Mul instruction.

OPCODE OF MUL	SIZE	TYPE

OPCODE OF MUL	SIZE	TYPE Reg	# reg

OPCODE OF MUL	SIZE	TYPE constant	Con	stant	number	

OPCODE OF DIV	SIZE	TYPE Reg	# reg

OPCODE OF DIV	SIZE	TYPE constant	Const	ant	number	

ADD = 16, SUB = 17, MUL = 18, DIV = 19.

n1 x n2.

$r_0 \leftarrow n_1$

mull n2

$r_1 : r_0$ = result

upper 32 bits of result

lower 32 bits of result

constant/reg.

n1 / n2.

$r_0 \leftarrow n_1$

divl n2

$r_1 : r_0$ = result

Remainder.

Quotient

divl n2

constant/reg.

Machine Language - PROGRAM - 2.

GOAL: RESERVE storage for 5 integers.

- The fifth integer will store the final result for the computation.
- You must take addition of first two integers.
- You must subtract integer 4 from integer 3
- You must take product/multiplication of the result of addition & subtraction.

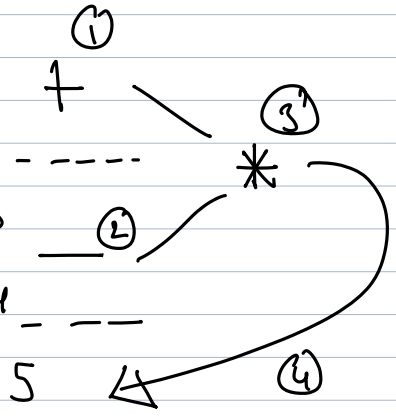
Int 5 = (Int 1 + Int 2) * (Int 3 - Int 4)

Solution:

Stage-I:

Reserve storage for 5 integers.

M[2200:2203] = Integer-1
M[2204:2207] = Integer-2
M[2208:2211] = Integer-3
M[2212:2215] = Integer-4
M[2216:2223] = Integer-5



Step-1: $R_0 \leftarrow M[2200:2203]$

Step-2: $R_1 \leftarrow M[2204:2207]$

Step-3: $R_0 \leftarrow R_0 + R_1$ [R_0 contains the sum of first two integers].

Step-4: $R_2 \leftarrow M[2208:2211]$

Step-5: $R_3 \leftarrow M[2212:2215]$

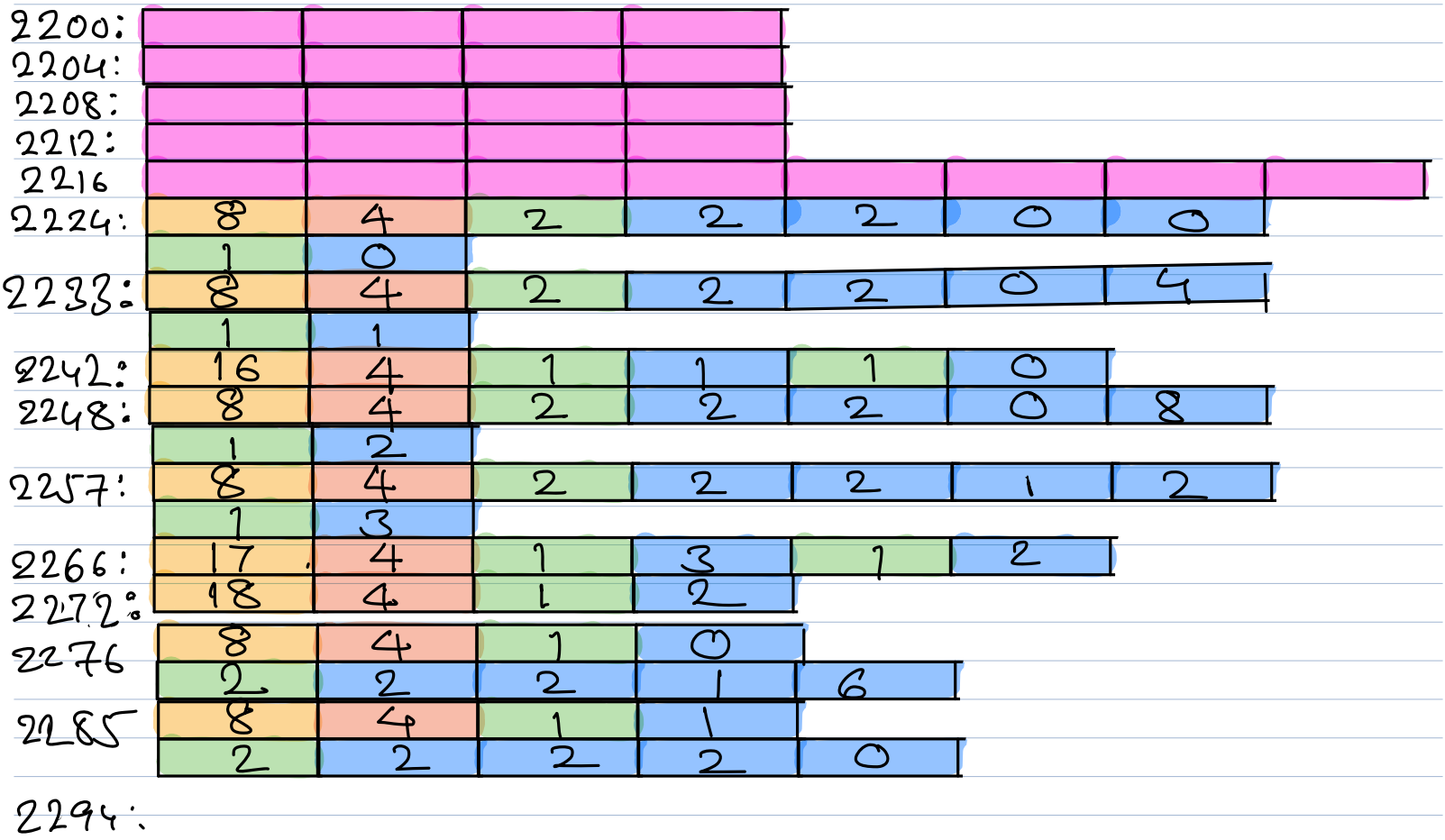
Step-6 : $R_2 \leftarrow R_2 - R_3$ [R_2 contains the subtraction of 4th int from 3rd].

Step-7 : $[R1 : R0] \leftarrow R_0 * R_2$.

Step-8 $M[2216 : 2219] \leftarrow R_0$

Step-9 $M[2220 : 2223] \leftarrow R_1$

STEP-II : Decimal Machine language



Program = M[2200 : 2293]

Data Section: M[2200 : 2223]

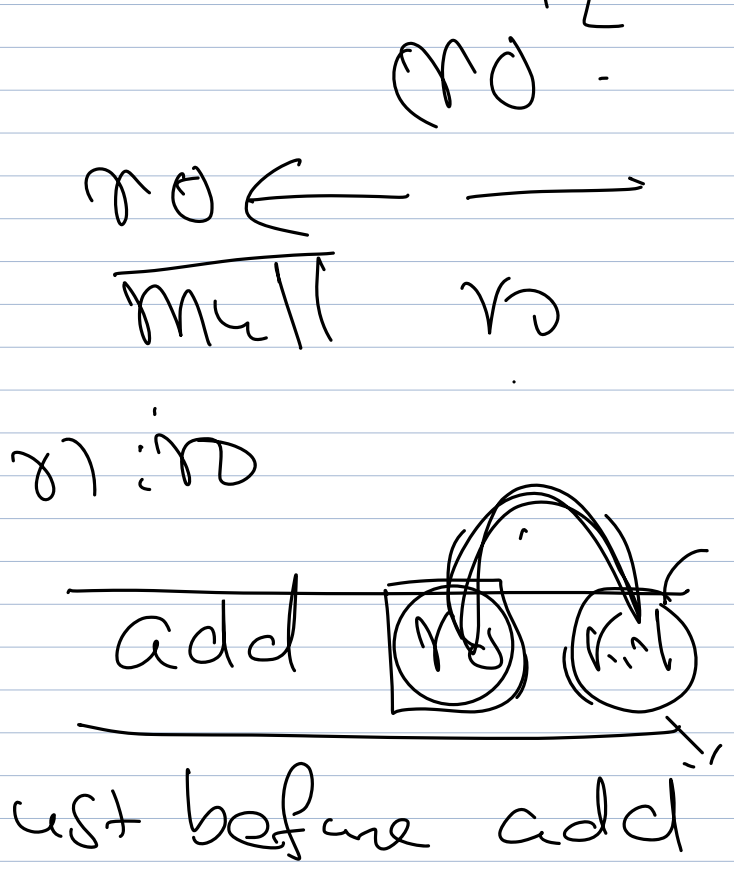
Text section: M[2224 : 2293]

Whichever number that you or end-user wants to be integer I can be/must be stored in M[2200:2209]

Computer logic:

1) Develop logic of doing something without knowing the exact value of data but properties of data!

Assembly lang.



just after add

$r_0 = 100 \quad r_1 = 300$

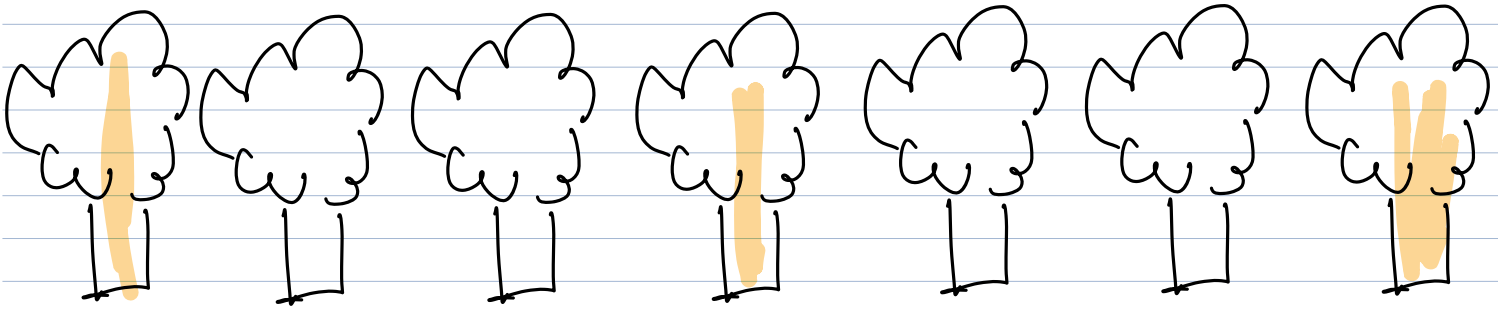
add r1, r1

just befor add: r1 = 300

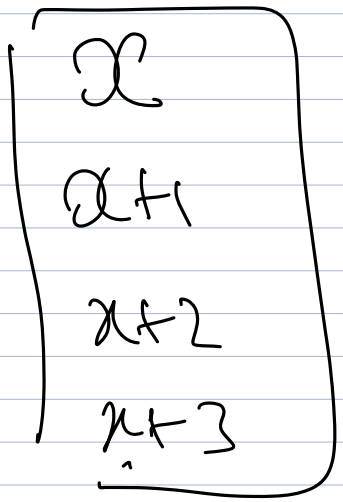
just after add: r1 = 100

Hardware

→ Assembly | Microprocessor

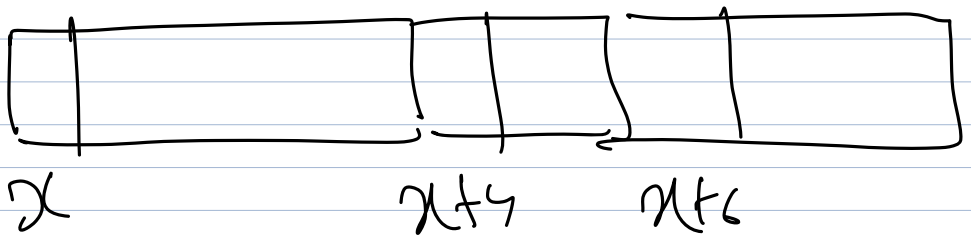


5 integers.



Address of current int + Size of current integer

= Addr. of next integer



Tuesday Tom. audio

3 4

5 machine