

The Little Man Computer – Sheet 1

Programming the Little Man Computer

1 The example program

Address	Instruction	What it does:
00	901	
01	399	
02	901	
03	199	
04	902	
05	000	

Assembly Language Code

```

INF
STA 99
INF
ADD 99
OUT
HLT
00 INF
01 STA 99
02 INF
03 ADD 99
04 OUT
05 HLT
  
```

OUTPUT
20

CPU

- PROGRAM COUNTER: 06
- INSTRUCTION REGISTER: 0
- ADDRESS REGISTER: 00
- ACCUMULATOR: 020
- ARITH-METIC UNIT

RAM

0	1	2	3	4	5	6	7	8	9
901	399	901	199	902	000	000	000	000	000
10	11	12	13	14	15	16	17	18	19
000	000	000	000	000	000	000	000	000	000
20	21	22	23	24	25	26	27	28	29
000	000	000	000	000	000	000	000	000	000
30	31	32	33	34	35	36	37	38	39
000	000	000	000	000	000	000	000	000	000
40	41	42	43	44	45	46	47	48	49
000	000	000	000	000	000	000	000	000	000
50	51	52	53	54	55	56	57	58	59
000	000	000	000	000	000	000	000	000	000
60	61	62	63	64	65	66	67	68	69
000	000	000	000	000	000	000	000	000	000
70	71	72	73	74	75	76	77	78	79
000	000	000	000	000	000	000	000	000	000
80	81	82	83	84	85	86	87	88	89
000	000	000	000	000	000	000	000	000	000
90	91	92	93	94	95	96	97	98	99
000	000	000	000	000	000	000	000	000	015

INPUT
5

Program HALTED, RESET, LOAD, SELECT or alter memory

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The Little Man Computer – Reference

The little man's instruction set: These are all the instructions the little man can execute.

Instruction	Mnemonic	Machine Code
Load	LDA	5xx
Store	STA	3xx
Add	ADD	1xx
Subtract	SUB	2xx
Input	INP	901
Output	OUT	902
End	HLT	000
Branch if zero	BRZ	7xx
Branch if zero or positive	BRP	8xx
Branch always	BRA	6xx
Data storage	DAT	

xx refers to a Mailbox number (Memory Address)

The Little Man Computer – Extension

1 Add 3 numbers

Write a program to add 3 numbers

Note down any initial data:

Address	Value	Comment

And also the program

Address	Instruction	What it does
00		
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		

2 Addition & Subtraction

Write a program that correctly calculates
 $x + y + z - a - b$ (Ex. $1 + 2 + 3 - 4 - 5 = -3$)

Data:

Address	Value	Comment

Program:

Address	Instruction	What it does
00		
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		