(1)

000000 e205 LDI R16, 0x25

000001 e314 LDI R17, 0x34

000002 e321 LDI R18, 0x31

000003 0f01 ADD R16, R17

000004 0f02 ADD R16, R18

000005 e714 LDI R17, 0x74

000006 0f01 ADD R16, R17

000007 e040 LDI R20, 0

000008 0f04 ADD R16, R20

000009 ef5f LDI R21, 0xFF

00000a b95a OUT DDRD, R21

00000b 9543 L2: INC R20

00000c b94b OUT PORTD, R20

00000d 9340 0300 STS SUM, R20

( 2 )

ADD 0000 11XX XXXX XXXX

OUT 1011 1XXX XXXX XXXX

INC 1001 010X XXXX 0011

STS 1001 001X XXXX 0000

XXXX XXXX XXXX XXXX

IN 1011 0XXX XXXX XXXX

SUBI 0101 XXXX XXXX XXXX

SBI 0001 10XX XXXX XXXX

(3)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Instruction | PC | SREG | R16 | R17 | R18 | R20 | R21 | DDRD | PDRD |
| 1 | LDI R16, 0x25 | 0x00000001 |  | 0x25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | LDI R17, 0x34 | 0x00000002 |  | 0x25 | 0x34 | 0 | 0 | 0 | 0 | 0 |
| 3 | LDI R18, 0x31 | 0x00000003 |  | 0x25 | 0x34 | 0x31 | 0 | 0 | 0 | 0 |
| 4 | ADD R16, R17 | 0x00000004 |  | 0x59 | 0x34 | 0x31 | 0 | 0 | 0 | 0 |
| 5 | ADD R16, R18 | 0x00000005 | V,N | 0x8A | 0x34 | 0x31 | 0 | 0 | 0 | 0 |
| 6 | LDI R17, 0x74 | 0x00000006 | V,N | 0x8A | 0x74 | 0x31 | 0 | 0 | 0 | 0 |
| 7 | ADD R16, R17 | 0x00000007 | S,N | 0xFE | 0x74 | 0x31 | 0 | 0 | 0 | 0 |
| 8 | LDI R20, 0 | 0x00000008 | S,N | 0xFE | 0x74 | 0x31 | 0 | 0 | 0 | 0 |
| 9 | ADD R16, R20 | 0x00000009 | S,N | 0xFE | 0x74 | 0x31 | 0 | 0 | 0 | 0 |
| 10 | LDI R21, 0xFF | 0x0000000A | S,N | 0xFE | 0x74 | 0x31 | 0 | 0xFF | 0 | 0 |
| 11 | OUT DDRD, R21 | 0x0000000B | S,N | 0xFE | 0x74 | 0x31 | 0 | 0xFF | 0xFF | 0 |
| 12 | L2: INC R20 | 0x0000000C |  | 0xFE | 0x74 | 0x31 | 0x01 | 0xFF | 0xFF | 0 |
| 13 | OUT PORTD, R20 | 0x0000000D |  | 0xFE | 0x74 | 0x31 | 0x01 | 0xFF | 0xFF | 0x01 |
| 14 | STS SUM, R20 | 0x0000000F |  | 0xFE | 0x74 | 0x31 | 0x01 | 0xFF | 0xFF | 0x01 |
| 15 | RJMP L2 | 0x0000000B |  | 0xFE | 0x74 | 0x31 | 0x01 | 0xFF | 0xFF | 0x01 |

(4)

1.經由STS 將R20的數值存入SUM 的adress，而SUM的adress為0x300，當進行到RJMP L2時，會將R20的數值加一並再存入0x300

2.

.EQU SUM = 0x300

改成

.EQU SUM = 0x150