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; pb_bounce_count_bin.asm
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; Description:  Count the number of negative edges. The counter is reset at startup
;               and whenever the counter reaches 0xFF. Can be done by decrementing
;               and outputting r16 instead of complementing.

start:
    ldi r16, 0xFF       ; load r16 with all 1s
    out VPORTD_DIR, r16 ; VPORTD - all pins configured as outputs
    cbi VPORTE_DIR, 0   ; set direction for PE0 as input

;   1 -> 0 transition requires the switch to first be released
main_loop:
    cpi r16, 0xFF       ; check if counter reached 255
    breq clear_count    ; branch if counter is reached
    sbis VPORTE_IN, 0   ; skip if PE0 is 1, switch is open
    rjmp main_loop      ; loop until PE0 is 1

wait_for_zero:
    sbic VPORTE_IN, 0   ; skip if PE0 is 0, switch is closed
    rjmp wait_for_zero  ; loop and wait for transition 1 -> 0

inc_count:
    inc r16             ; increment r16 by 1
    rjmp output         ; jump to output

clear_count:
    ldi r16, 0x00       ; clear r16 to all 0s

output:
    mov r17, r16        ; copy r16 into r17
    com r17             ; complement r17 due to bargraph LED configuration
    out VPORTD_OUT, r17 ; output to LEDs.
    rjmp main_loop
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