# DA1B Assembly Code

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; DA1B.asm

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;

; Set some constants

.EQU STARTADDS = 0X0200

.EQU MOD5\_YES\_ADDS = 0X0300

.EQU MOD5\_NO\_ADDS = 0X0500

.EQU STARTNUM = 3

.EQU COUNT = 250

start:

LDI XH, HIGH(STARTADDS)

LDI XL, LOW(STARTADDS)

LDI YH, HIGH(MOD5\_YES\_ADDS)

LDI YL, LOW(MOD5\_YES\_ADDS)

LDI ZH, HIGH(MOD5\_NO\_ADDS)

LDI ZL, LOW(MOD5\_NO\_ADDS)

LDI R20, 0

LDI R21, STARTNUM

LDI R22, COUNT

WORK\_START:

; Store current value to current RAM address and then increment RAM address

ST X+, R21

; Copy current value to working register for modulus analysis

MOV R23, R21

MOD5TEST:

; Subtract 5 from working register until zero or negative is reached

SUBI R23, 5

BRLO MOD5\_NO

BREQ MOD5\_YES

; If not yet zero or negative repeat the subtraction

RJMP MOD5TEST

MOD5\_YES:

; Current value is divisible by 5. Sum it up and put it the the correct RAM address

ADD R16, R21

ADC R17, R20

ST Y+, R21

RJMP NEXT\_VALUE

MOD5\_NO:

; Current value is not divisible by 5. Sum it up and put in the correct RAM address

ADD R18, R21

ADC R19, R20

ST Z+, R21

RJMP NEXT\_VALUE

NEXT\_VALUE:

; Update current value, and counter. Repeat loop until count is zero

DEC R22

BREQ END\_WORK

INC R21

RJMP WORK\_START

END\_WORK:

RJMP END\_WORK

# Atmel Studio 7 during debugging

Execution time: 35,432 cycles, 2,214.50 µs at 16MHz

## Beginning of Task

|  |
| --- |
| *Start of execution* |

## End of Task

|  |
| --- |
| *End of execution* |