

1.

Waiting for input

LC3Tools v2.0.1

Application Edit View

Registers

Register	Address	Value	Comment
R0	x0000	0	
R1	x8000	-32768	
R2	xFFFF7	-25	
R3	x0000	0	
R4	x0000	0	
R5	x0000	0	
R6	x0000	0	
R7	x3007	12295	
PSR	x8002	-32766	CC: Z
PC	x3000	12288	
MCR	x0000	0	

Memory

Address	Value	Comment
x3000	xA237	INPUT LDI R1, KDSR
x3001	x07FE	BRsp INPUT
x3002	xA036	LDI R0, KDDR
x3003	xA236	ECHO LDI R1, DSR
x3004	x07FE	BRsp ECHO
x3005	x8035	STI R0, DDR
x3006	x4801	JSR ISALPHA
x3007	xF025	HALT
x3008	x3237	ISALPHA ST R1, SaveR1
x3009	x3437	ST R2, SaveR2
x300A	x2231	LD R1, upperS
x300B	x1401	ADD R2, R0, R1
x300C	x0811	BRn FAIL
x300D	x222F	LD R1, upperS
x300E	x1401	ADD R2, R0, R1
x300F	x0203	BRp Check2
x3010	x5020	AND R0, R0, #0
x3011	x1021	ADD R0, R0, #1
x3012	xC1C0	RET
x3013	x222A	Check2 LD R1, lowerS
x3014	x1401	ADD R2, R0, R1
x3015	x0808	BRn FAIL

Console (click to focus)

```
warning: 58407657: Skipping 'Updating Keyboard' scheduled for 58407650
warning: 58407657: Skipping 'Updating Display' scheduled for 58407650
warning: 58407657: Skipping 'No interrupt of higher priority pending' scheduled for 58407651
```

PC x3000

Input 'A'

LC3Tools v2.0.1

Application Edit View

Registers

Register	Address	Value	Comment
R0	x0001	1	
R1	xFFA6	-90	
R2	xFFE7	-25	
R3	x0000	0	
R4	x0000	0	
R5	x0000	0	
R6	x0000	0	
R7	x3007	12295	
PSR	x8001	-32767	CC: P
PC	x3007	12295	
MCR	x0000	0	

Console (click to focus)

```
warning: 58407657: Skipping 'Updating Keyboard' scheduled for 58407650
warning: 58407657: Skipping 'Updating Display' scheduled for 58407650
warning: 58407657: Skipping 'No interrupt of higher priority pending' scheduled for 58407651
A
```

Input 'z'

LC3Tools v2.0.1

Application Edit View

Open File

Registers

R0	x0001	1	
R1	x8000	-32768	
R2	x0019	25	
R3	x0000	0	
R4	x0000	0	
R5	x0000	0	
R6	x0000	0	
R7	x3007	12295	
PSR	x8001	-32767	CC: P
PC	x3007	12295	
MCR	x0000	0	









Console (click to focus)


warning: 112934157: Skipping 'Updating Keyboard' scheduled for 112934150
warning: 112934157: Skipping 'Updating Display' scheduled for 112934150
warning: 112934157: Skipping 'No interrupt of higher priority pending' scheduled for 112934151
z■

Input '0'

LC3Tools v2.0.1

Application Edit View



LC3Tools 

Registers

R0	x0000	0	
R1	x8000	-32768	
R2	x0019	25	
R3	x0000	0	
R4	x0000	0	
R5	x0000	0	
R6	x0000	0	
R7	x3007	12295	
PSR	x8001	-32767	CC: P
PC	x3007	12295	
MCR	x0000	0	

Console (click to focus)

```
warning: 112934157: Skipping 'Updating Keyboard' scheduled for 112934150
warning: 112934157: Skipping 'Updating Display' scheduled for 112934150
warning: 112934157: Skipping 'No interrupt of higher priority pending' scheduled for 112934151
zwarning: 118293397: Skipping 'Updating Keyboard' scheduled for 118293390
warning: 118293397: Skipping 'Updating Display' scheduled for 118293390
warning: 118293397: Skipping 'No interrupt of higher priority pending' scheduled for 118293391
0■
```

Input '*'

LC3Tools v2.0.1

Application Edit View

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LC3Tools ⚙️

Registers

R0	x0000	0	
R1	x8000	-32768	
R2	x0019	25	
R3	x0000	0	
R4	x0000	0	
R5	x0000	0	
R6	x0000	0	
R7	x3007	12295	
PSR	x8001	-32767	CC: P
PC	x3007	12295	
MCR	x0000	0	

Console (click to focus)

* ■

2. I didn't know how to save the starting address of the trap instructions so I did it manually because I didn't want to change the code we try the trap x26.

!	▶	x0023	x031F	799	.FILL TRAP_IN
!	▶	x0024	x0340	832	.FILL TRAP_PUTSP
!	▶	x0025	x0366	870	.FILL TRAP_HALT
!	▶	x0026	x028A	650	
!	▶	x0027	x038C	908	.FILL BAD_TRAP
!	▶	x0028	x038C	908	.FILL BAD_TRAP
!	▶	x0029	x038C	908	.FILL BAD_TRAP
!	▶	x002A	x038C	908	.FILL BAD_TRAP

String "I love CS2253"

LC3Tools v2.0.1
Application Edit View

LC3Tools

Registers

R0	x000A	10
R1	x0000	0
R2	x310D	12557
R3	x0000	0
R4	x0000	0
R5	x0000	0
R6	x2FFE	12286
R7	x0000	0
PSR	x0002	2 CC: Z
PC	x028F	655
MCR	x0000	0

Console (click to focus)

```

warning: 105623232: Skipping 'Updating Keyboard' scheduled
for 105623230
warning: 105623232: Skipping 'Updating Display' scheduled for
105623230
warning: 105623232: Skipping 'No interrupt of higher priority
pending' scheduled for 105623231
enter line: I love CS2253

```

Memory

▶	x3100	x0049	73
▶	x3101	x0020	32
▶	x3102	x006C	108
▶	x3103	x006F	111
▶	x3104	x0076	118
▶	x3105	x0065	101
▶	x3106	x0020	32
▶	x3107	x0043	67
▶	x3108	x0053	83
▶	x3109	x0032	50
▶	x310A	x0032	50
▶	x310B	x0035	53
▶	x310C	x0033	51
▶	x310D	x0000	0
▶	x310E	x0000	0
▶	x310F	x0000	0
▶	x3110	x0000	0
▶	x3111	x0000	0
▶	x3112	x0000	0
▶	x3113	x0000	0
▶	x3114	x0000	0
▶	x3115	x0000	0
▶	x3116	x0000	0

3.
 - a. TRAP x72 will invoke the instruction.
 - b. Yes it will work, RTI saves the PC after the TRAP instruction and RTI will go back to that location and keep executing the main program.
4. x1000: starting address of the trap instructions.
X0034: x1000