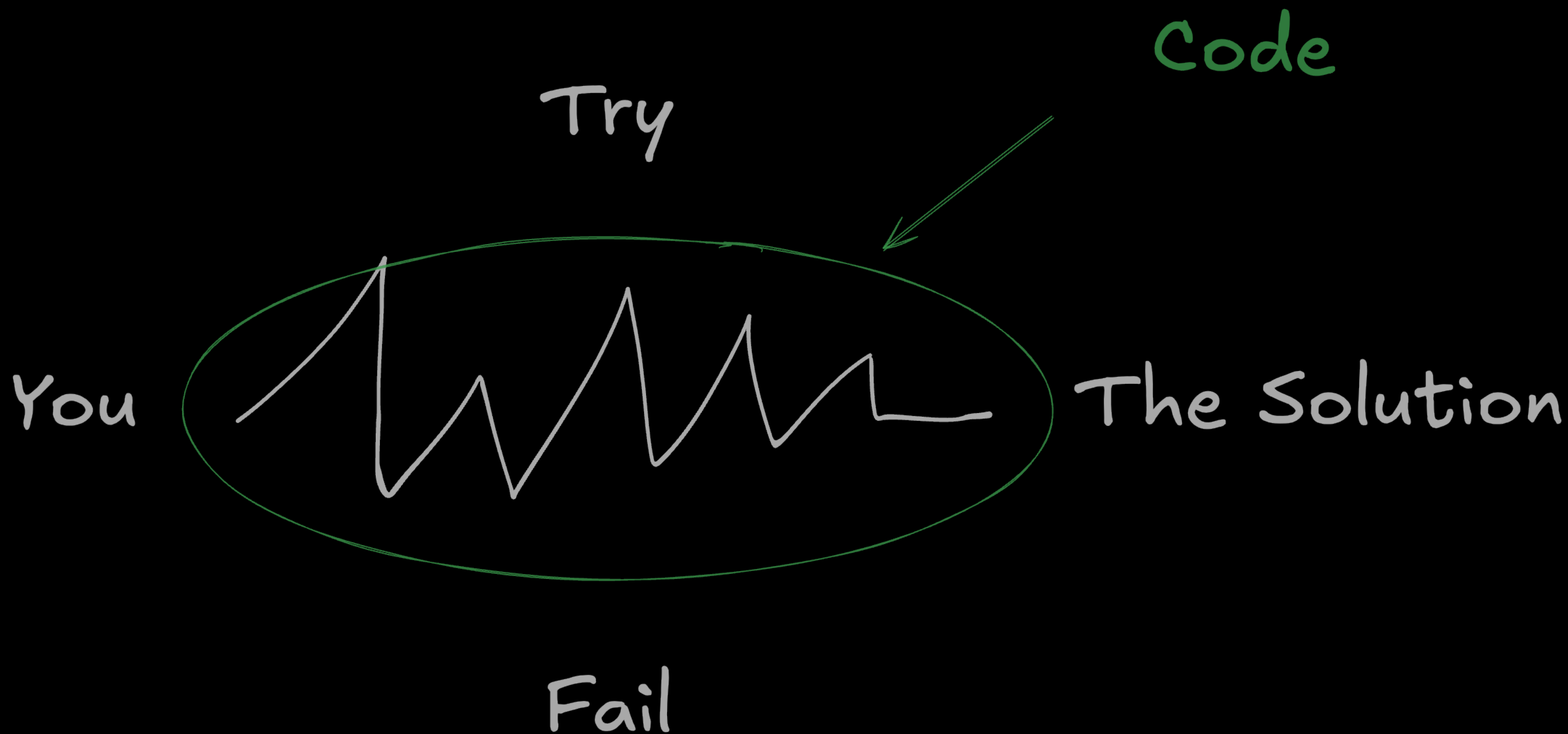
Keyboard $\xrightarrow{\text{Code}}$ Screen

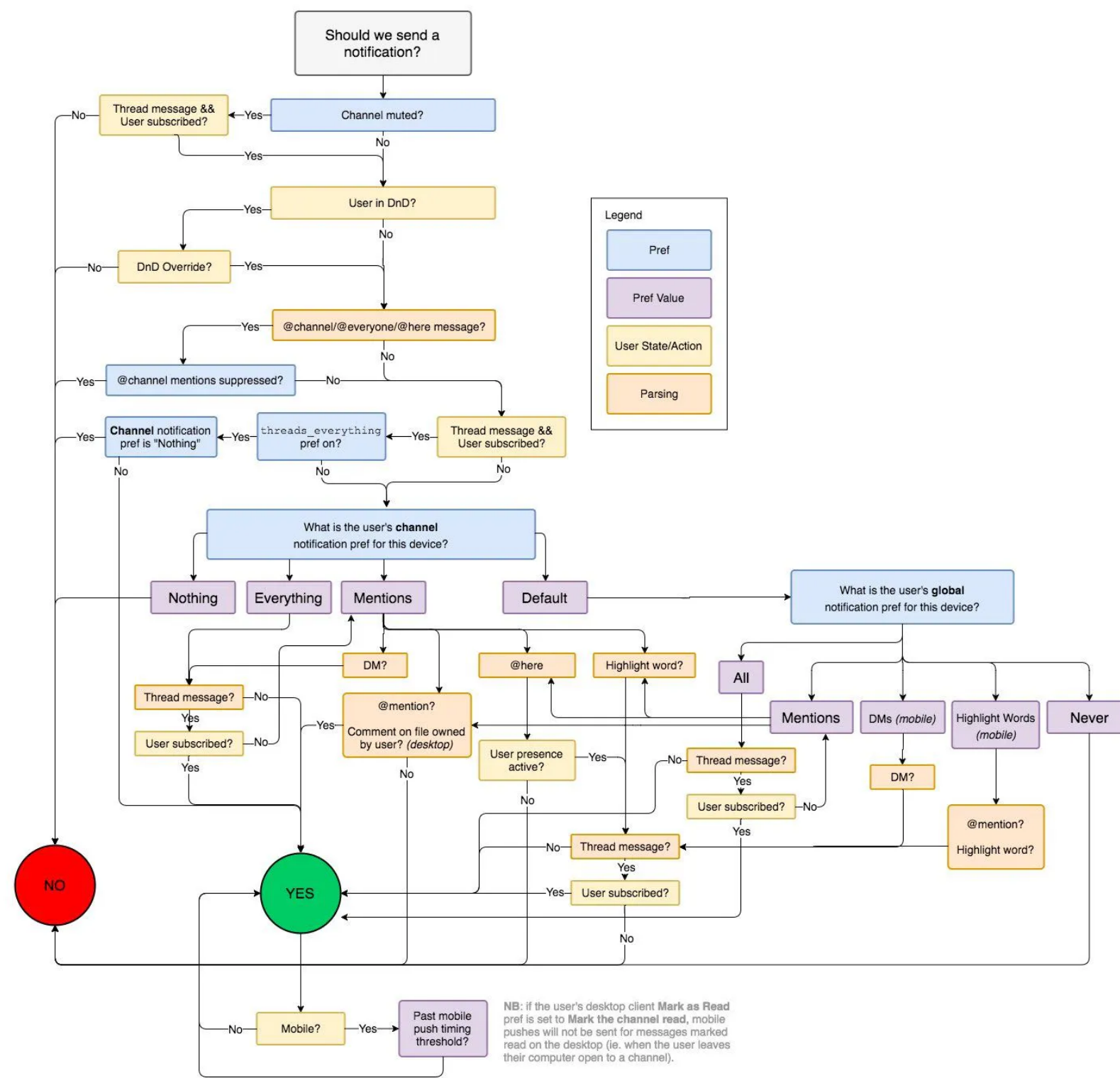












Variable Types (Review)

(Data Types)

- Strings (str): Text data, like "Hello, World!"
- Integers (int): Whole numbers, like 42 or -10
- Floats (float): Decimal numbers, like 3.14 or -0.5
- Booleans (bool): True or False values

What type?

- A person's name
- A person's height
- An address
- The value of Pi
- Drinks coffee (yes or no)



Inputs

```
name = input("What is your name? ")
```

```
print(f"Hello, {name}!")
```

f-strings

```
name = input("What is your name? ")
time_of_day = "afternoon"

# These print the same thing
print("Hello, " + name + ", good " + time_of_day + "!")
print(f"Hello, {name}, good {time_of_day}!")
```

```
x = 10
```

```
y = 20
```

```
print(f"The sum of {x} and {y} is {x + y}")
```



Lab 2

"Notebook" Project

- A general repo for you to practice code and take notes
- Put whatever you want in there

Project Work



Refactoring

- Changing the code without changing its behavior
- Making it more readable, efficient, or maintainable
- Incorporating new techniques or best practices

General Q/A

Project 2: You.py

- We'll be taking the concept around me.py and turning it into an interactive input that builds out a profile for the user

Go Time

- Focus on Code
- Ask for Help
- Push and commit what you have before you leave