Midterm Preparation
Questions?
Information Sources

• In-class exercises
• Zyante book
• Linked web pages
• Lecture notes
• Prior exams
  – Available in the “prior classes” section of my home page
Exam Mechanics

• When: Thursday, March 18th, 9-10:15
• Connect to the class Zoom
  – No cameras are required
• Open book; open notes
  – I suggest that you take time to write 1 page of quick-reference notes
  – Scratch paper is allowed
  – All released class materials are fair game
• No calculating devices, including compilers
• Do not use other network resources
• Accommodations: please sign up now
Exam Mechanics

• Multiple choice or numerical answers
• Coverage will be theory to practice
• No generation of code
• But: many questions will be about code
  – Here is code, what does it do?
  – Here is what the code is supposed to do + the code; where is the bug?
  – -> Need to know the API that we have been using
Number Representations

• Conversion between binary and:
  – Decimal
  – Hexadecimal

• Bit-wise operations: &, |, ~, ^
Arithmetic

• Shifting left/right (multiplication/division by 2)
Teensy Digital Input/Output

How to use:

• GPIOx_PDDR
• GPIOx_PDOR
• GPIOx_PDIR
Circuits

• Resistors
• Diodes
• Analog comparators
• Switches
Moving Between Analog and Digital

Digital to Analog:
• Resistive network

Analog to Digital:
• Flash ADC (with analog comparators)
• Successive approximation
Motor Control

- H-bridges
- Pulse-width modulation
PWM and Direction Control

Direction

Two low-current inputs control direction and torque magnitude
Coding

Possible:
• What does this program do?
• This program is supposed to do X – where are the bugs?

Not on the exam:
• Given a problem, write code to solve it
Finite State Machines

The basics will appear. Given a finite state machine, what happens when a sequence of inputs is received?

• What is the state after the sequence of inputs?
• What is output by the FSM?
Not on this exam…

• FSMs in code
• Negative numbers
• Serial communication