Project 1: Addressing Multiple Digital Lines

Questions?

Project 1

- Hardware:
  - Wire in a LED bar
- Software:
  - Provide interface function for the LEDs
  - Write a test loop() function

Circuit

10-LED Bar:

- 10 rows of 2 pins; one LED per row
- Don’t forget the resistor!
- Pair the LEDs off so each pair can be driven by a single Teensy pin
- All pins must be on the same port

Distance Display

10 LEDs in a line (use bar graph):

- Represent distances between .1 and .8 m
- Interface function:

  ```
  void display_distance(float dist)
  ```

  - dist is a value in meters
  - 9 different illumination patterns

Project 1: Test Function

- In `loop()`
  - Prompt the user for a distance in millimeters
  - Display that distance

Code Specifications as Contracts

- You are implementing code that will be used for future projects and by your other group members

- Implement exactly the functions that we ask for
  - Name of function must be as specified
  - Parameter types and names must be as specified
  - Return values must be as specified

Documentation

Project-level documentation (top of each C (and H) file)

- Project #
- Date
- Group number
- Group members
- Group member responsible for the software

Documentation

Function-level documentation:

- Summarize what the function does in a sentence or two
  - This is for future users of your function
- Explicitly document the **inputs** (parameters) and **outputs** (return values) of the function
  - Include variable names and meaning of the variables, including units!
  - Discuss any other effects that the function has (e.g., changing pin state)
- The specification links to an example

Documentation

- In-Line documentation:
  - Document the ***meaning*** of individual lines of code or small groups of lines
  - Document what you are doing and why
- See the project 1 specification for a link to an example