***Task 1***

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; Lab\_06\_Task\_01.asm

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; Replace with your application code

CBI DDRB,0 ; set PORTB pin 0 as an input

CBI DDRB,1 ; set PORTB pin 1 as an input

SBI DDRD,0 ; set PORTD pin 0 as an output

SBI DDRD,1 ; set PORTD pin 1 as an output

START:

SBIC PINB,0 ; Skip next instruction if PORTB pin 0 is clear (low)

RJMP ON ; Jump to ON label if PORTB pin 0 is high

RJMP START ; Jump back to START label if PORTB pin 0 is low

ON:

SBI PORTD,0 ; Set bit 0 of PORTD to turn on PORTD pin 0 (output high)

SBI PORTD,1 ; Set bit 1 of PORTD to turn on PORTD pin 1 (output high)

SBIS PINB,1 ; Skip next instruction if PORTB pin 1 is set (high)

RJMP OFF ; Jump to OFF label if PORTB pin 1 is set low

RJMP ON ; Jump back to ON label if PORTB pin 1 is high

OFF:

CBI PORTD,0 ; Clear bit 0 of PORTD to turn off PORTD pin 0 (output low)

CBI PORTD,1 ; Clear bit 1 of PORTD to turn off PORTD pin 1 (output low)

RJMP START ; Jump back to START label to begin the loop again

***Task 2***

*SBI* *DDRD*,0    *; Set bit 0 of DDRD to set PORTD pin 0 as an output*

*SBI* *DDRD*,1    *; Set bit 1 of DDRD to set PORTD pin 1 as an output*

*START*:

*SBI* PORTD,0    *; Set bit 0 of PORTD to turn on PORTD pin 0 (output high)*

*CBI* PORTD,1    *; Clear bit 1 of PORTD to turn off PORTD pin 1 (output low)*

*CALL* ON        *; Call the ON subroutine*

*CBI* PORTD,0    *; Clear bit 0 of PORTD to turn off PORTD pin 0 (output low)*

*SBI* PORTD,1    *; Set bit 1 of PORTD to turn on PORTD pin 1 (output high)*

*CALL* OFF       *; Call the OFF subroutine*

*RJMP* *START*        *; Jump back to START label to begin the loop again*

*; ON subroutine*

*ON*:

*LDI* R19,0x64         *; Load immediate value 0x64 (100 in decimal) into register R19*

*LOOP1*:

*LDI* R20,0x64      *; Load immediate value 0x64 (100 in decimal) into register R20*

*LOOP2*:

*LDI* R21,0x18   *; Load immediate value 0x18 (24 in decimal) into register R21*

*LOOP3*:

*NOP*             *; No operation*

*DEC* R21         *; Decrement register R21*

*BRNE* LOOP3      *; Branch to LOOP3 if R21 is not equal to zero*

*DEC* R20            *; Decrement register R20*

*BRNE* LOOP2         *; Branch to LOOP2 if R20 is not equal to zero*

*DEC* R19              *; Decrement register R19*

*BRNE* LOOP1           *; Branch to LOOP1 if R19 is not equal to zero*

*RET*                     *; Return from the subroutine*

*; OFF subroutine*

*OFF*:

*LDI* R22,0xC8         *; Load immediate value 0xC8 (200 in decimal) into register R22*

*LOO1*:

*LDI* R23,0x64      *; Load immediate value 0x64 (100 in decimal) into register R23*

*LOO2*:

*LDI* R24,0x4    *; Load immediate value 0x4 (4 in decimal) into register R24*

*LOO3*:

*NOP*              *; No operation*

*DEC* R24          *; Decrement register R24*

*BRNE* LOO3        *; Branch to LOO3 if R24 is not equal to zero*

*DEC* R23             *; Decrement register R23*

*BRNE* LOO2           *; Branch to LOO2 if R23 is not equal to zero*

*DEC* R22               *; Decrement register R22*

*BRNE* LOO1             *; Branch to LOO1 if R22 is not equal to zero*

*RET*                      *; Return from the subroutine*