

# LESSON 7

ENCODING AND SENDING FORMATTED TEXT

# WARM-UP: THINK PAIR SHARE

- One of the most powerful uses of the internet is sending text to people. Since the internet can only send bits around we need a way to encode text with bits...
- If it were up to you, how would you encode text in binary?

# INTRODUCING ASCII

- In order to transmit text data we're all going to have to agree on an encoding scheme
- ASCII: American Standard Code for Information Interchange (pronounced "Ask-ee")
- <http://www.ascii-code.com/>

# ASCII

- ASCII codes were originally 7 bits long and so there are 128 possible values.
- 0-31 are “control characters” that are largely defunct and go unused; they were formerly used to control various aspects of machines and printers
- 32-126 are printable characters and include the numbers 0-9, all 26 letters (both lowercase and uppercase), and many common punctuation symbols
- 127 is the symbol for delete
- Over time, 8 bits became a standard “chunk-size” for encoding information. ASCII made the transition to this 8-bit encoding by just adding an extra 0 to the front of the old 7-bit codes.

# QUICK ACTIVITY

- Write your name in ASCII code as Name!  
(capital first letter, exclamation point at the end)

# FORMATTING TEXT CHALLENGE: CREATE A PROTOCOL FOR ENCODING FORMATTED TEXT

- Formatting:
  - ALL CAPS
  - **Bold**
  - *Italics*
  - Underline
  - Font Color
  - Large font
- Today your challenge is to:
  - Invent a protocol for sending formatted text
  - Use the Internet Simulator to test out your protocol

# CODE STUDIO

- Connect with your partner on the Internet Simulator

# HTML

- Example: `<b>this is bold</b>` and this isn't



# WRAP-UP: DISCUSSION

- Were most groups successful?
- If not, what caused the most trouble?
- Were some components of the challenge easier to address than others?
- Take a moment to think about the layers of encodings that allowed for formatted text to be transmitted over the Internet
- Imagine someone pointed to a piece of formatted text and asked: “Can you explain to me how this is encoded in binary?” How would you explain that?

# ABSTRACTION?

- Abstraction - a simplified representation of something more complex. Abstractions allow you to hide details to help you manage complexity, focus on relevant concepts, and reason about problems at a higher level.
- So what does this have to do with what we have learned so far?

# HOMEWORK

- Answer the on Code Studio for stage 7
- Worksheet (include written question and problems like code studio)

# LESSON 7 VOCAB

- ASCII – American Standard Code for Information Interchange. ASCII is the universally recognized raw text format that any computer can understand
- Code – to write code, or to write instructions for a computer
- Protocol – A set of rules governing the exchange or transmission of data between devices

# UNIT 1 PART 1 TEST CONCEPTS

- Prototype
- Computer Science definition
- Binary question/message
- Protocol
- Bit
- Bandwidth
- Bitrate

# UNIT 1 PART 1 TEST CONCEPTS

- Latency
- Types of wires/methods to transmit data
- Number system
- Binary number system
- ASCII
- Abstraction