# Objectives for today

- Compare Internet to a Post Office
  - Addresses of networks-> why they matter
- Learn how the internet works


- Cool educational takeaways:
  - Teach networking w/o a computer
  - Cool algorithms
  - Hands-on activity
  - Candy is also involved

# Cables are tubes

- Carry out signals
  - Tomorrow we'll find out how fast
- Data sent over networks are broken into small pieces
  - These are called packets!
  - Tiny packages that carry data
- Packets have addresses to get from point A to point B
  - Started with MAC addresses
  - Where does the MAC address get us?

# What's a MAC for?

- What can we figure out?

- What's it used for?

- a4:5e:60:c9:78:7d

- OUI Lookup

# What kind
# of address = internet?

# IP Addresses

- IP doesn't actually = internet
  - IP = "leave your network"


- A lot like a zip code!


- Why do you use a zip code?

# IP's are Important!

- Without them, the internet won't work!
- Without zip codes, your mail won't get delivered!

- They look like this:
- 138.247.240.84

# What makes the internet?

- Lots of networks, all connected together
- DSU's connects to three separate networks
- Your network at home connects to your Internet Provider's network

- All of us end up on the same network… called what?

# Routers do the work!

- Routers are what connect networks
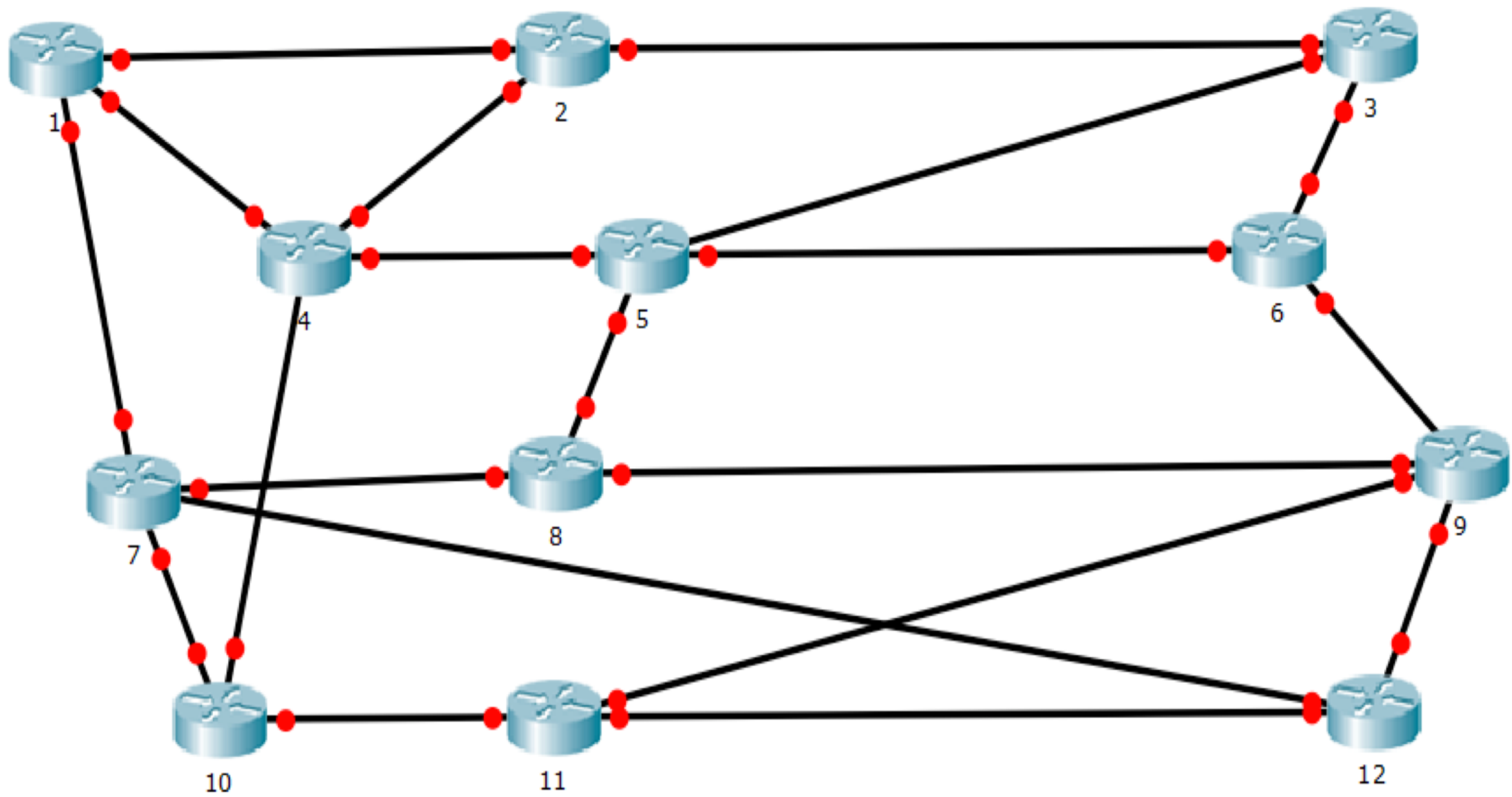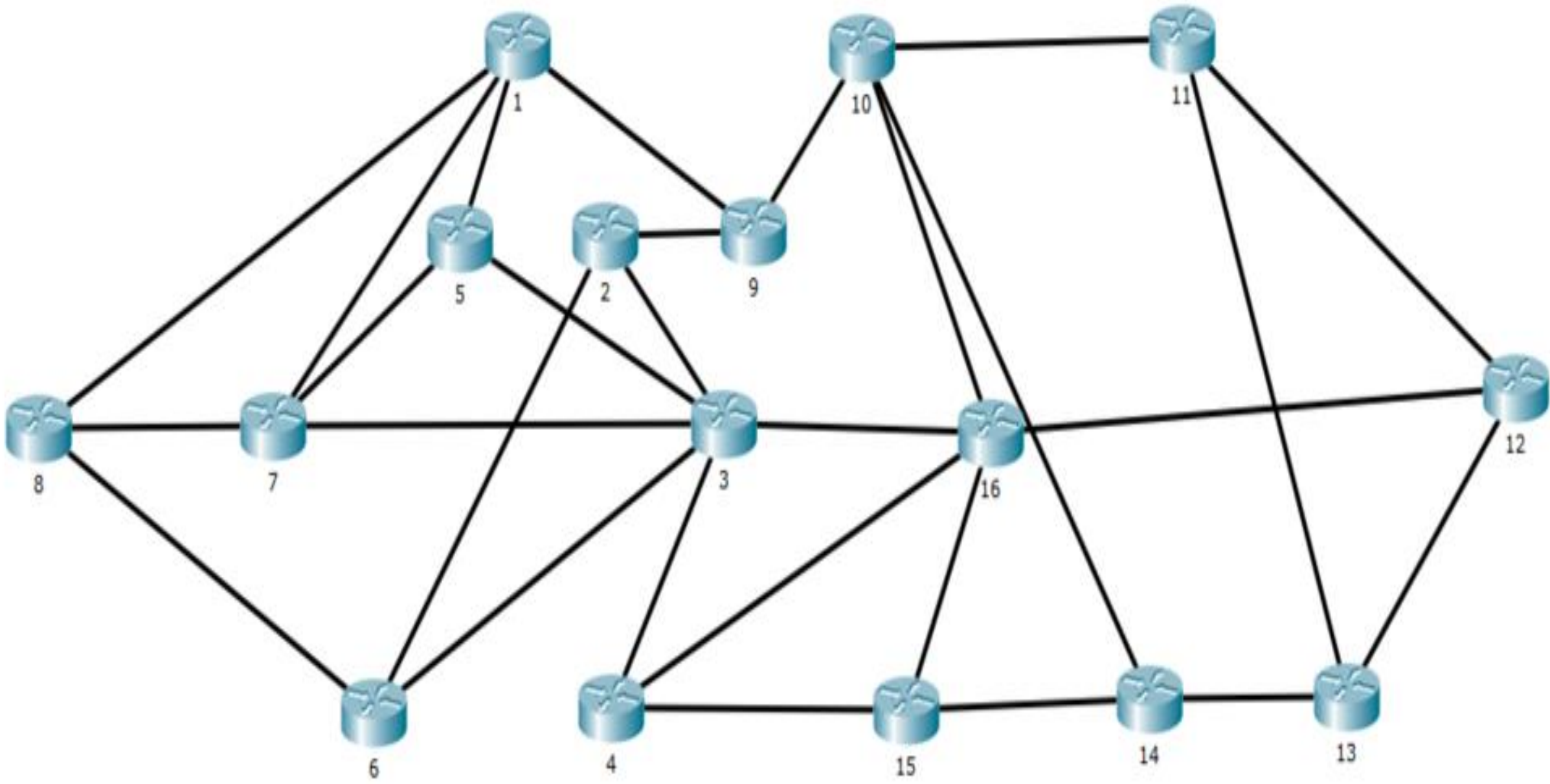
- Do you have a router at home?

# How do routers work?

- Just like the post office!

- They look at the IP address

- If they know where it belongs, they send it there
- If they don't know, they send it somewhere else

# Let's build the internet!

- We'll assign IP addresses to everyone

- The string will be our cable

- You will be a router!

- Your job: Route your packets!

# What can go wrong?

- Someone tampers?

- String breaks?

- Overwhelmed?

- Collisions?

# Security Lessons!

- Layering!
- Encapsulation!
- Modularity!
- Abstraction!