Technika Mikroprocesorowa

Sprawozdanie z Laboratorium 3

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1. Zadanie 1

   Disassembly:

```
--- ../../../../crt1/gcrt1.S ----------------------------------------------------
0000002A 11.24               CLR R1        Clear Register
0000002B 1f.be               OUT 0x3F,R1       Out to I/O location
0000002C cf.e5               LDI R28,0x5F      Load immediate
0000002D d8.e0               LDI R29,0x08      Load immediate
0000002E de.bf               OUT 0x3E,R29      Out to I/O location
0000002F cd.bf               OUT 0x3D,R28      Out to I/O location
00000030 0e.94.47.00         CALL 0x00000047       Call subroutine
00000032 0c.94.56.00         JMP 0x00000056        Jump
00000034 0c.94.00.00         JMP 0x00000000        Jump
--- C:\Users\Maksym\OneDrive\##########\Techniki microprocesorowe\Lab3\Zadanie 1\Zadanie 1\Debug/.././main.c
    12: {
    13:     while(!(TIFR & (1 << OCF0))){};
00000036 08.b6               IN R0,0x38        In from I/O location
00000037 01.fe               SBRS R0,1     Skip if bit in register set
00000038 fd.cf               RJMP PC-0x0002        Relative jump
    14:     TIFR |= _BV(OCF0);
00000039 88.b7               IN R24,0x38       In from I/O location
0000003A 82.60               ORI R24,0x02      Logical OR with immediate
0000003B 88.bf               OUT 0x38,R24      Out to I/O location
0000003C 08.95               RET       Subroutine return
    18: {
0000003D cf.93               PUSH R28      Push register on stack
    19:     for(uint8_t i = 0; i <100; i++)
0000003E c0.e0               LDI R28,0x00      Load immediate
0000003F 03.c0               RJMP PC+0x0004        Relative jump
    21:         timer10ms();
00000040 0e.94.36.00         CALL 0x00000036       Call subroutine
    19:     for(uint8_t i = 0; i <100; i++)
00000042 cf.5f               SUBI R28,0xFF     Subtract immediate
--- No source file -------------------------------------------------------------
00000043 c4.36               CPI R28,0x64      Compare with immediate
00000044 d8.f3               BRCS PC-0x04      Branch if carry set
00000045 cf.91               POP R28       Pop register from stack
```

   Source code:

```c
/*
 * Zadanie 1.c
 *
 * Created: 05.05.2022 12:27:24
 * Author : mpervov
 */
# define F_CPU 1000000UL
# include <avr/io.h>
# include <util/delay.h>

void timer10ms()
{
	while(!(TIFR & (1 << OCF0))){};
	TIFR |= _BV(OCF0);
}

void czas_1s()
{
	for(uint8_t i = 0; i <100; i++)
	{
		timer10ms();
	}
```

```
}

int main(void)
{
	OCR0 = 40;
	DDRA = 0x01;
	PORTA = 0x00;
	TCCR0 |= _BV(CS02) | _BV(WGM01);

    while (1)
    {
		PORTA ^= _BV(PA0);
		czas_1s();
    }
}
```