

Name:

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Lab Question 1 – Polling Method:

Write Embedded C code using the ATmega328P μ C (Arduino Uno) to read an analog value from a potentiometer connected to pin PC0 (Analog Pin A0) every second using Timer2 in Normal Mode. The ADC result should be printed to the Serial Monitor.

Requirements:

- Use internal VCC as ADC reference (AREF = AVCC).
- Set ADC prescaler to 128 (ADC frequency = 125 kHz).
- Use Timer2 in Normal Mode with prescaler $F_{CPU}/1024$.
- Toggle a flag or trigger ADC conversion inside the Timer2 overflow ISR, to happen approximately every second.
- Print ADC result on Serial Terminal inside main loop if new reading is ready.

Lab Question 2 – Interrupt Method:

Modify the previous code to use the ADC Interrupt instead of checking a flag. When the timer overflows, start ADC conversion. Once conversion is complete, the ADC ISR should print the value.

Requirements:

- Timer2 should still be used for the 1-second timing.
- Use ADC interrupt to print ADC value directly in ISR.
- Ensure accurate 1-second timing using Timer2 overflow counting.
- Serial Monitor must show live ADC values (0–1023) depending on potentiometer position.

Exam Notes:

- Students must demonstrate the work setup.
- Code must be uploaded and verified on Arduino Uno.
- Serial Monitor output must show periodic ADC values once every second.
- Timer settings and interrupt configurations must follow ATmega328P specs.

Good Luck

Remember Education is permanent, Grades are Temporary