Unit 2 - Lesson 2
Building a Network

Computer Science Principles

Warm Up

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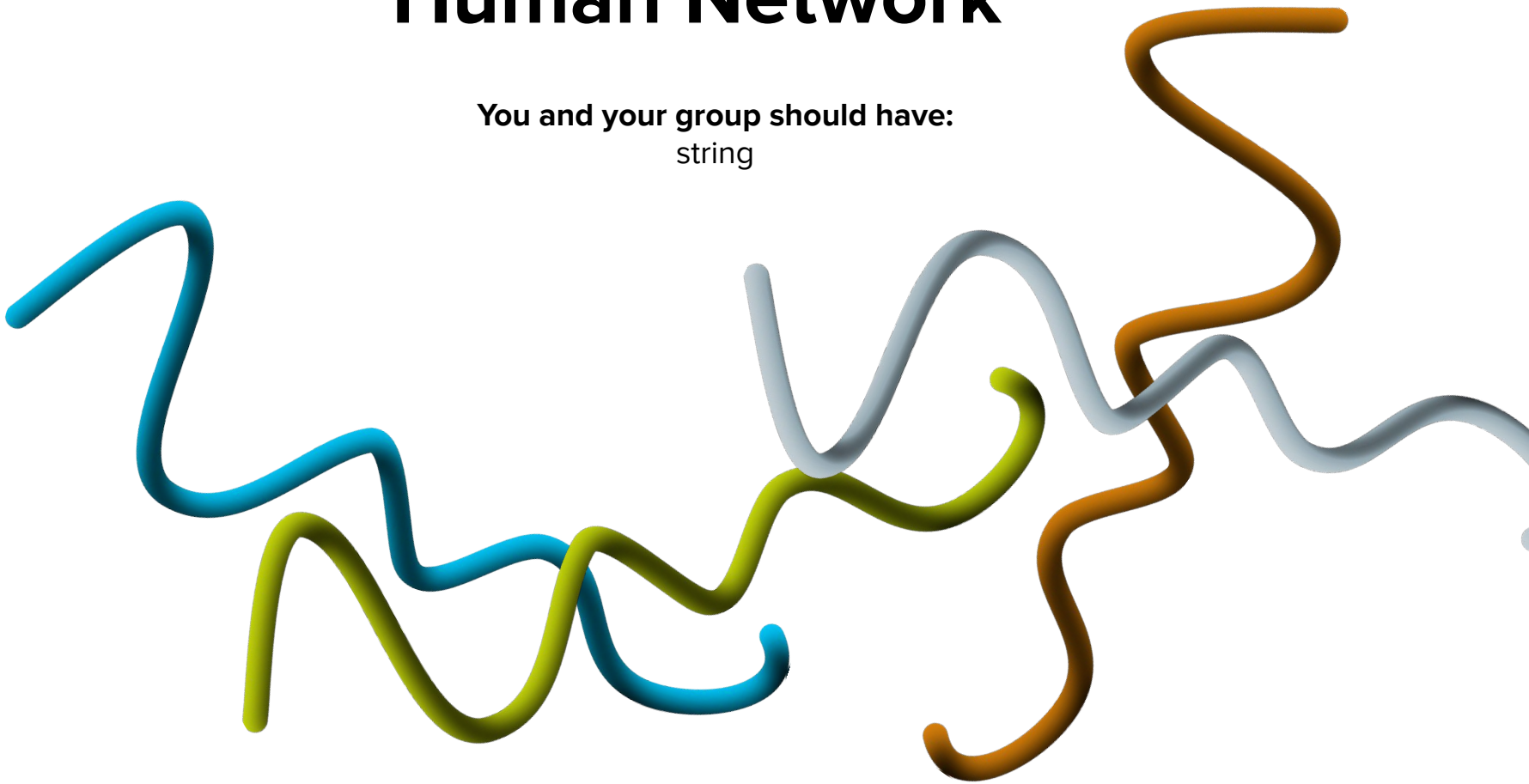
Prompt:

In the previous lesson, we explored the Internet Simulator, where each of you were connected to one other person by a single wire. What are the potential problems with this setup?

Activity

Human Network

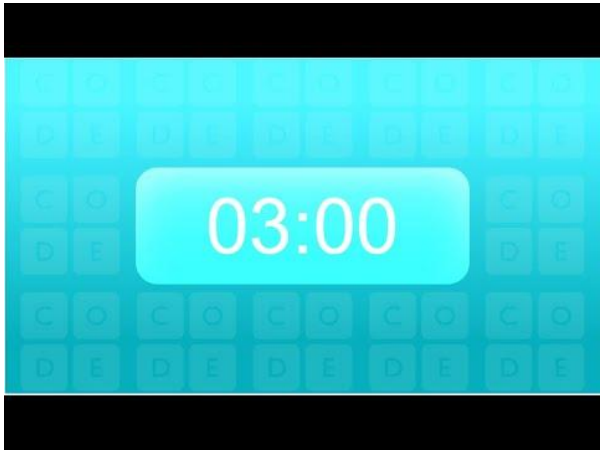
You and your group should have:
string



Rules for all Challenges:

- Only two people can be connected by a single string.
- You can be connected to multiple people at the same time via multiple strings.

Challenge #1: As a group, create a network where everyone can speak directly to everyone else.



Guideline A: Strings cost money, so try to use the least number of strings possible

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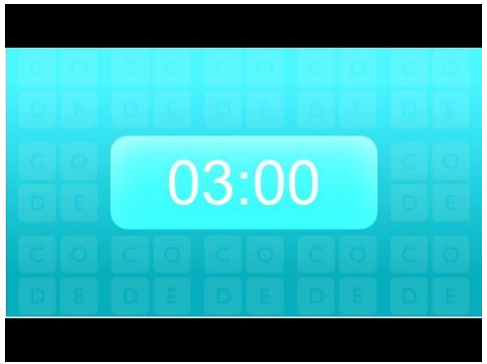
Challenge #2: As a group, create a network that uses the least number of strings.



Guideline A: Strings cost money, so try to use the least number of strings possible

Guideline B: Strings can be cut, which might disconnect people from the network

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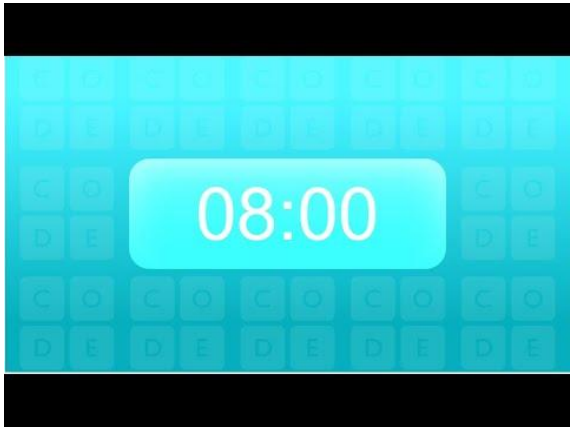
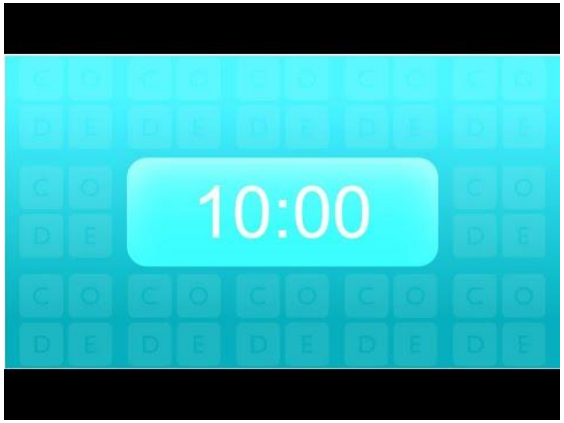
Challenge #3: As a group, create a network that keeps everyone connected even if one of the lines is cut



Guideline A: Strings cost money, so try to use the least number of strings possible

Guideline B: Strings can be cut, which might disconnect people from the network

Guideline C: Direct Connections are faster than long paths with indirect connections



Challenge #4: As a group, create a network that you feel balances all 3 guidelines.

Retrieve
your knowledge and ideas and write it down silently

Pair
up with a neighbor and talk about your reflections

Share
your thoughts in a class discussion

💡 Discuss:

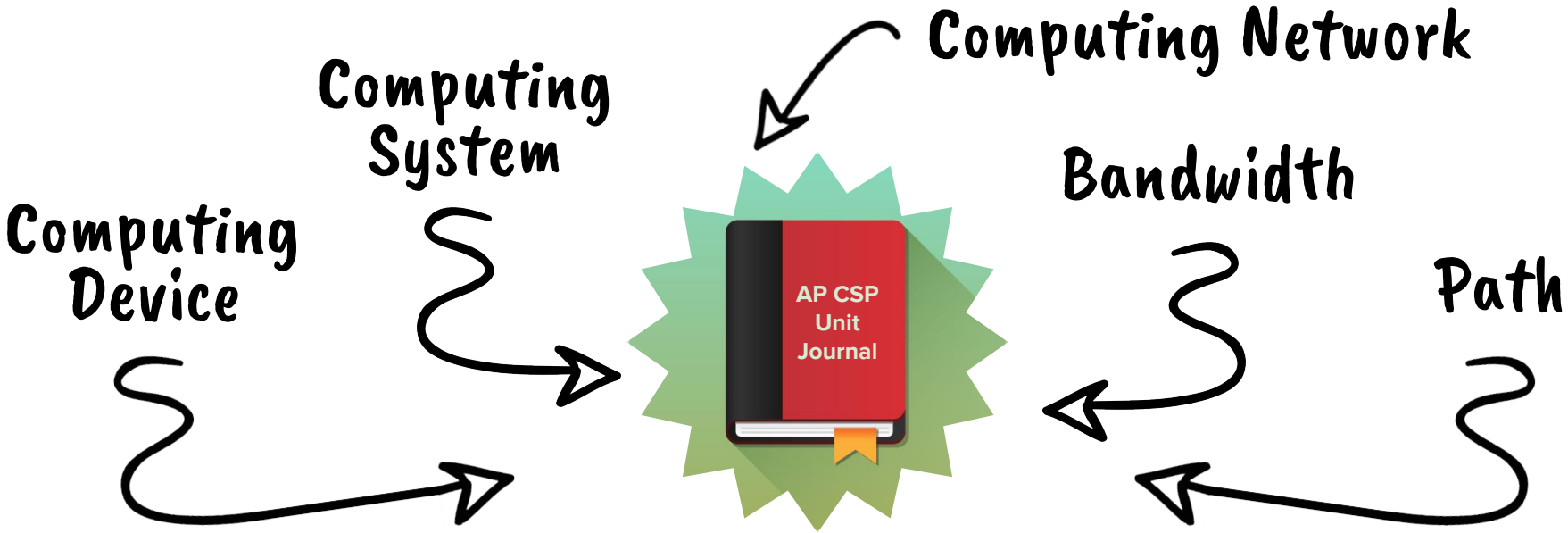
Thinking about our 3 guidelines, what is a strength of the network your group created?

What is a weakness for the network your group created?

Wrap Up

Create your Canvas!

Write the following five words in your AP CS Principles Unit Journal. Choose **one** of the ***words*** and create your ***initial definition*** and ***visual representation***.

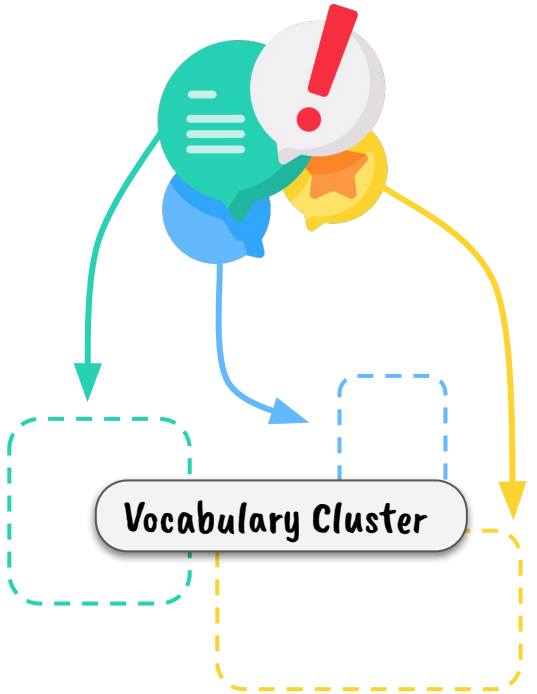


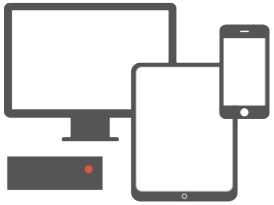
Give One, Get One

Do This: Share your vocabulary cluster definitions and visualizations with your peers.

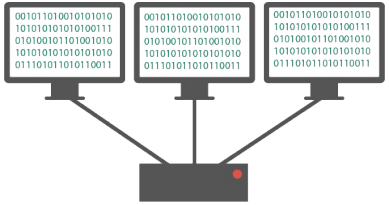
- **Give** one of your ideas
- **Get** one of your peer's ideas to build out one of your clusters

Find another classmate and repeat!

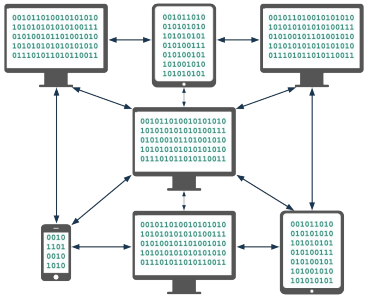




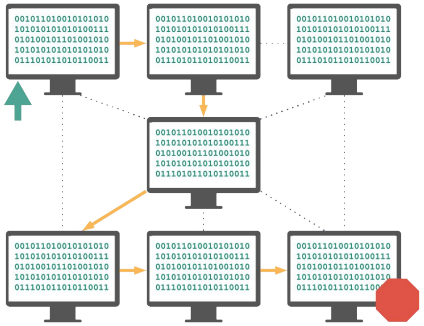
Computing Device: a machine that can run a program, including computers, tablets, servers, routers, and smart sensors



Computing System: a group of computing devices and programs working together for a common purpose



Computing Network: a group of interconnected computing devices capable of sending or receiving data.

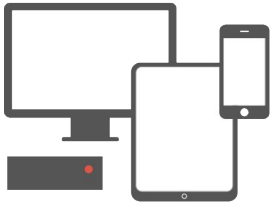


Path: the series of connections between computing devices on a network starting with a sender and ending with a receiver.

Bandwidth: the maximum amount of data that can be sent in a fixed amount of time, usually measured in bits per second.

Prompt: How would you use these words to describe today's activity?

Computing Device
Computing System
Computing Network
Path
Bandwidth



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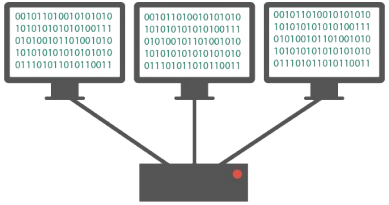

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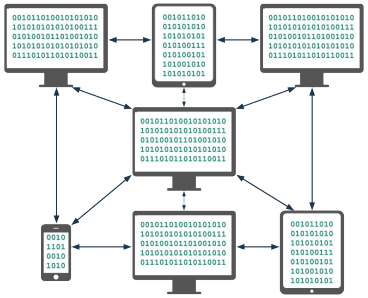

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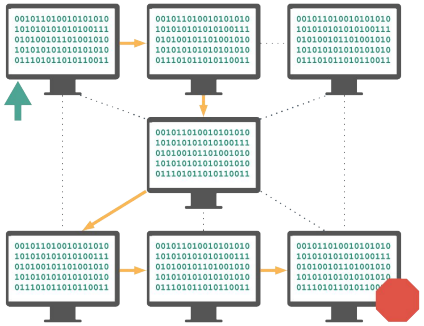

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