1 Studio II "Rocket" v1.01

The following is a Studio II conversion of simple CHIP-8 code. The original game was written by Joseph Weisbecker, published in Byte magazine (1978). See that article for the flowchart and specific information, this implementation is almost the same. For a summary of the Studio II instructions, see Paul Robson's documentation of the Pseudo Machine Language. The main difference is the use of the Studio II sprite graphics; score is sprite #0, the UFO is sprite #1 and the rocket is sprite #2. Gameplay is not identical and there may be better ways of doing some of this, this is just an example. If you spot an error please let me know: et3400@yahoo.com

v1.00 - 08-19-10, initial version
v1.01 - 08-23-10, minor error fix & increased timer delays slightly

Rocket part 1		
Addr	**Instr**	**Comment**
0400	6A01	RA = 1, select keypad A
0402	D106	if A.1 pressed goto 0406
0404	1402	goto 0402
0406	6100	R1 = 0, init score
0408	6200	R2 = 0, init rocket count
040A	66F8	R6 = $F8, const for bit mask
040C	A8D0	IX = $8D0, use IX to init spr#0 (score)
040E	B8DF	$8D0 = $DF, IX = IX + 8, set spr#0 posn
0410	B805	$8D8 = 5, IX = IX + 8, set spr#0 height
0412	B000	$8E0 = 0, IX = IX + 0, set spr#0 dir
0414	247E	call setup ufo
0416	E818	draw ufo
0418	246E	call draw score
041A	5209	skip next if R2 $\neq$ 9
041C	141C	goto 041C, game over - endless loop
041E	7201	R2 = R2 + 1, inc rocket count
0420	6300	R3 = 0, reset rocket fired flag
0422	6400	R4 = 0, reset score increment
0424	2492	call rocket setup
0426	E828	draw rocket
0428	C701	R7 = random(1), 0 - move, 1 - skip
042A	373B	if R7 $\neq$ 0 goto 043B, skip move
042C	6901	R9 = 1, select spr#1
042E	E830	erase ufo
0430	A8F1	IX = $8F1, spr#1 hmove counter
0432	E1	move ufo
0433	F5A6	R5 = Mem[IX], R5 is spr#1 hmove ctr
0435	5500	skip next if R5 $\neq$ 0

Table 1: main program

Rocket part 2		
Addr	**Instr**	**Comment**
0437	247E	call setup ufo, reset position
0439	E86A	draw ufo, if collision goto 046A
043B	6F02	RF = 2, delay using timer
043D	3F3D	if RF ≠ 0, goto 043D
043F	6A01	RA = 1, select keypad A
0441	D545	if A.5 pressed goto 0445
0443	1447	goto 0447
0445	6301	R3 = 1, set fired flag
0447	5300	skip next if R3 ≠ 0 (rocket fired)
0449	1428	goto 0428, move ufo again
044B	3E28	if RE ≠ 0, goto 0428 (rocket timer)
044D	6902	R9 = 2, select spr#2
044F	E851	erase rocket
0451	E1	move rocket
0452	E86A	draw rocket, if collision goto 046A
0454	6E05	RE = 5, delay using timer
0456	A8D2	IX = $8D2, spr#2 posn
0458	F5A6	R5 = Mem[IX], R5 is spr#2 posn
045A	8562	R5 = R5 AND R6, mask bits 3 to 7, at top if zero
045C	3528	if R5 ≠ 0 goto 0428
045E	6900	R9 = 0, select spr#0
0460	E862	erase score
0462	6902	R9 = 2, select spr#2
0464	E866	erase rocket
0466	8144	R1 = R1 + R4, add score increment
0468	1418	goto 0418
046A	6401	R4 = 1, set score increment after hit
046C	145E	goto 045E

Draw Score		
Addr	**Instr**	**Comment**
046E	6900	R9 = 0, select spr#0
0470	A210	IX = $210, addr table for digits
0472	F1B6	R1 AND $0F, OR into LSB of IX
0474	F5A6	R5 = Memory[IX], R5 = offset to digit data
0476	F5B3	LSB of IX = R5, IX points to digit graphic
0478	E0E4	clear spr#0, load spr#0
047A	E87C	draw spr#0
047C	C0	return

Table 2: main program, subroutine

Setup UFO		
Addr	**Instr**	**Comment**
047E	6901	R9 = 1, select spr#1
0480	A8D1	IX = $8D1, use IX to init spr#1
0482	B840	$8D1 = $40, IX = IX + 8, set spr#1 posn
0484	B803	$8D9 = 3, IX = IX + 8, set spr#1 height
0486	B806	$8E1 = 6, IX = IX + 8, set spr#1 dir
0488	B800	$8E9 = 0, IX = IX + 8
048A	B038	$8F1 = $38, IX = IX + 0, set spr#1 hmove counter
048C	A4B2	IX = $4B2, addr for ufo graphics
048E	E0E4	clear spr#1, load spr#1
0490	C0	return

Setup Rocket		
Addr	**Instr**	**Comment**
0492	6902	R9 = 2, select spr#2
0494	A8D2	IX = $8D2, use IX to init spr#2
0496	B8D2	$8D2 = $D2, IX = IX + 8, set spr#2 posn
0498	B806	$8DA = 6, IX = IX + 8, set spr#2 height
049A	B002	$8E2 = 2, IX = IX + 0, set spr#2 dir
049C	A4AC	IX = $4AC, addr for rocket graphics
049E	E0E4	clear spr#2, load spr#2
04A0	6C06	RC = 6, set dir RC
04A2	C71F	R7 = random(31), shift rocket right R7 times
04A4	47AB	if R7 = 0 goto 04AB
04A6	E2	move spr#2 in dir RC
04A7	77FF	R7 = R7 - 1
04A9	37A6	if R7 $\neq$ 0 goto 04A6
04AB	C0	return

Graphics		
Addr	**Instr**	**Comment**
04AC	2070	Rocket - 6 bytes
04AE	70F8	
04B0	D888	
04B2	7CD6	UFO - 3 bytes
04B4	7C	

Table 3: subroutines and data

Instructions: press keypad A, button #1 to start game. Press keypad A, button #5 to fire. After 9 rockets the game ends, press reset to play again.