ECE375
Morse Code Transmitter

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Timer/Counter I

- We have learned how to use 8bit Timer/Counter from lab 7.
- In lab 8, you will have to use 16bit Timer/Counter (Timer/Counter1) in order to count 1 second.
  - No credit will be given if you just use ‘Wait’ function provided in lab1 skeleton code.
Functionalities

- **PORT D**
  - PD0 for entering the prompt.
  - PD4 for transmitting letters to Morse code.
  - PD6 for changing a letter in order.
  - PD7 for changing a letter in reverse order.
    - No credit will be given if you arbitrarily choose pins.

- **PORT B**
  - “Morse code” indicator for PB5, PB6, PB7.
  - “Transmission active” indicator for PB4.

- Please read lab 8 handouts carefully to figure out details.
Morse Code

- 1 second illumination to represent “Dot”.
- 3 seconds illumination to represent “Dash”.
- 1 second pause (light-off) to represent the space between parts of the same letter.
- 3 seconds pause (light-off) to represent the space between letters.
Initialization

- You will have to have your board looked like this as soon as you load code into AVR board.
The Prompt

- Only when PD0 is pressed for the first time, you are entering the prompt.
  - Nothing should happen for pressing other switch buttons.
Switch Functions

- When pressing PD6...
  - A letter should be changed following the order of alphabet one at a time. The alphabet needs to wrap around.
Switch Functions

- When pressing PD7...
  - A letter should be changed in reverse order of alphabet one at a time. The alphabet needs to wrap around.
Switch Functions

- When pressing PD0...
  - It confirms a letter that is currently shown.
  - A new letter ‘A’ appears after pressing PD0.
    - Remember only **previous letters** are confirmed.

‘Z’ is selected

‘Z’ is confirmed
  ‘E’ is selected

‘Z, E’ are confirmed
  ‘B’ is selected
Switch Functions

- When pressing PD4…
  - It confirms every letter displayed in LCD, and these will be converted to Morse code and illuminated in LEDs (PB7, PB6, PB5).
  - PB4 should always be ON while transmitting Morse code.
Switch Functions

- When 2\textsuperscript{nd} line of LCD is fully typed and another confirmation (PD0) is made…
  - It automatically transmits Morse code which does not require to press PD4.
Demo

- Demo video is posted in Canvas.
- Please have a look if you have confusion.
Questions?