

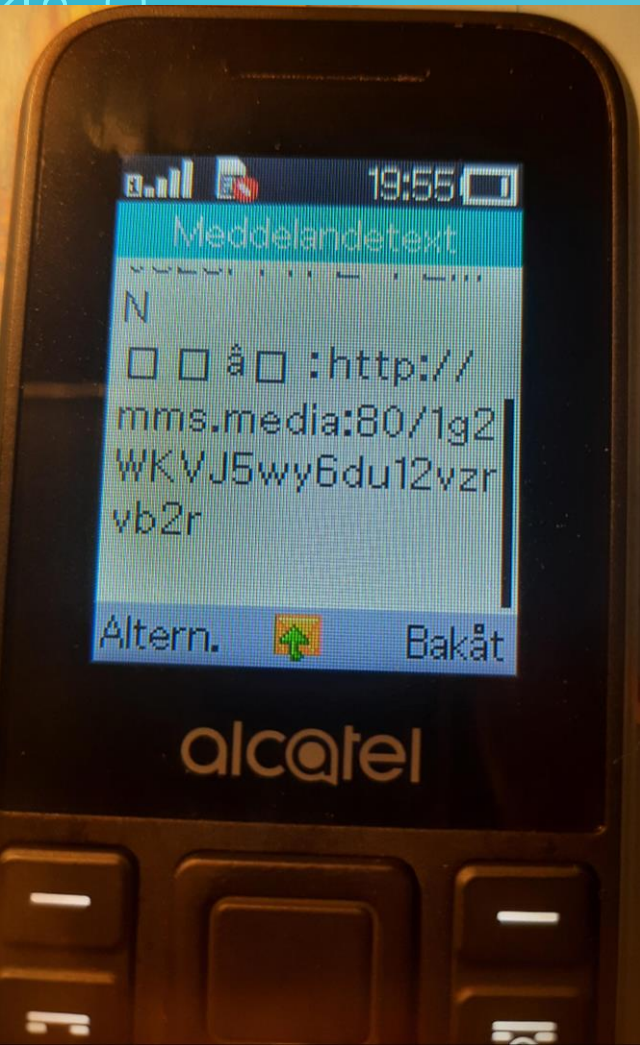
# 03. INTERNET PROTOCOLS

## HOW COMPUTERS TALK

M3U1P3



# WHAT IF COMPUTERS HAD NO RULES?



# Oops...

Looks like something went wrong.  
We're working on it.



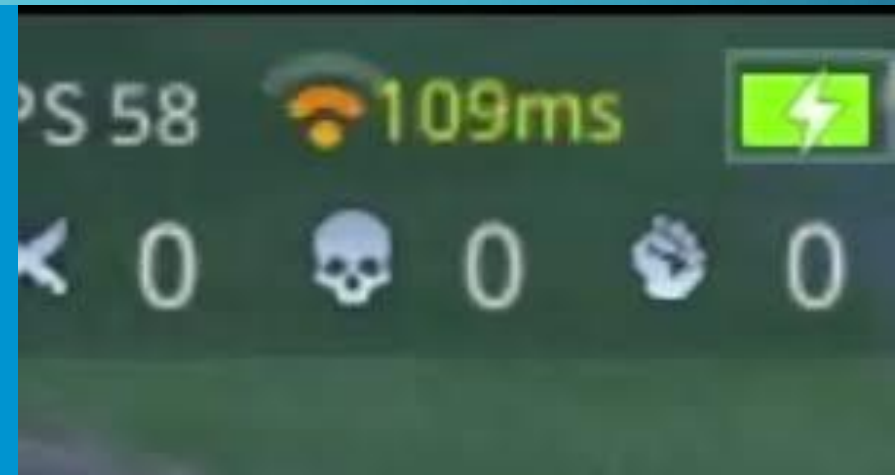
Try Again



Go Home



Contact Us



# 404

Page not found

# WHAT IS A COMPUTER PROTOCOL?



# COMPUTER PROTOCOLS

- Computer Rules for Communication
- Protocols help computers:
  - send messages
  - understand each other
  - avoid mistakes

## Network Protocol

Set of rules and conventions



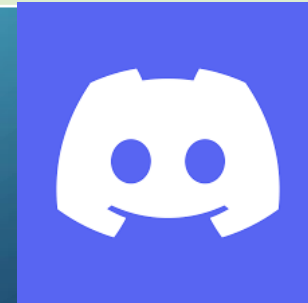
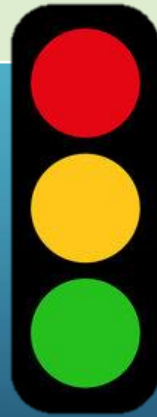
# REAL-LIFE PROTOCOLS

- Humans Use Protocols Too!



# REAL-LIFE PROTOCOLS

| In School                         | On the road                  | Online                                   |
|-----------------------------------|------------------------------|--|
| raise your hand<br>wait your turn | traffic lights<br>stop signs | greeting<br>sending stickers<br>replying |



# WHY DO WE NEED PROTOCOLS?



# WHY DO WE NEED PROTOCOLS?

**✘** No protocol

confusion  
missing data  
errors

**✔** Protocol

organized  
reliable  
understandable



# DIFFERENT JOBS, DIFFERENT PROTOCOLS

| Protocol | Purpose           |
|----------|-------------------|
| TCP      | Reliable delivery |
| UDP      | Fast delivery     |
| HTTP     | Websites          |
| FTP      | File transfer     |

# TCP = CAREFUL DELIVERY

- Transmission Control Protocol (TCP)
- TCP is like a package delivery service with tracking
- TCP checks:
  - Did it arrive?
  - Is anything missing?
  - Is the order correct?






# WHERE IS TCP USED?

- logging in
  - online banking
  - sending email
  - downloading files
- 
- Accuracy is more important than speed.

# TCP HANDSHAKE

## Before Sending Data

- Computer A:  
 "Can we connect?"
- Computer B:  
 "Yes!"
- Computer A:  
 "Great!"



**iamkirkbater**  Aug 23rd, 2017 at 9:37 AM  
in #www

Do you want to hear a joke about TCP/IP?



7 replies



**jkjustjoshing** 5 months ago

Yes, I'd like to hear a joke about TCP/IP



**iamkirkbater**  5 months ago

Are you ready to hear the joke about TCP/IP?



**jkjustjoshing** 5 months ago

I am ready to hear the joke about TCP/IP



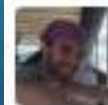
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Did you receive the joke about TCP/IP?



**jkjustjoshing** 5 months ago

I have received the joke about TCP/IP.



**iamkirkbater**  5 months ago

Excellent. You have received the joke about TCP/IP. Goodbye.

# UDP = FAST DELIVERY

- User Datagram Protocol (UDP)
- UDP is like live TV or voice chat
- It's real time
- UDP does NOT check everything



**Kirk Bater**

@KirkBater

Follow



This image is a TCP/IP Joke. This tweet is a UDP joke. I don't care if you get it.

## Thread

iamkirkbater and jkjustjoshing



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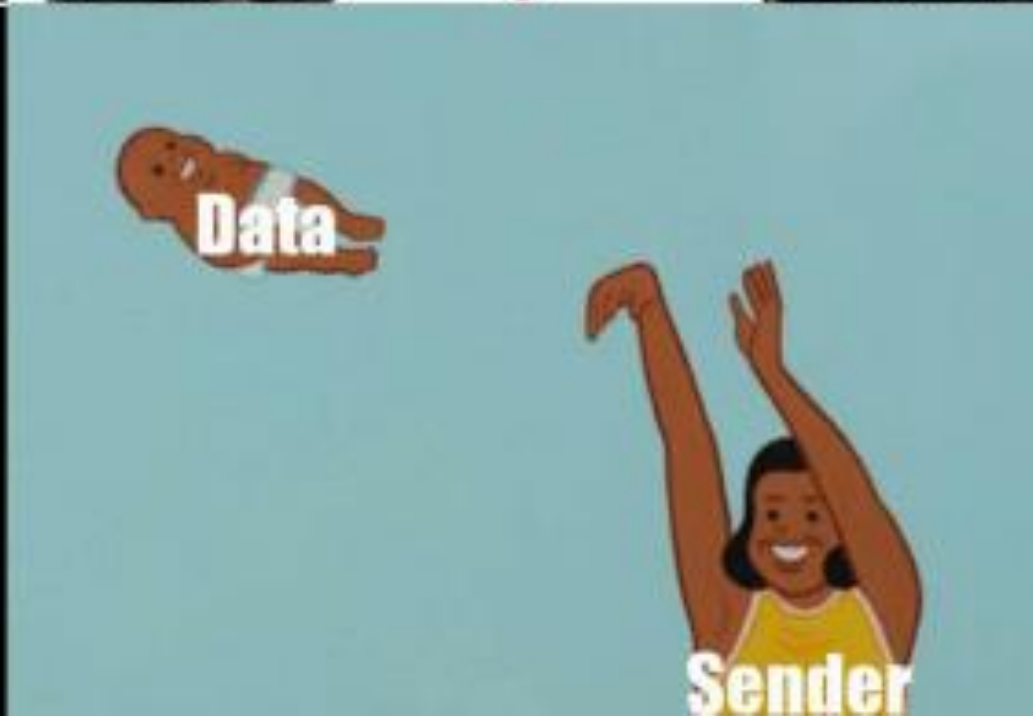
# TCP VS UDP VISUAL CAREFUL VS FAST

| TCP  | UDP  |
|--|--|
|  checked  |  fast           |
|  reliable |  real-time      |
|  slower  |  may lose data |

**TCP**



**UDP**



# TCP



# UDP



# TCP OR UDP





# ONLINE GAMES



TCP

UDP



# VIDEO CALLS

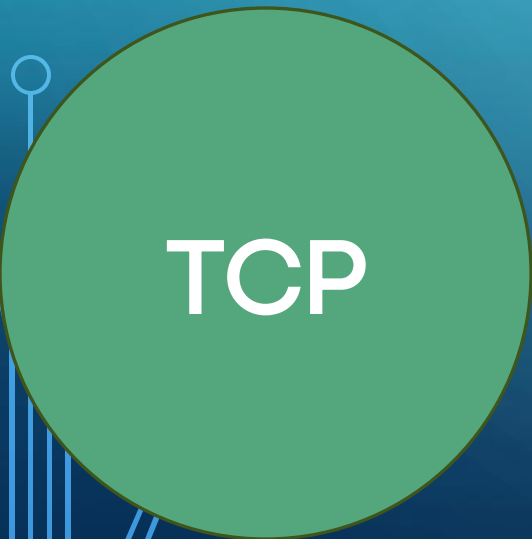


TCP

UDP

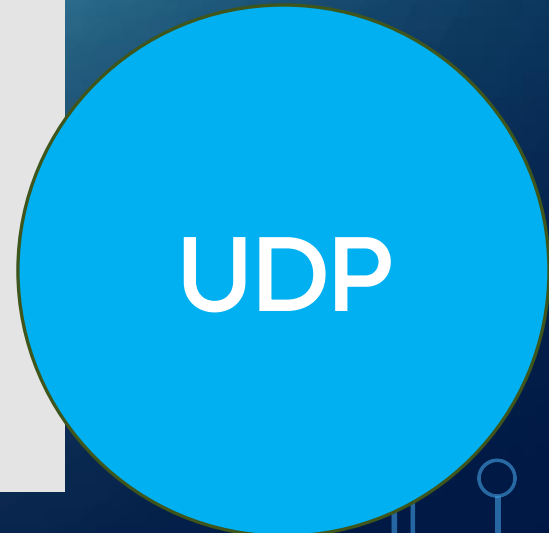
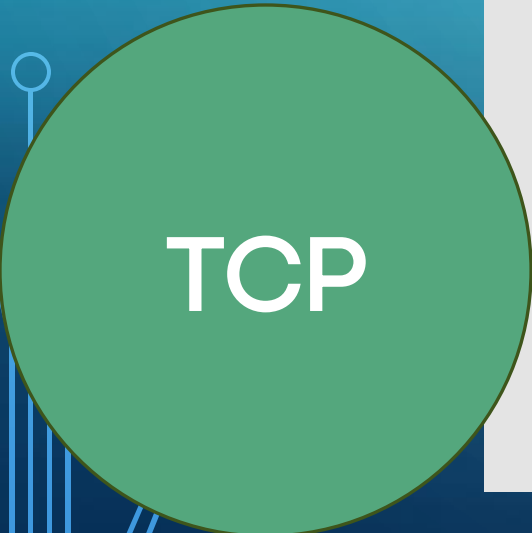


# BANKING






# EMAIL



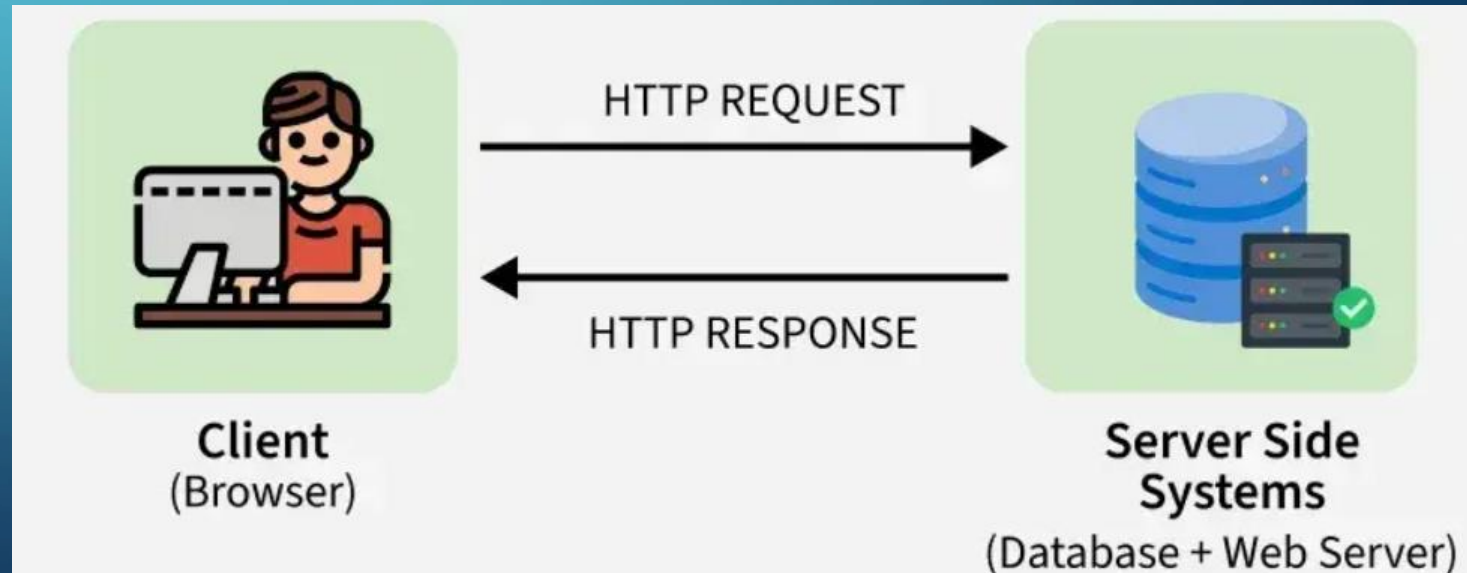
# HTTP = WEBSITE COMMUNICATION

- Hyper Text Transfer Protocol (HTTP)
- HTTP helps:
  -  browsers talk to websites.



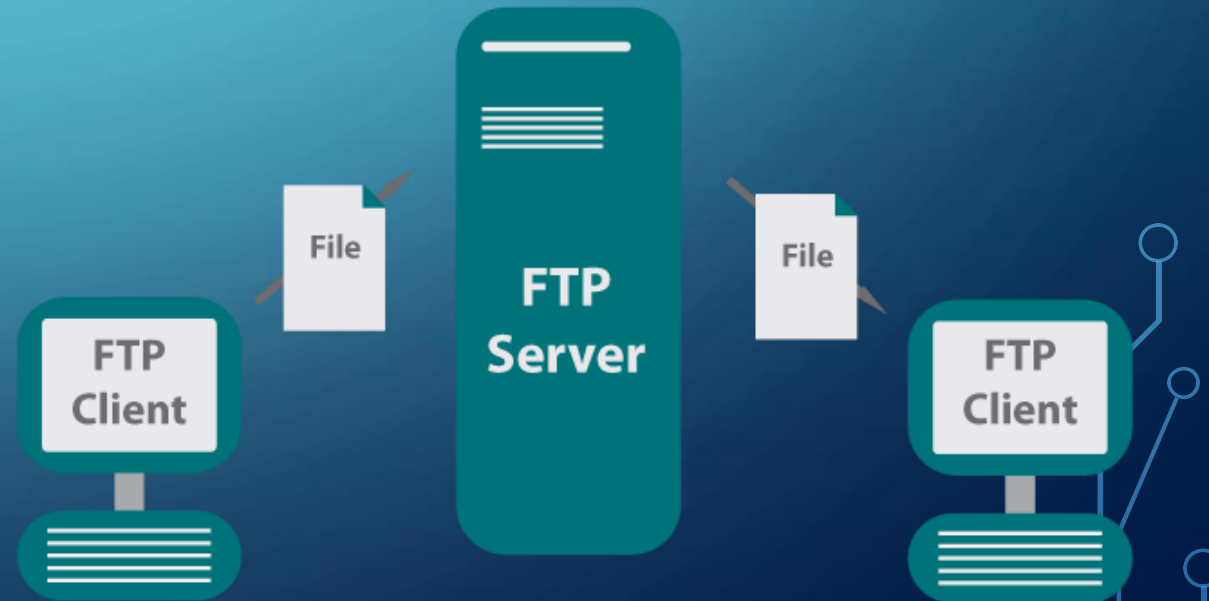
# HOW WEBSITES COMMUNICATE

- Example:
  - You click YouTube
  - Browser sends request
  - Server responds
  - Website appears



# FTP = SENDING FILES

- File Transfer Protocol (FTP)
- FTP is moving files between computers.
- **Examples**
  - uploading websites
  - transferring photos
  - sharing large files



The background is a gradient of blue, darker at the bottom. In the four corners, there are decorative white line-art elements resembling circuit traces or network diagrams, with small circles at the end of the lines.

**WHICH PROTOCOL?**

**“MATCH THE SITUATION”**

## Situation

Watching YouTube Live

Opening a website

Uploading files

Online banking

## Protocol

FTP

TCP

UDP

HTTP

The background is a dark teal gradient. In the corners, there are decorative white line-art elements resembling circuit traces or network diagrams, with small circles at the end of the lines.

**WHICH PROTOCOL ARE USED?**

**WHY?**

# WHICH PROTOCOL ARE USED? WHY?



# WHICH PROTOCOL ARE USED? WHY?



Shopee

# WHICH PROTOCOL ARE USED? WHY?

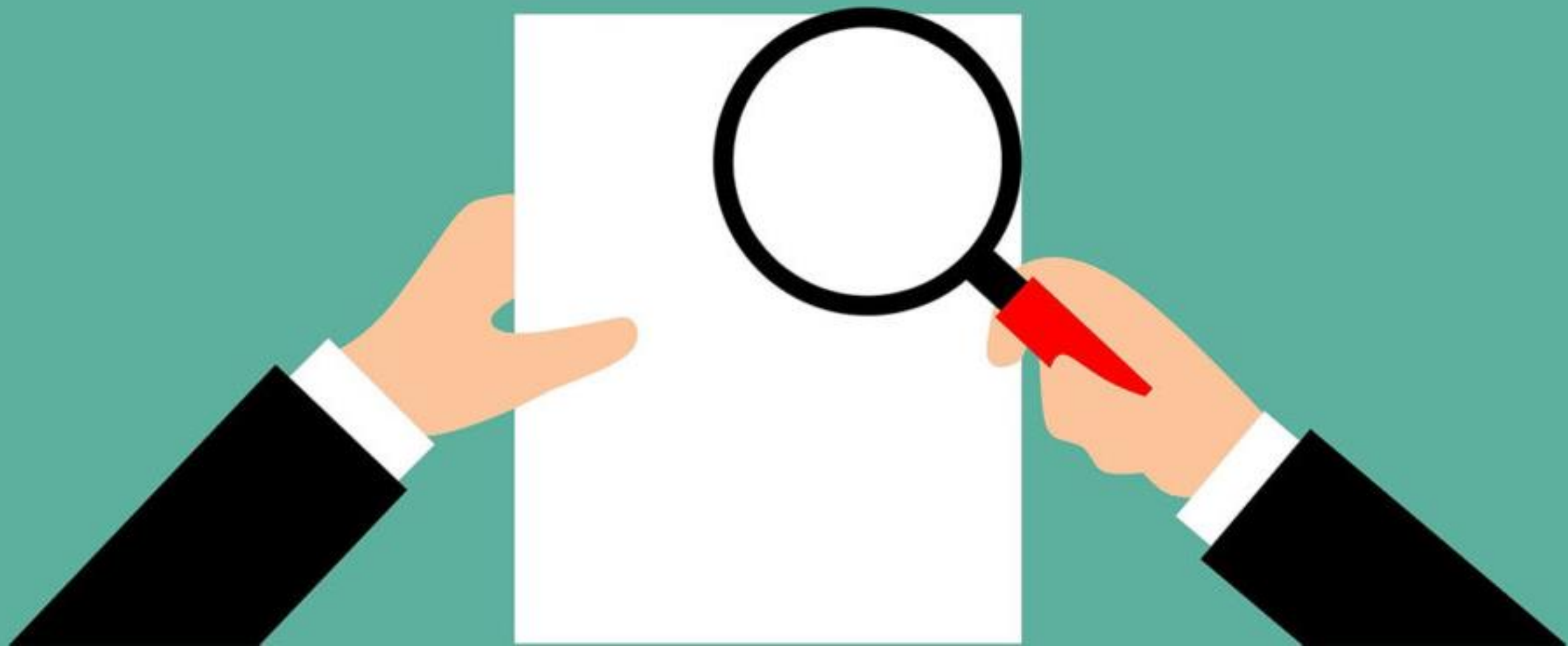


**Discord**

The background is a solid teal color with a subtle gradient. In the four corners, there are decorative white line-art elements resembling circuit traces or data paths, with small circles at the end of the lines.

**ANY QUESTIONS?**

# Review



# QUICK REVIEW

- What is a protocol?
- TCP or UDP: online games?
- What does HTTP do?
- What does FTP do?



**THE END**