Our mini-project idea is a microcontroller metronome. The basic functionality we were planning is as follows: input desired tempo using a potentiometer (ATD); input desired tempo by tapping a push button (TIM); output metronome sound using a speaker (TIM and PWM); output the tempo and beat count on an LCD screen (SPI); and, switch between multiple time signatures and beat subdivisions. Beyond this functionality, we were also hoping to potentially implement a motor that would move a pendulum to package the metronome as digital metronome with the “nostalgic” style operation and casing.

Our mini-project idea is a microcontroller metronome. The basic functionality we were planning is as follows: allow the user to input the desired tempo using a potentiometer or by tapping out the tempo on a pushbutton; output the metronome sound with a speaker; allow the user to switch between multiple time signatures and beat subdivisions; and, display tempo, time signature, beat subdivision, and current beat count on an LCD screen. The peripherals used would be as follows:

* ATD for the potentiometer input
* TIM for accurate metronome sound output and for accurate “tap tempo” input
* PWM for sound output
* SPI for LCD screen output

Beyond this functionality, we also might implement a motor that swings a pendulum, much like a classic, mechanical metronome.