Grading of Lab Demonstration

Board should be setup at start of demo. Programmer is connected to board and AVR studio is open with project code open. Students will build the code and program the board. We will collect a copy of the code used at the demo and check it against submitted code.

**Switch record on, play keyboard including notes nearly 10 seconds apart, switch record off, switch playback on**
- LEDs show the 7-bit note value (i.e. 2nd byte of MIDI message) for each note when recording 5/5
- Playback begins when playback switch is changed (with no other actions performed) 5/5
- Playback plays correct notes and no additional messages (checked through MIDI-0X) 8/5
- Playback has appropriate timing (must use timer1, timer1 must not overflow; will ask about code) 8/5
- LEDs show the 7-bit note value for each note that is played back 2/5
- LEDs turn off when no notes are played for 500ms (must use timer1 interrupts; will ask about code) 2/5
- Playback automatically loops and replays after reaching end of recording 2/5

**Switch playback off, switch playback on**
- Recording plays correctly from the start 5/5

**Push reset button (still in playback mode)**
- Recording plays correctly from the start 5/5

**Switch playback off, switch record on, play shorter sequence of notes, switch record off, switch playback on**
- Recording plays correctly from the start, no leftover notes from previous recording are played 5/5

**Switch modify on while still in playback mode. Cover/uncover/shine flashlight on sensor**
- Playback speed changes under each of the three lighting conditions 10/5

**Lab Demonstration Total** 60/60

Grading of Lab Report and Code

**Report sections**
- List contributions of each group member 5/5
- Paragraph on hardest bug faced and how it was debugged 5/5
- Paragraph describing how the timing specs are satisfied 5/5

**Annotated logic analyzer printouts included in report**
- A single printout that shows playback switch turning on, and the first three bytes that are transmitted out of the USART 5/5
- Annotations on the printout that state the value of each of the bytes 5/5
- Short paragraph of text explaining why printout is showing correct behavior or not (note that you can get these points even if your printout is wrong, as long as you can show why it is wrong) 5/5

**Questions from lab description**
- Analysis of timing precision is correct 5/5
- Correct calculation of photocell resistance under three lighting conditions (show your work, starting with ADC values) 5/5

**Lab Report Total** 40/40

Deductions

**Code collected at demo is not exact match for code that was submitted** 30 points

**Lateness:** The assignment is complete when all three files are submitted: report/code/self-assessment 20 points per day

**Overall Lab Score** 100/100