

Part 4: "New Advanced Study of Magic Squares and Cubes"
Chapter 4: Commentary Articles No.2 by Kanji Setsuda:
"Positional Writing System of Numbers of the Base N"
Section 8-2: How to build various 'Euler Squares' 8x8
by the N-th Increment Number System

[Continued from the preceding Section 8]

7. 'Composite, Self-complementary and Pan-diagonal' Magic Squares of Order 8

For the next case, let's try to reconstruct '3-Type Simultaneous' Magic Squares of Order 8 by our New Euler's Method with Positional Number System of the Base N.

7-1. What Solutions do we have by our Ordinary Method?

Let me show you the next lists of original definitions and their sample solutions with Decomposition Diagrams by the N-th Increment Number Systems(N=8, 4, 2).

```
//
/** Basic Form and Basic Conditions: C=260; **
// n1+n2+n3+n4+n5+n6+n7+n8=C      ...bc1; //for Rows
// n1+n9+n17+n25+n33+n41+n49+n57=C  ...bc2; //for Columns
// n1+n10+n19+n28+n37+n46+n55+n64=C  ...bc3; //for Pan-diagonals #1
// n8+n15+n22+n29+n36+n43+n50+n57=C  ...bc4; //for Pan-diagonals #2
//
// 61 62 63 64 57 58 59 60 61 62 63 64 57 58 59 60
// 5 6 7 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 2 3 4
// 13 14 15 16 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 9 10 11 12
// 21 22 23 24 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 17 18 19 20
// 29 30 31 32 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 25 26 27 28
// 37 38 39 40 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 33 34 35 36
// 45 46 47 48 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 41 42 43 44
// 53 54 55 56 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 49 50 51 52
// 61 62 63 64 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 57 58 59 60
// 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4
//
/** Composite Conditions: S=130; **
// n1+n2+n9+n10=S      ...cc01 | n22+n23+n30+n31=S      ...cc22 | n43+n44+n51+n52=S      ...cc43
// n2+n3+n10+n11=S     ...cc02 | n23+n24+n31+n32=S     ...cc23 | n44+n45+n52+n53=S     ...cc44
// n3+n4+n11+n12=S     ...cc03 | n24+n17+n32+n25=S     ...cc24 | n45+n46+n53+n54=S     ...cc45
// n4+n5+n12+n13=S     ...cc04 | n25+n26+n33+n34=S     ...cc25 | n46+n47+n54+n55=S     ...cc46
// n5+n6+n13+n14=S     ...cc05 | n26+n27+n34+n35=S     ...cc26 | n47+n48+n55+n56=S     ...cc47
// n6+n7+n14+n15=S     ...cc06 | n27+n28+n35+n36=S     ...cc27 | n48+n41+n56+n49=S     ...cc48
// n7+n8+n15+n16=S     ...cc07 | n28+n29+n36+n37=S     ...cc28 | n49+n50+n57+n58=S     ...cc49
// n8+n1+n16+n9=S      ...cc08 | n29+n30+n37+n38=S     ...cc29 | n50+n51+n58+n59=S     ...cc50
// n9+n10+n17+n18=S    ...cc09 | n30+n31+n38+n39=S     ...cc30 | n51+n52+n59+n60=S     ...cc51
// n10+n11+n18+n19=S   ...cc10 | n31+n32+n39+n40=S     ...cc31 | n52+n53+n60+n61=S     ...cc52
// n11+n12+n19+n20=S   ...cc11 | n32+n25+n40+n33=S     ...cc32 | n53+n54+n61+n62=S     ...cc53
// n12+n13+n20+n21=S   ...cc12 | n33+n34+n41+n42=S     ...cc33 | n54+n55+n62+n63=S     ...cc54
// n13+n14+n21+n22=S   ...cc13 | n34+n35+n42+n43=S     ...cc34 | n55+n56+n63+n64=S     ...cc55
// n14+n15+n22+n23=S   ...cc14 | n35+n36+n43+n44=S     ...cc35 | n56+n49+n64+n57=S     ...cc56
// n15+n16+n23+n24=S   ...cc15 | n36+n37+n44+n45=S     ...cc36 | n57+n58+n1+n2=S      ...cc57
// n16+n9+n24+n17=S    ...cc16 | n37+n38+n45+n46=S     ...cc37 | n58+n59+n2+n3=S      ...cc58
// n17+n18+n25+n26=S   ...cc17 | n38+n39+n46+n47=S     ...cc38 | n59+n60+n3+n4=S      ...cc59
// n18+n19+n26+n27=S   ...cc18 | n39+n40+n47+n48=S     ...cc39 | n60+n61+n4+n5=S      ...cc60
// n19+n20+n27+n28=S   ...cc19 | n40+n33+n48+n41=S     ...cc40 | n61+n62+n5+n6=S      ...cc61
// n20+n21+n28+n29=S   ...cc20 | n41+n42+n49+n50=S     ...cc41 | n62+n63+n6+n7=S      ...cc62
// n21+n22+n29+n30=S   ...cc21 | n42+n43+n50+n51=S     ...cc42 | n63+n64+n7+n8=S      ...cc63
```

```
// and n64+n57+n8+n1=5 ...cc64
/** 'Self-complementary Conditions' for Simultaneous Squares: SC=65; **
// n1+n64=n2+n63=n3+n62=n4+n61=n5+n60=n6+n59=n7+n58=n8+n57=n9+n56=
// n10+n55=n11+n54=n12+n53=n13+n52=n14+n51=n15+n50=n16+n49=n17+n48=n18+n47=
// n19+n46=n20+n45=n21+n44=n22+n43=n23+n42=n24+n41=n25+n40=n26+n39=n27+n38=
// n28+n37=n29+n36=n30+n35=n31+n34=n32+n33=SC ...scc
/** List-forming Inequality Conditions for the Standard Solutions **
// n1<n8; n1<n57; n1<n64; and n8>n57;
//
```

You may wonder why so few equations are listed for the basic conditions of rows, columns and pan-diagonals. But it is all right, if you obey all the Composite Conditions completely. Every row, column and pan-diagonal should necessarily add up to the magic constant automatically. Even two Primary Diagonals should also add up to 260, only under the Self-complementary Conditions above:

$$n1+n10+n19+n28+n37+n46+n55+n64=(n1+n64)+(n10+n55)+(n19+n46)+(n28+n37)=SC*4=260$$

$$n8+n15+n22+n29+n36+n43+n50+n57=(n8+n57)+(n15+n50)+(n22+n43)+(n29+n36)=SC*4=260$$

Here you see the sample solutions of our object '3-T Simultaneous' PMS88.

**** Three-type Simultaneous Magic Squares of Order 8:**

'Composite', Self-Complementary and Pan-Diagonal; **

**** Abstract List of Solutions with Decomposition Diagrams ****

[Classical], [Mathematical]; Sol_Numb#; /D8i,/D4i,/D2i; Check_Sums||\|/|

[C]sc	1#	Row C m\Pd1/Pd2	/D8i	/H	Rw C \P1/P2	/L	Rw C \P1/P2
1 63 4 62 6 60 7 57	260 260 260 260	07070707	28 28 28 28	06355360	28 28 28 28		
56 10 53 11 51 13 50 16	260 260 260 260	61616161	28 28 28 28	71422417	28 28 28 28		
25 39 28 38 30 36 31 33	260 260 260 260	34343434	28 28 28 28	06355360	28 28 28 28		
48 18 45 19 43 21 42 24	260 260 260 260	52525252	28 28 28 28	71422417	28 28 28 28		
41 23 44 22 46 20 47 17	260 260 260 260	52525252	28 28 28 28	06355360	28 28 28 28		
32 34 29 35 27 37 26 40	260 260 260 260	34343434	28 28 28 28	71422417	28 28 28 28		
49 15 52 14 54 12 55 9	260 260 260 260	61616161	28 28 28 28	06355360	28 28 28 28		
8 58 5 59 3 61 2 64	260 260 260 260	07070707	28 28 28 28	71422417	28 28 28 28		

[Math]	1#	/D4i	/H	Rw C \P1/P2	/M	Rw C \P1/P2	/L	Rw C \P1/P2
0 62 3 61 5 59 6 56	03030303	12 12 12 12	03031212	12 12 12 12	02311320	12 12 12 12		
55 9 52 10 50 12 49 15	30303030	12 12 12 12	12120303	12 12 12 12	31022013	12 12 12 12		
24 38 27 37 29 35 30 32	12121212	12 12 12 12	21213030	12 12 12 12	02311320	12 12 12 12		
47 17 44 18 42 20 41 23	21212121	12 12 12 12	30302121	12 12 12 12	31022013	12 12 12 12		
40 22 43 21 45 19 46 16	21212121	12 12 12 12	21213030	12 12 12 12	02311320	12 12 12 12		
31 33 28 34 26 36 25 39	12121212	12 12 12 12	30302121	12 12 12 12	31022013	12 12 12 12		
48 14 51 13 53 11 54 8	30303030	12 12 12 12	03031212	12 12 12 12	02311320	12 12 12 12		
7 57 4 58 2 60 1 63	03030303	12 12 12 12	12120303	12 12 12 12	31022013	12 12 12 12		

/D2i	/1 RCPP	/2 RCPP	/3 RCPP	/4 RCPP	/5 RCPP	/6 RCPP
01010101	4444	01010101 4444	01010101 4444	01011010 4444	01100110 4444	00111100 4444
10101010	4444	10101010 4444	01010101 4444	10100101 4444	10011001 4444	11000011 4444
01010101	4444	10101010 4444	10101010 4444	01011010 4444	01100110 4444	00111100 4444
10101010	4444	01010101 4444	10101010 4444	10100101 4444	10011001 4444	11000011 4444
10101010	4444	01010101 4444	10101010 4444	01011010 4444	01100110 4444	00111100 4444
01010101	4444	10101010 4444	10101010 4444	10100101 4444	10011001 4444	11000011 4444
10101010	4444	10101010 4444	01010101 4444	01011010 4444	01100110 4444	00111100 4444
01010101	4444	01010101 4444	01010101 4444	10100101 4444	10011001 4444	11000011 4444

[C]sc	37#	Row C m\Pd1/Pd2	/D8i	/H	Rw C \P1/P2	/L	Rw C \P1/P2
1 63 4 62 10 56 11 53	260 260 260 260	07071616	28 28 28 28	06351724	28 28 28 28		
60 6 57 7 51 13 50 16	260 260 260 260	70706161	28 28 28 28	35062417	28 28 28 28		
21 43 24 42 30 36 31 33	260 260 260 260	25253434	28 28 28 28	42715360	28 28 28 28		
48 18 45 19 39 25 38 28	260 260 260 260	52524343	28 28 28 28	71426053	28 28 28 28		
37 27 40 26 46 20 47 17	260 260 260 260	43435252	28 28 28 28	42715360	28 28 28 28		
32 34 29 35 23 41 22 44	260 260 260 260	34342525	28 28 28 28	71426053	28 28 28 28		
49 15 52 14 58 8 59 5	260 260 260 260	61617070	28 28 28 28	06351724	28 28 28 28		
12 54 9 55 3 61 2 64	260 260 260 260	16160707	28 28 28 28	35062417	28 28 28 28		

[Math]	37#	/D4i	/H	Rw C1\P1/P2	/M	Rw C1\P1/P2	/L	Rw C1\P1/P2		
0	62	3	61	9	55	10	52	03030303 12 12 12 12	03032121 12 12 12 12	02311320 12 12 12 12
59	5	56	6	50	12	49	15	30303030 12 12 12 12	21210303 12 12 12 12	31022013 12 12 12 12
20	42	23	41	29	35	30	32	12121212 12 12 12 12	12123030 12 12 12 12	02311320 12 12 12 12
47	17	44	18	38	24	37	27	21212121 12 12 12 12	30301212 12 12 12 12	31022013 12 12 12 12
36	26	39	25	45	19	46	16	21212121 12 12 12 12	12123030 12 12 12 12	02311320 12 12 12 12
31	33	28	34	22	40	21	43	12121212 12 12 12 12	30301212 12 12 12 12	31022013 12 12 12 12
48	14	51	13	57	7	58	4	30303030 12 12 12 12	03032121 12 12 12 12	02311320 12 12 12 12
11	53	8	54	2	60	1	63	03030303 12 12 12 12	21210303 12 12 12 12	31022013 12 12 12 12
/D2i	/1 RCPP	/2 RCPP	/3 RCPP	/4 RCPP	/5 RCPP	/6 RCPP				
01010101	4444	01010101 4444	01011010 4444	01010101 4444	01100110 4444	00111100 4444				
10101010	4444	10101010 4444	10100101 4444	01010101 4444	10011001 4444	11000011 4444				
01010101	4444	10101010 4444	01011010 4444	10101010 4444	01100110 4444	00111100 4444				
10101010	4444	01010101 4444	10100101 4444	10101010 4444	10011001 4444	11000011 4444				
10101010	4444	01010101 4444	01011010 4444	10101010 4444	01100110 4444	00111100 4444				
01010101	4444	10101010 4444	10100101 4444	10101010 4444	10011001 4444	11000011 4444				
10101010	4444	10101010 4444	01011010 4444	01010101 4444	01100110 4444	00111100 4444				
01010101	4444	01010101 4444	10100101 4444	10011001 4444	11000011 4444					

[C]sc	73#	Row	C7m	Pd1/Pd2	/D8i	/H	Rw C1\P1/P2	/L	Rw C1\P1/P2	
1	63	6	60	10	56	13	51	260 260 260 260	07071616 28 28 28 28	06531742 28 28 28 28
62	4	57	7	53	11	50	16	260 260 260 260	70706161 28 28 28 28	53064217 28 28 28 28
19	45	24	42	28	38	31	33	260 260 260 260	25253434 28 28 28 28	24713560 28 28 28 28
48	18	43	21	39	25	36	30	260 260 260 260	52524343 28 28 28 28	71246035 28 28 28 28
35	29	40	26	44	22	47	17	260 260 260 260	43435252 28 28 28 28	24713560 28 28 28 28
32	34	27	37	23	41	20	46	260 260 260 260	34342525 28 28 28 28	71246035 28 28 28 28
49	15	54	12	58	8	61	3	260 260 260 260	61617070 28 28 28 28	06531742 28 28 28 28
14	52	9	55	5	59	2	64	260 260 260 260	16160707 28 28 28 28	53064217 28 28 28 28

[Math]	73#	/D4i	/H	Rw C1\P1/P2	/M	Rw C1\P1/P2	/L	Rw C1\P1/P2		
0	62	5	59	9	55	12	50	03030303 12 12 12 12	03122130 12 12 12 12	02131302 12 12 12 12
61	3	56	6	52	10	49	15	30303030 12 12 12 12	30211203 12 12 12 12	13020213 12 12 12 12
18	44	23	41	27	37	30	32	12121212 12 12 12 12	03122130 12 12 12 12	20313120 12 12 12 12
47	17	42	20	38	24	35	29	21212121 12 12 12 12	30211203 12 12 12 12	31202031 12 12 12 12
34	28	39	25	43	21	46	16	21212121 12 12 12 12	03122130 12 12 12 12	20313120 12 12 12 12
31	33	26	36	22	40	19	45	12121212 12 12 12 12	30211203 12 12 12 12	31202031 12 12 12 12
48	14	53	11	57	7	60	2	30303030 12 12 12 12	03122130 12 12 12 12	02131302 12 12 12 12
13	51	8	54	4	58	1	63	03030303 12 12 12 12	30211203 12 12 12 12	13020213 12 12 12 12
/D2i	/1 RCPP	/2 RCPP	/3 RCPP	/4 RCPP	/5 RCPP	/6 RCPP				
01010101	4444	01010101 4444	01011010 4444	01100110 4444	01010101 4444	00111100 4444				
10101010	4444	10101010 4444	10100101 4444	10011001 4444	01010101 4444	11000011 4444				
01010101	4444	10101010 4444	01011010 4444	01100110 4444	10101010 4444	00111100 4444				
10101010	4444	01010101 4444	10100101 4444	10011001 4444	10101010 4444	11000011 4444				
10101010	4444	01010101 4444	01011010 4444	01100110 4444	10101010 4444	00111100 4444				
01010101	4444	10101010 4444	10100101 4444	10011001 4444	10101010 4444	11000011 4444				
10101010	4444	10101010 4444	01011010 4444	01100110 4444	01010101 4444	00111100 4444				
01010101	4444	01010101 4444	10100101 4444	10011001 4444	01010101 4444	11000011 4444				

109#	145#	181#
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1	62	7	60	11	56	13	50	1	63	4	62	18	48	19	45	1	63	6	60	18	48	21	43
63	4	57	6	53	10	51	16	60	6	57	7	43	21	42	24	62	4	57	7	45	19	42	24
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48	19	42	21	38	25	36	31	56	10	53	11	39	25	38	28	56	10	51	13	39	25	36	30
34	29	40	27	44	23	46	17	37	27	40	26	54	12	55	9	35	29	40	26	52	14	55	9
32	35	26	37	22	41	20	47	32	34	29	35	15	49	14	52	32	34	27	37	15	49	12	54
49	14	55	12	59	8	61	2	41	23	44	22	58	8	59	5	41	23	46	20	58	8	61	3
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217#	253#	289#
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10	53	16	51	28	39	30	33	7	57	16	50	24	42	31	33	6	57	16	51	24	43	30	33
56	11	50	13	38	25	36	31	60	6	51	13	43	21	36	30	60	7	50	13	42	21	36	31
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23	44	17	46	5	58	3	64	26	40	17	47	9	55	2	64	27	40	17	46	9	54	3	64

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	2989#		3241#		3493#																		
10	56	11	53	13	51	16	50	11	56	10	53	13	50	16	51	12	55	9	54	14	49	15	52
63	1	62	4	60	6	57	7	62	1	63	4	60	7	57	6	61	2	64	3	59	8	58	5
18	48	19	45	21	43	24	42	19	48	18	45	21	42	24	43	20	47	17	46	22	41	23	44
39	25	38	28	36	30	33	31	38	25	39	28	36	31	33	30	37	26	40	27	35	32	34	29
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23	41	22	44	20	46	17	47	22	41	23	44	20	47	17	46	21	42	24	43	19	48	18	45
58	8	59	5	61	3	64	2	59	8	58	5	61	2	64	3	60	7	57	6	62	1	63	4
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	3745#		3961#		4177#																		
13	60	1	56	21	36	25	48	14	59	2	55	22	35	26	47	15	58	3	54	23	34	27	46
51	6	63	10	43	30	39	18	52	5	64	9	44	29	40	17	52	5	64	9	44	29	40	17
16	57	4	53	24	33	28	45	15	58	3	54	23	34	27	46	14	59	2	55	22	35	26	47
50	7	62	11	42	31	38	19	49	8	61	12	41	32	37	20	49	8	61	12	41	32	37	20
46	27	34	23	54	3	58	15	45	28	33	24	53	4	57	16	45	28	33	24	53	4	57	16
20	37	32	41	12	61	8	49	19	38	31	42	11	62	7	50	18	39	30	43	10	63	6	51
47	26	35	22	55	2	59	14	48	25	36	21	56	1	60	13	48	25	36	21	56	1	60	13
17	40	29	44	9	64	5	52	18	39	30	43	10	63	6	51	19	38	31	42	11	62	7	50
	4393#		4609#		4753#																		
16	57	4	53	24	33	28	45	17	47	20	46	22	44	23	41	18	48	19	45	21	43	24	42
51	6	63	10	43	30	39	18	64	2	61	3	59	5	58	8	63	1	62	4	60	6	57	7
13	60	1	56	21	36	25	48	9	55	12	54	14	52	15	49	10	56	11	53	13	51	16	50
50	7	62	11	42	31	38	19	40	26	37	27	35	29	34	32	39	25	38	28	36	30	33	31
46	27	34	23	54	3	58	15	33	31	36	30	38	28	39	25	34	32	35	29	37	27	40	26
17	40	29	44	9	64	5	52	16	50	13	51	11	53	10	56	15	49	14	52	12	54	9	55
47	26	35	22	55	2	59	14	57	7	60	6	62	4	63	1	58	8	59	5	61	3	64	2
20	37	32	41	12	61	8	49	24	42	21	43	19	45	18	48	23	41	22	44	20	46	17	47
	4897#		5041#		5185#																		
19	48	18	45	21	42	24	43	20	47	17	46	22	41	23	44	21	48	18	43	25	36	30	39
62	1	63	4	60	7	57	6	61	2	64	3	59	8	58	5	60	1	63	6	56	13	51	10
11	56	10	53	13	50	16	51	12	55	9	54	14	49	15	52	7	62	4	57	11	50	16	53
38	25	39	28	36	31	33	30	37	26	40	27	35	32	34	29	42	19	45	24	38	31	33	28
35	32	34	29	37	26	40	27	36	31	33	30	38	25	39	28	37	32	34	27	41	20	46	23
14	49	15	52	12	55	9	54	13	50	16	51	11	56	10	53	12	49	15	54	8	61	3	58
59	8	58	5	61	2	64	3	60	7	57	6	62	1	63	4	55	14	52	9	59	2	64	5
22	41	23	44	20	47	17	46	21	42	24	43	19	48	18	45	26	35	29	40	22	47	17	44

```

5293#           5401#           5509#
22 47 17 44 26 35 29 40  23 46 17 44 27 34 29 40  24 45 18 43 28 33 30 39
59  2 64  5 55 14 52  9  58  3 64  5 54 15 52  9  57  4 63  6 53 16 51 10
 8 61  3 58 12 49 15 54  8 61  2 59 12 49 14 55  7 62  1 60 11 50 13 56
41 20 46 23 37 32 34 27  41 20 47 22 37 32 35 26  42 19 48 21 38 31 36 25
38 31 33 28 42 19 45 24  39 30 33 28 43 18 45 24  40 29 34 27 44 17 46 23
11 50 16 53  7 62  4 57  10 51 16 53  6 63  4 57  9 52 15 54  5 64  3 58
56 13 51 10 60  1 63  6  56 13 50 11 60  1 62  7  55 14 49 12 59  2 61  8
25 36 30 39 21 48 18 43  25 36 31 38 21 48 19 42  26 35 32 37 22 47 20 41

5617#           5653#           5689#
25 39 28 38 30 36 31 33  26 40 27 37 29 35 32 34  27 40 26 37 29 34 32 35
56 10 53 11 51 13 50 16  55  9 54 12 52 14 49 15  54  9 55 12 52 15 49 14
 1 63  4 62  6 60  7 57  2 64  3 61  5 59  8 58  3 64  2 61  5 58  8 59
48 18 45 19 43 21 42 24  47 17 46 20 44 22 41 23  46 17 47 20 44 23 41 22
41 23 44 22 46 20 47 17  42 24 43 21 45 19 48 18  43 24 42 21 45 18 48 19
 8 58  5 59  3 61  2 64  7 57  6 60  4 62  1 63  6 57  7 60  4 63  1 62
49 15 52 14 54 12 55  9  50 16 51 13 53 11 56 10  51 16 50 13 53 10 56 11
32 34 29 35 27 37 26 40  31 33 30 36 28 38 25 39  30 33 31 36 28 39 25 38

5725#
28 39 25 38 30 33 31 36
53 10 56 11 51 16 50 13
 4 63  1 62  6 57  7 60
45 18 48 19 43 24 42 21
44 23 41 22 46 17 47 20
 5 58  8 59  3 64  2 61
52 15 49 14 54  9 55 12
29 34 32 35 27 40 26 37 . . . . . [Counts(n1=1)/A11 = 360/5760] [OK!]

```

** Calculated and Listed by Kanji Setsuda
on May 19, 2012 with MacOSX 10.7.4 & Xcode 4.3.2 **

7-2. Reconstruction of this type by the 4-th Increment Number System

According to our **New Definition of 'Euler Squares'** in 2012, we should be able to reconstruct this type by any Base of Positional Number System. Either 8-th, 4-th or 2-nd Increment Number System should be all right and give the same result.

I would like to report here about our reconstruction of this type by the 4-th Increment Number System.

The next lists are designed to explain about the concept of our **New Euler's Method**.

** **Decomposition of Object by the 4-th Increment Number System** **

```

[Math]           1# /D4i /H|Rw|C1\P1/P2|           /M|Rw|C1\P1/P2|           /L|Rw|C1\P1/P2|
0 62  3 61  5 59  6 56  03030303|12|12|12|12|  03031212|12|12|12|12|  02311320|12|12|12|12|
55  9 52 10 50 12 49 15  30303030|12|12|12|12|  12120303|12|12|12|12|  31022013|12|12|12|12|
24 38 27 37 29 35 30 32  12121212|12|12|12|12|  21213030|12|12|12|12|  02311320|12|12|12|12|
47 17 44 18 42 20 41 23  21212121|12|12|12|12|  30302121|12|12|12|12|  31022013|12|12|12|12|
40 22 43 21 45 19 46 16  21212121|12|12|12|12|  21213030|12|12|12|12|  02311320|12|12|12|12|
31 33 28 34 26 36 25 39  12121212|12|12|12|12|  30302121|12|12|12|12|  31022013|12|12|12|12|
48 14 51 13 53 11 54  8  30303030|12|12|12|12|  03031212|12|12|12|12|  02311320|12|12|12|12|
7 57  4 58  2 60  1 63  03030303|12|12|12|12|  12120303|12|12|12|12|  31022013|12|12|12|12|

```

** **Composition of Object by the 4-th Increment Number System** **

```

[EU]  1/      9/      28/  [Math]           1#  [C1asc]           1#|Row|C1m\Pd1/Pd2|
03030303 03031212 02311320  0 62  3 61  5 59  6 56  1 63  4 62  6 60  7 57|260|260\260/260|
30303030 12120303 31022013  55  9 52 10 50 12 49 15  56 10 53 11 51 13 50 16|260|260\260/260|
12121212 21213030 02311320  24 38 27 37 29 35 30 32  25 39 28 38 30 36 31 33|260|260\260/260|
21212121 30302121 31022013  47 17 44 18 42 20 41 23  48 18 45 19 43 21 42 24|260|260\260/260|
21212121 21213030 02311320  40 22 43 21 45 19 46 16  41 23 44 22 46 20 47 17|260|260\260/260|
12121212 30302121 31022013  31 33 28 34 26 36 25 39  32 34 29 35 27 37 26 40|260|260\260/260|
30303030 03031212 02311320  48 14 51 13 53 11 54  8  49 15 52 14 54 12 55  9|260|260\260/260|
03030303 12120303 31022013  7 57  4 58  2 60  1 63  8 58  5 59  3 61  2 64|260|260\260/260|
      *16      *4      *1

```

7-3. How to Design and Compose 'Euler Units' by the 4-th Increment Number System

//

```

/** Basic Form and Basic Conditions: C=12; **
// n1+n2+n3+n4+n5+n6+n7+n8=C ...bc1; //for Rows
// n1+n9+n17+n25+n33+n41+n49+n57=C ...bc2; //for Columns
// n1+n10+n19+n28+n37+n46+n55+n64=C ...bc3; //for Pan-diagonals #1
// n8+n15+n22+n29+n36+n43+n50+n57=C ...bc4; //for Pan-diagonals #2
//
// 61 62 63 64 57 58 59 60 61 62 63 64 57 58 59 60
//
// 5 6 7 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 2 3 4
// -----+-----+-----+-----+-----+-----+-----+-----
// 13 14 15 16 | 9 |10 |11 |12 |13 |14 |15 |16 | 9 10 11 12
// -----+-----+-----+-----+-----+-----+-----+-----
// 21 22 23 24 |17 |18 |19 |20 |21 |22 |23 |24 |17 18 19 20
// -----+-----+-----+-----+-----+-----+-----+-----
// 29 30 31 32 |25 |26 |27 |28 |29 |30 |31 |32 |25 26 27 28
// -----+-----+-----+-----+-----+-----+-----+-----
// 37 38 39 40 |33 |34 |35 |36 |37 |38 |39 |40 |33 34 35 36
// -----+-----+-----+-----+-----+-----+-----+-----
// 45 46 47 48 |41 |42 |43 |44 |45 |46 |47 |48 |41 42 43 44
// -----+-----+-----+-----+-----+-----+-----+-----
// 53 54 55 56 |49 |50 |51 |52 |53 |54 |55 |56 |49 50 51 52
// -----+-----+-----+-----+-----+-----+-----+-----
// 61 62 63 64 |57 |58 |59 |60 |61 |62 |63 |64 |57 58 59 60
// -----+-----+-----+-----+-----+-----+-----+-----
// 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4
//
/** Composite Conditions: S=6; **
// n1+n2+n9+n10=S ...cc01 | n22+n23+n30+n31=S ...cc22 | n43+n44+n51+n52=S ...cc43
// n2+n3+n10+n11=S ...cc02 | n23+n24+n31+n32=S ...cc23 | n44+n45+n52+n53=S ...cc44
// n3+n4+n11+n12=S ...cc03 | n24+n17+n32+n25=S ...cc24 | n45+n46+n53+n54=S ...cc45
// n4+n5+n12+n13=S ...cc04 | n25+n26+n33+n34=S ...cc25 | n46+n47+n54+n55=S ...cc46
// n5+n6+n13+n14=S ...cc05 | n26+n27+n34+n35=S ...cc26 | n47+n48+n55+n56=S ...cc47
// n6+n7+n14+n15=S ...cc06 | n27+n28+n35+n36=S ...cc27 | n48+n41+n56+n49=S ...cc48
// n7+n8+n15+n16=S ...cc07 | n28+n29+n36+n37=S ...cc28 | n49+n50+n57+n58=S ...cc49
// n8+n1+n16+n9=S ...cc08 | n29+n30+n37+n38=S ...cc29 | n50+n51+n58+n59=S ...cc50
// n9+n10+n17+n18=S ...cc09 | n30+n31+n38+n39=S ...cc30 | n51+n52+n59+n60=S ...cc51
// n10+n11+n18+n19=S ...cc10 | n31+n32+n39+n40=S ...cc31 | n52+n53+n60+n61=S ...cc52
// n11+n12+n19+n20=S ...cc11 | n32+n25+n40+n33=S ...cc32 | n53+n54+n61+n62=S ...cc53
// n12+n13+n20+n21=S ...cc12 | n33+n34+n41+n42=S ...cc33 | n54+n55+n62+n63=S ...cc54
// n13+n14+n21+n22=S ...cc13 | n34+n35+n42+n43=S ...cc34 | n55+n56+n63+n64=S ...cc55
// n14+n15+n22+n23=S ...cc14 | n35+n36+n43+n44=S ...cc35 | n56+n49+n64+n57=S ...cc56
// n15+n16+n23+n24=S ...cc15 | n36+n37+n44+n45=S ...cc36 | n57+n58+n1+n2=S ...cc57
// n16+n9+n24+n17=S ...cc16 | n37+n38+n45+n46=S ...cc37 | n58+n59+n2+n3=S ...cc58
// n17+n18+n25+n26=S ...cc17 | n38+n39+n46+n47=S ...cc38 | n59+n60+n3+n4=S ...cc59
// n18+n19+n26+n27=S ...cc18 | n39+n40+n47+n48=S ...cc39 | n60+n61+n4+n5=S ...cc60
// n19+n20+n27+n28=S ...cc19 | n40+n33+n48+n41=S ...cc40 | n61+n62+n5+n6=S ...cc61
// n20+n21+n28+n29=S ...cc20 | n41+n42+n49+n50=S ...cc41 | n62+n63+n6+n7=S ...cc62
// n21+n22+n29+n30=S ...cc21 | n42+n43+n50+n51=S ...cc42 | n63+n64+n7+n8=S ...cc63
// and n64+n57+n8+n1=S ...cc64
/** 'Self-complementary Conditions' for Simultanous Squares: SC=3; **
// n1+n64=n2+n63=n3+n62=n4+n61=n5+n60=n6+n59=n7+n58=n8+n57=n9+n56=
// n10+n55=n11+n54=n12+n53=n13+n52=n14+n51=n15+n50=n16+n49=n17+n48=n18+n47=
// n19+n46=n20+n45=n21+n44=n22+n43=n23+n42=n24+n41=n25+n40=n26+n39=n27+n38=
// n28+n37=n29+n36=n30+n35=n31+n34=n32+n33=SC ...scc
//

```

All the Euler Units must have the similar structure to that of the whole objects.

As you see, almost the same equations are defined above with the previous list of our original definitions, only with a few differences in the values of Constant Sums.

The similar structures between Euler Units and whole objects are the basic request and presupposition for the "Euler Squares" and our **New Euler's Method**.

We don't always follow the conditions of "Greco-Latinian Squares" here. We don't care about any content pattern of {0, 1, 2, 3} for every part. But we should always want the constant sums of 4 numbers of all Composite Combinations and also want the same sums of 8 numbers of all rows, columns and pan-diagonals completely realized.

On top of that, we should obey one more important condition: Any number of {0, 1, 2, 3} must come just 16 times in any Euler Unit as often as the other ones.

```

/** New 'Euler Squares' for the 3-T Simultaneous MS88: **
/** 'Composite', Self-complementary and Pan-diagonal; **
/** by the 4-th Increment Number System and New Euler's Method **
/** 'NEMS88CScPD4i.c': Dictated by Kanji Setsuda in 2006, 2010; **
/** Revised on May 20, 2012 with MacOSX 10.7.4 & Xcode 4.3.2 **
//
#include <stdio.h>
//
/** Global Variables *
short int ecnt, cnt, cnt1, cnt2, cnt3;
short LSM, SSM, SC;
short u1,u2,u3;
short nm[65], flg[5], uflg[65];
short teu[121][65];
short mtc[121][121];
short tn[5761][68];
short anm[9][68];
short n1c[65];
short rscsm[17], pdsm[17];
//
/** Sub-Procedures *
void stp01(void), stp02(void), stp03(void), stp04(void);
void stp05(void), stp06(void), stp07(void), stp08(void);
void stp09(void), stp10(void), stp11(void), stp12(void);
void stp13(void), stp14(void), stp15(void), stp16(void);
void stp17(void), stp18(void), stp19(void), stp20(void);
void stp21(void), stp22(void), stp23(void), stp24(void);
void stp25(void), stp26(void), stp27(void), stp28(void);
void stp29(void), stp30(void), stp31(void), stp32(void);
void stp33(void);
void euprint(void), preu(short x);
void reftbl(void);
void cmbcmp(void), cbcp(void);
void solrecord(void);
void solsort(short x), excsol(short x);
void solprd(short x);
void sol3pr(short x, short y, short z);
void pr3sol(short x);
void chksms(void);
void prn1c(void);
//
/** Main Program *
int main(){
short n;
printf("\n");
printf("*** Reconstruct The 3-T Simultaneous Magic Squares 8x8:\n");
printf("  'Composite', Self-Complementary and Pan-Diagonal;\n");
printf("    by the 4-th Increment Number System and New Euler's Method **\n");
printf("\n");
printf(" [List of Euler Units]\n");
for(n=0;n<65;n++){nm[n]=0;}; for(n=0;n<4;n++){flg[n]=0;}
LSM=12; SSM=6; SC=3; cnt=0; cnt3=0;
stp01(); //Make the Euler Units
if(cnt3>0){preu(cnt3);}
printf(" [Count of Euler Units = %d]\n",ecnt);
reftbl(); //Make the Reference Table
printf("\n");
printf("*** 3-T Simultaneous MS88: Composite, Self-complementary and Pan-diagonal; **\n");
printf(" [Smart List of Reconstructions: Euler_Units/// Sol_Number#|Sum_Checks|]\n");
cnt=0; cnt1=0; cnt3=0;
for(n=0;n<65;n++){n1c[n]=0;}
cmbcmp(); //Combine, Compose and Print
solsort(cnt); //Sort the Solutions
sol3pr(1,12,1); //Print the List of Solutions
sol3pr(13,cnt1,24);
}

```

```

sol3pr(cnt1+1,cnt,cnt1);
if(cnt3>0){pr3sol(cnt3);}
printf(" . . . . .\n");
printf(" [Solution Counts(n1==1)/Total = %d/%d]\n",cnt1,cnt);
printf("\n");
printf(" [List of Counts according to the Value of n1]\n");
prn1c(); //Print the Counts according to the value of n1
printf(" . . . . .\n");
printf(" [OK!]\n");
printf("*** Calculated and Listed by Kanji Setsuda\n");
printf(" on May 20, 2012 with MacOSX 10.7.4 & Xcode 4.3.2 **\n");
printf("\n");
return 0;
}
//
/* Compose Euler Units *
// Level #1:
// Set n1 & n64
void stp01(){
short a,b;
for(a=0;a<4;a++){b=SC-a;
if((fLg[a]<16)&&(fLg[b]<16)){
nm[1]=a; nm[64]=b;
fLg[a]++; fLg[b]++;
stp02();
fLg[b]--; fLg[a]--;}
}
}
// Set n8 & n57
void stp02(){
short a,b;
for(a=3;a>=0;a--){b=SC-a;
if((fLg[a]<16)&&(fLg[b]<16)){
nm[8]=a; nm[57]=b;
fLg[a]++; fLg[b]++;
stp03();
fLg[b]--; fLg[a]--;}
}
}
// Set n2 & n63
void stp03(){
short a,b;
for(a=3;a>=0;a--){b=SC-a;
if((fLg[a]<16)&&(fLg[b]<16)){cnt2=0;
nm[2]=a; nm[63]=b;
fLg[a]++; fLg[b]++;
stp04();
fLg[b]--; fLg[a]--;}
}
}
// Set n7=SSM-n63-n64-n8 & n58
void stp04(){
short a,b;
a=SSM-nm[63]-nm[64]-nm[8];
b=SSM-nm[2]-nm[1]-nm[57];
if((0<=a)&&(a<4)&&(a+b==SC)){
if((fLg[a]<16)&&(fLg[b]<16)){
nm[7]=a; nm[58]=b;
fLg[a]++; fLg[b]++;
stp05();
fLg[b]--; fLg[a]--;}}
}
// Set n3 & n62
void stp05(){
short a,b;

```



```

    for(a=0;a<4;a++){b=SC-a;
        if((fLg[a]<16)&&(fLg[b]<16)){
            nm[3]=a; nm[62]=b;
            fLg[a]++; fLg[b]++;
            stp06();
            fLg[b]--; fLg[a]--;}
    }
}
// Set n6=SSM-n62-n63-n7 & n59
void stp06(){
    short a,b;
    a=SSM-nm[62]-nm[63]-nm[7];
    b=SSM-nm[3]-nm[2]-nm[58];
    if((0<=a)&&(a<4)&&(a+b==SC)){
        if((fLg[a]<16)&&(fLg[b]<16)){
            nm[6]=a; nm[59]=b;
            fLg[a]++; fLg[b]++;
            stp07();
            fLg[b]--; fLg[a]--;}}
}
// Set n4 & n61
void stp07(){
    short a,b;
    for(a=3;a>=0;a--){b=SC-a;
        if((fLg[a]<16)&&(fLg[b]<16)){
            nm[4]=a; nm[61]=b;
            fLg[a]++; fLg[b]++;
            stp08();
            fLg[b]--; fLg[a]--;}
    }
}
// Set n5=SSM-n1-n2-n3-n4-n6-n7-n8 & n60
void stp08(){
    short a,b,c,d;
    a=LSM-nm[1]-nm[2]-nm[3]-nm[4]-nm[6]-nm[7]-nm[8];
    b=LSM-nm[64]-nm[63]-nm[62]-nm[61]-nm[59]-nm[58]-nm[57];
    c=SSM-nm[61]-nm[62]-nm[6];
    d=SSM-nm[4]-nm[3]-nm[59];
    if((a==c)&&(b==d)){
        if((0<=a)&&(a<4)&&(a+b==SC)){
            if((fLg[a]<16)&&(fLg[b]<16)){
                nm[5]=a; nm[60]=b;
                fLg[a]++; fLg[b]++;
                stp09();
                fLg[b]--; fLg[a]--;}}}}
}
// Level #2:
// Set n9 & n56
void stp09(){
    short a,b;
    for(a=3;a>=0;a--){b=SC-a;
        if((fLg[a]<16)&&(fLg[b]<16)){
            nm[9]=a; nm[56]=b;
            fLg[a]++; fLg[b]++;
            stp10();
            fLg[b]--; fLg[a]--;}
    }
}
// Set n10=SSM-n1-n2-n9 & n55
void stp10(){
    short a,b;
    a=SSM-nm[1]-nm[2]-nm[9];
    b=SSM-nm[64]-nm[63]-nm[56];
    if((0<=a)&&(a<4)&&(a+b==SC)){
        if((fLg[a]<16)&&(fLg[b]<16)){

```

```

        nm[10]=a; nm[55]=b;
        flg[a]++; flg[b]++;
        stp11();
        flg[b]--; flg[a]--;}}
}
// Set n11=SSM-n2-n3-n10 & n54
void stp11(){
short a,b;
a=SSM-nm[2]-nm[3]-nm[10];
b=SSM-nm[63]-nm[62]-nm[55];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[11]=a; nm[54]=b;
        flg[a]++; flg[b]++;
        stp12();
        flg[b]--; flg[a]--;}}
}
// Set n12=SSM-n3-n4-n11 & n53
void stp12(){
short a,b;
a=SSM-nm[3]-nm[4]-nm[11];
b=SSM-nm[62]-nm[61]-nm[54];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[12]=a; nm[53]=b;
        flg[a]++; flg[b]++;
        stp13();
        flg[b]--; flg[a]--;}}
}
// Set n13=SSM-n4-n5-n12 & n52
void stp13(){
short a,b;
a=SSM-nm[4]-nm[5]-nm[12];
b=SSM-nm[61]-nm[60]-nm[53];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[13]=a; nm[52]=b;
        flg[a]++; flg[b]++;
        stp14();
        flg[b]--; flg[a]--;}}
}
// Set n14=SSM-n5-n6-n13 & n51
void stp14(){
short a,b;
a=SSM-nm[5]-nm[6]-nm[13];
b=SSM-nm[60]-nm[59]-nm[52];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[14]=a; nm[51]=b;
        flg[a]++; flg[b]++;
        stp15();
        flg[b]--; flg[a]--;}}
}
// Set n15=SSM-n6-n7-n14 & n50
void stp15(){
short a,b;
a=SSM-nm[6]-nm[7]-nm[14];
b=SSM-nm[59]-nm[58]-nm[51];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[15]=a; nm[50]=b;
        flg[a]++; flg[b]++;
        stp16();
        flg[b]--; flg[a]--;}}
}
}

```

```

// Set n16=SSM-n7-n8-n15 & n49
void stp16(){
short a,b,c,d;
a=SSM-nm[7]-nm[8]-nm[15];
b=SSM-nm[58]-nm[57]-nm[50];
c=SSM-nm[8]-nm[1]-nm[9];
d=SSM-nm[57]-nm[64]-nm[56];
if((a==c)&&(b==d)){
    if((0<=a)&&(a<4)&&(a+b==SC)){
        if((flg[a]<16)&&(flg[b]<16)){
            nm[16]=a; nm[49]=b;
            flg[a]++; flg[b]++;
            stp17();
            flg[b]--; flg[a]--;}}
}
// Level #3:
// Set n17 & n48
void stp17(){
short a,b;
for(a=0;a<4;a++){b=SC-a;
    if((flg[a]<16)&&(flg[b]<16)){
        nm[17]=a; nm[48]=b;
        flg[a]++; flg[b]++;
        stp18();
        flg[b]--; flg[a]--;}
}
}
// Set n18=SSM-n9-n10-n17 & n47
void stp18(){
short a,b;
a=SSM-nm[9]-nm[10]-nm[17];
b=SSM-nm[56]-nm[55]-nm[48];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[18]=a; nm[47]=b;
        flg[a]++; flg[b]++;
        stp19();
        flg[b]--; flg[a]--;}}
}
// Set n19=SSM-n10-n11-n18 & n46
void stp19(){
short a,b;
a=SSM-nm[10]-nm[11]-nm[18];
b=SSM-nm[55]-nm[54]-nm[47];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[19]=a; nm[46]=b;
        flg[a]++; flg[b]++;
        stp20();
        flg[b]--; flg[a]--;}}
}
// Set n20=SSM-n11-n12-n19 & n45
void stp20(){
short a,b;
a=SSM-nm[11]-nm[12]-nm[19];
b=SSM-nm[54]-nm[53]-nm[46];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[20]=a; nm[45]=b;
        flg[a]++; flg[b]++;
        stp21();
        flg[b]--; flg[a]--;}}
}
// Set n21=SSM-n12-n13-n20 & n44
void stp21(){

```

```

short a,b;
a=SSM-nm[12]-nm[13]-nm[20];
b=SSM-nm[53]-nm[52]-nm[45];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[21]=a; nm[44]=b;
        flg[a]++; flg[b]++;
        stp22();
        flg[b]--; flg[a]--;}}
}
// Set n22=SSM-n13-n14-n21 & n43
void stp22(){
short a,b;
a=SSM-nm[13]-nm[14]-nm[21];
b=SSM-nm[52]-nm[51]-nm[44];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[22]=a; nm[43]=b;
        flg[a]++; flg[b]++;
        stp23();
        flg[b]--; flg[a]--;}}
}
// Set n23=SSM-n14-n15-n22 & n42
void stp23(){
short a,b;
a=SSM-nm[14]-nm[15]-nm[22];
b=SSM-nm[51]-nm[50]-nm[43];
if((0<=a)&&(a<4)&&(a+b==SC)){
    if((flg[a]<16)&&(flg[b]<16)){
        nm[23]=a; nm[42]=b;
        flg[a]++; flg[b]++;
        stp24();
        flg[b]--; flg[a]--;}}
}
// Set n24=SSM-n15-n16-n23 & n41
void stp24(){
short a,b,c,d;
a=SSM-nm[15]-nm[16]-nm[23];
b=SSM-nm[50]-nm[49]-nm[42];
c=SSM-nm[16]-nm[9]-nm[17];
d=SSM-nm[49]-nm[56]-nm[48];
if((a==c)&&(b==d)){
    if((0<=a)&&(a<4)&&(a+b==SC)){
        if((flg[a]<16)&&(flg[b]<16)){
            nm[24]=a; nm[41]=b;
            flg[a]++; flg[b]++;
            stp25();
            flg[b]--; flg[a]--;}}}
}
// Level #4:
// Set n25 & n40
void stp25(){
short a,b;
for(a=3;a>=0;a--){b=SC-a;
    if((flg[a]<16)&&(flg[b]<16)){
        nm[25]=a; nm[40]=b;
        flg[a]++; flg[b]++;
        stp26();
        flg[b]--; flg[a]--;}
}
}
// Set n33=SSM-n1-n9-n17-n25-n41-n49-n57 & n32
void stp26(){
short a,b,c,d;
a=LSM-nm[1]-nm[9]-nm[17]-nm[25]-nm[41]-nm[49]-nm[57];

```

```

b=LSM-nm[64]-nm[56]-nm[48]-nm[40]-nm[24]-nm[16]-nm[8];
c=SSM-nm[40]-nm[48]-nm[41];
d=SSM-nm[25]-nm[17]-nm[24];
if((a==c)&&(b==d)){
    if((0<=a)&&(a<4)&&(a+b==SC)){
        if((flg[a]<16)&&(flg[b]<16)){
            nm[33]=a; nm[32]=b;
            flg[a]++; flg[b]++;
            stp27();
            flg[b]--; flg[a]--;}}}}
}
// Set n26=SSM-n5-n12-n19-n33-n48-n55-n62 & n39
void stp27(){
    short a,b,c,d;
    a=LSM-nm[5]-nm[12]-nm[19]-nm[33]-nm[48]-nm[55]-nm[62];
    b=LSM-nm[3]-nm[10]-nm[17]-nm[32]-nm[46]-nm[53]-nm[60];
    c=SSM-nm[17]-nm[18]-nm[25];
    d=SSM-nm[48]-nm[47]-nm[40];
    if((a==c)&&(b==d)){
        if((0<=a)&&(a<4)&&(a+b==SC)){
            if((flg[a]<16)&&(flg[b]<16)){
                nm[26]=a; nm[39]=b;
                flg[a]++; flg[b]++;
                stp28();
                flg[b]--; flg[a]--;}}}}
}
// Set n31=SSM-n4-n13-n22-n40-n41-n50-n59 & n34
void stp28(){
    short a,b,c,d,e,f;
    a=LSM-nm[4]-nm[13]-nm[22]-nm[40]-nm[41]-nm[50]-nm[59];
    b=LSM-nm[6]-nm[15]-nm[24]-nm[25]-nm[43]-nm[52]-nm[61];
    c=SSM-nm[23]-nm[24]-nm[32];
    d=SSM-nm[42]-nm[41]-nm[33];
    e=SSM-nm[32]-nm[39]-nm[40];
    f=SSM-nm[33]-nm[26]-nm[25];
    if((a==c)&&(a==e)&&(b==d)&&(b==f)){
        if((0<=a)&&(a<4)&&(a+b==SC)){
            if((flg[a]<16)&&(flg[b]<16)){
                nm[31]=a; nm[34]=b;
                flg[a]++; flg[b]++;
                stp29();
                flg[b]--; flg[a]--;}}}}
}
// Level #5:
// Set n27=SSM-n6-n13-n20-n34-n41-n56-n63 & n38
void stp29(){
    short a,b,c,d;
    a=LSM-nm[6]-nm[13]-nm[20]-nm[34]-nm[41]-nm[56]-nm[63];
    b=LSM-nm[2]-nm[9]-nm[24]-nm[31]-nm[45]-nm[52]-nm[59];
    c=SSM-nm[18]-nm[19]-nm[26];
    d=SSM-nm[47]-nm[46]-nm[39];
    if((a==c)&&(b==d)){
        if((0<=a)&&(a<4)&&(a+b==SC)){
            if((flg[a]<16)&&(flg[b]<16)){
                nm[27]=a; nm[38]=b;
                flg[a]++; flg[b]++;
                stp30();
                flg[b]--; flg[a]--;}}}}
}
// Set n30=SSM-n3-n12-n21-n39-n48-n49-n58 & n35
void stp30(){
    short a,b,c,d,e,f;
    a=LSM-nm[3]-nm[12]-nm[21]-nm[39]-nm[48]-nm[49]-nm[58];
    b=LSM-nm[7]-nm[16]-nm[17]-nm[26]-nm[44]-nm[53]-nm[62];
    c=SSM-nm[22]-nm[23]-nm[31];

```

```

d=SSM-nm[43]-nm[42]-nm[34];
e=SSM-nm[31]-nm[38]-nm[39];
f=SSM-nm[34]-nm[27]-nm[26];
if((a==c)&&(a==e)&&(b==d)&&(b==f)){
    if((0<=a)&&(a<4)&&(a+b==SC)){
        if((flg[a]<16)&&(flg[b]<16)){
            nm[30]=a; nm[35]=b;
            flg[a]++; flg[b]++;
            stp31();
            flg[b]--; flg[a]--;}}
}
// Set n28=SSM-n7-n14-n21-n35-n42-n49-n64 & n37
void stp31(){
    short a,b,c,d;
    a=LSM-nm[7]-nm[14]-nm[21]-nm[35]-nm[42]-nm[49]-nm[64];
    b=LSM-nm[1]-nm[16]-nm[23]-nm[30]-nm[44]-nm[51]-nm[58];
    c=SSM-nm[19]-nm[20]-nm[27];
    d=SSM-nm[46]-nm[45]-nm[38];
    if((a==c)&&(b==d)){
        if((0<=a)&&(a<4)&&(a+b==SC)){
            if((flg[a]<16)&&(flg[b]<16)){
                nm[28]=a; nm[37]=b;
                flg[a]++; flg[b]++;
                stp32();
                flg[b]--; flg[a]--;}}
}
// Set n29=SSM-n2-n11-n20-n38-n47-n56-n57 & n36
void stp32(){
    short a,b,c,d,e,f;
    a=LSM-nm[2]-nm[11]-nm[20]-nm[38]-nm[47]-nm[56]-nm[57];
    b=LSM-nm[8]-nm[9]-nm[18]-nm[27]-nm[45]-nm[54]-nm[63];
    c=SSM-nm[20]-nm[21]-nm[28];
    d=SSM-nm[45]-nm[44]-nm[37];
    e=SSM-nm[21]-nm[22]-nm[30];
    f=SSM-nm[44]-nm[43]-nm[35];
    if((a==c)&&(a==e)&&(b==d)&&(b==f)){
        if((0<=a)&&(a<4)&&(a+b==SC)){
            if((flg[a]<16)&&(flg[b]<16)){
                nm[29]=a; nm[36]=b;
                flg[a]++; flg[b]++;
                stp33();
                flg[b]--; flg[a]--;}}
}
/* Check Sums of the Four *
void stp33(){
    short sm1,sm2;
    sm1=nm[29]+nm[30]+nm[37]+nm[38];
    sm2=nm[27]+nm[28]+nm[35]+nm[36];
    if((sm1==SSM)&&(sm2==SSM)){euprint();}
}
//
/* Print The EUnits *
void euprint(){
    short n;
    teu[ecnt][0]=ecnt+1;
    for(n=1;n<65;n++){teu[ecnt][n]=nm[n];}
    ecnt++; cnt2++;
    if(cnt2==1){
        anm[cnt3][0]=ecnt;
        for(n=1;n<65;n++){anm[cnt3][n]=nm[n];}
        cnt3++; if(cnt3==8){preu(cnt3); cnt3=0;}
    }
}
//
/* Print x Units *

```

```

void preu(short x){
short l,m,n,l8;
for(m=0;m<x;m++){
printf("%9d/",anm[m][0]);
}
printf("\n");
for(l=0;l<8;l++){l8=l*8;
for(m=0;m<x;m++){
printf(" ");
for(n=1;n<9;n++){printf("%d",anm[m][l8+n]);}
}
printf("\n");
}
}
//
void reftbl(){
short t,m,n,l;
for(m=0;m<ecnt;m++){
for(n=0;n<ecnt;n++){
t=0;
for(l=1;l<65;l++){if(teu[m][l]==teu[n][l]){t++;}}
mtc[m][n]=t;
}}
}
//
/* Combine and Compose *
void cmbcmp(){
short md;
md=16;
for(u1=0;u1<ecnt;u1++){cnt2=0;
for(u2=0;u2<ecnt;u2++){
if(mtc[u2][u1]==md){
for(u3=0;u3<ecnt;u3++){
if((mtc[u3][u1]==md)&&(mtc[u3][u2]==md)){
cbcp();
}
}
}}}
}
//
void cbcp(){
short n,d,fc;
for(n=1;n<65;n++){uflg[n]=0;}
for(n=1;n<65;n++){
d=(teu[u1][n]*4+teu[u2][n])*4+teu[u3][n]+1;
nm[n]=d; uflg[d]++;
}
fc=0;
for(n=1;n<65;n++){
if(uflg[n]==1){fc++;}
else{break;}
}
if(fc==64){
if((nm[1]<nm[57])&&(nm[57]<nm[8])&&(nm[1]<nm[64])){solrecord();}}
}
//
/* Record the Solutions *
void solrecord(){
short n;
n1c[nm[1]]++;
if(nm[1]==1){cnt1++;}
tn[cnt][0]=cnt+1;
for(n=1;n<65;n++){tn[cnt][n]=nm[n];}
tn[cnt][65]=u1+1; tn[cnt][66]=u2+1; tn[cnt][67]=u3+1;
cnt++;
}

```

```

//
/** Sort the Solutions *
void solsort(short x){
short mx,n,f;
short d1,d2;
long d3,d4,d5,d6,d7,d8;
mx=x-1;
do{f=0;
for(n=0;n<mx;n++){
d1=tn[n][1]; d2=tn[n+1][1];
if(d1>d2){excsol(n); f=1;}
else{
d3=((tn[n][2]*65+tn[n][4])*65+tn[n][6])*65+tn[n][8];
d4=((tn[n+1][2]*65+tn[n+1][4])*65+tn[n+1][6])*65+tn[n+1][8];
if((d1==d2)&&(d3<d4)){excsol(n); f=1;}
else{
d5=(tn[n][3]*65+tn[n][5])*65+tn[n][7];
d6=(tn[n+1][3]*65+tn[n+1][5])*65+tn[n+1][7];
if((d1==d2)&&(d3==d4)&&(d5>d6)){excsol(n); f=1;}
else{
d7=(tn[n][9]*65+tn[n][25])*65+tn[n][41];
d8=(tn[n+1][9]*65+tn[n+1][25])*65+tn[n+1][41];
if((d1==d2)&&(d3==d4)&&(d5==d6)&&(d7<d8)){excsol(n); f=1;}
}}}
}
mx--;
}while(f>0);
}
//
void excsol(short x){
short n,d;
for(n=0;n<68;n++){d=tn[x][n]; tn[x][n]=tn[x+1][n]; tn[x+1][n]=d;}
}
//
/** Print All Answers by 3 in 1 line *
void sol3pr(short x, short y, short z){
short m,n;
for(m=x;m<=y;m=m+z){
anm[cnt3][0]=m;
for(n=1;n<68;n++){anm[cnt3][n]=tn[m-1][n];}
cnt3++;
if(cnt3==3){pr3sol(cnt3); cnt3=0;}
}
}
//
/** Print 3 Answers in 1 line *
void pr3sol(short x){
short l,l8,m,n;
for(m=0;m<x;m++){
printf("%5d/%4d/%4d/%8d#",
anm[m][65],anm[m][66],anm[m][67],anm[m][0]);
if(m+1<x){printf(" ");}
}
printf("\n");
for(l=0;l<8;l++){l8=l*8;
for(m=0;m<x;m++){
printf(" ");
for(n=1;n<9;n++){printf("%3d",anm[m][l8+n]);}
if(m+1<x){printf(" ");}
}
printf("\n");
}
}
//
/** Print the Count according to n1 *

```



```

void prn1c(){
short m;
for(m=1;m<33;m++){
printf(" [%2d]%4d,",m,n1c[m]);
if(m%8==0){printf("\n");}
}
}

```

7-4. Execution Result: Reconstruction

Let me show you the next list: Reconstruction of the 3-Type Simultaneous PMS88: Composite, Self-complementary and Pan-diagonal, with their Euler Units at first.

[List of Euler Units]

1/	7/	13/	16/	22/	25/	27/	29/
03030303	03031212	02131302	03032121	01232301	03122130	02133120	01233210
30303030	30302121	31202031	30301212	32101032	30211203	31200213	32100123
12121212	03031212	02131302	03032121	01232301	03122130	02133120	01233210
21212121	30302121	31202031	30301212	32101032	30211203	31200213	32100123
12121212	21213030	20313120	12123030	10323210	03122130	02133120	01233210
12121212	12120303	13020213	21210303	23010123	30211203	31200213	32100123
30303030	21213030	20313120	12123030	10323210	03122130	02133120	01233210
03030303	12120303	13020213	21210303	23010123	30211203	31200213	32100123
31/	34/	40/	46/	48/	50/	52/	58/
13020213	12031203	12121212	13022031	12033021	10233201	12123030	10323210
20313120	21302130	30303030	20311302	21300312	23100132	30301212	32101032
13020213	12031203	03030303	13022031	12033021	10233201	03032121	01232301
20313120	21302130	21212121	20311302	21300312	23100132	21210303	23010123
31202031	30213021	21212121	13022031	12033021	10233201	03032121	01232301
02131302	03120312	03030303	20311302	21300312	23100132	21210303	23010123
31202031	30213021	30303030	13022031	12033021	10233201	12123030	10323210
02131302	03120312	12121212	20311302	21300312	23100132	30301212	32101032
61/	64/	70/	72/	74/	76/	82/	88/
23010123	21032103	23011032	21033012	20133102	21212121	21213030	20313120
10323210	12301230	10322301	12300321	13200231	30303030	30302121	31202031
23010123	21032103	23011032	21033012	20133102	03030303	03031212	02131302
10323210	12301230	10322301	12300321	13200231	12121212	12120303	13020213
32101032	30123012	23011032	21033012	20133102	12121212	03031212	02131302
01232301	03210321	10322301	12300321	13200231	03030303	12120303	13020213
32101032	30123012	23011032	21033012	20133102	30303030	21213030	20313120
01232301	03210321	10322301	12300321	13200231	21212121	30302121	31202031
91/	93/	95/	97/	100/	106/	109/	115/
32011023	31022013	30122103	32101032	30123012	31202031	30213021	30303030
01322310	02311320	03211230	10323210	12301230	20313120	21302130	21212121
32011023	31022013	30122103	23010123	21032103	13020213	12031203	03030303
01322310	02311320	03211230	01232301	03210321	02131302	03120312	12121212
32011023	31022013	30122103	23010123	21032103	13020213	12031203	12121212
01322310	02311320	03211230	01232301	03210321	02131302	03120312	03030303
32011023	31022013	30122103	32101032	30123012	31202031	30213021	21212121
01322310	02311320	03211230	10323210	12301230	20313120	21302130	30303030

[Count of Euler Units = 120]

**** 3-T Simultaneous MS88: Composite, Self-complementary and Pan-diagonal; ****

[Smart List of Reconstructions: Euler_Units/// So]_Number#|Sum_Checks|]

1/	9/	28/						1# Row C m\Pd1/Pd2		
03030303	03031212	02311320	1	63	4	62	6	60	7	57 260 260\260/260
30303030	12120303	31022013	56	10	53	11	51	13	50	16 260 260\260/260
12121212	21213030	02311320	25	39	28	38	30	36	31	33 260 260\260/260
21212121	30302121	31022013	48	18	45	19	43	21	42	24 260 260\260/260
21212121	21213030	02311320	41	23	44	22	46	20	47	17 260 260\260/260
12121212	30302121	31022013	32	34	29	35	27	37	26	40 260 260\260/260
30303030	03031212	02311320	49	15	52	14	54	12	55	9 260 260\260/260
03030303	12120303	31022013	8	58	5	59	3	61	2	64 260 260\260/260

2/	9/	28/								2# Row C1m\Pd1/Pd2
03030303	03031212	02311320	1	63	4	62	6	60	7	57 260 260\260/260
30303030	12120303	31022013	56	10	53	11	51	13	50	16 260 260\260/260
21212121	21213030	02311320	41	23	44	22	46	20	47	17 260 260\260/260
12121212	30302121	31022013	32	34	29	35	27	37	26	40 260 260\260/260
12121212	21213030	02311320	25	39	28	38	30	36	31	33 260 260\260/260
21212121	30302121	31022013	48	18	45	19	43	21	42	24 260 260\260/260
30303030	03031212	02311320	49	15	52	14	54	12	55	9 260 260\260/260
03030303	12120303	31022013	8	58	5	59	3	61	2	64 260 260\260/260
3/	8/	28/								3# Row C1m\Pd1/Pd2
03030303	03031212	02311320	1	63	4	62	6	60	7	57 260 260\260/260
21212121	30302121	31022013	48	18	45	19	43	21	42	24 260 260\260/260
12121212	21213030	02311320	25	39	28	38	30	36	31	33 260 260\260/260
30303030	12120303	31022013	56	10	53	11	51	13	50	16 260 260\260/260
30303030	03031212	02311320	49	15	52	14	54	12	55	9 260 260\260/260
12121212	30302121	31022013	32	34	29	35	27	37	26	40 260 260\260/260
21212121	21213030	02311320	41	23	44	22	46	20	47	17 260 260\260/260
03030303	12120303	31022013	8	58	5	59	3	61	2	64 260 260\260/260
4/	7/	28/								4# Row C1m\Pd1/Pd2
03030303	03031212	02311320	1	63	4	62	6	60	7	57 260 260\260/260
21212121	30302121	31022013	48	18	45	19	43	21	42	24 260 260\260/260
30303030	03031212	02311320	49	15	52	14	54	12	55	9 260 260\260/260
12121212	30302121	31022013	32	34	29	35	27	37	26	40 260 260\260/260
12121212	21213030	02311320	25	39	28	38	30	36	31	33 260 260\260/260
30303030	12120303	31022013	56	10	53	11	51	13	50	16 260 260\260/260
21212121	21213030	02311320	41	23	44	22	46	20	47	17 260 260\260/260
03030303	12120303	31022013	8	58	5	59	3	61	2	64 260 260\260/260
5/	8/	28/								5# Row C1m\Pd1/Pd2
03030303	03031212	02311320	1	63	4	62	6	60	7	57 260 260\260/260
12121212	30302121	31022013	32	34	29	35	27	37	26	40 260 260\260/260
21212121	21213030	02311320	41	23	44	22	46	20	47	17 260 260\260/260
30303030	12120303	31022013	56	10	53	11	51	13	50	16 260 260\260/260
30303030	03031212	02311320	49	15	52	14	54	12	55	9 260 260\260/260
21212121	30302121	31022013	48	18	45	19	43	21	42	24 260 260\260/260
12121212	21213030	02311320	25	39	28	38	30	36	31	33 260 260\260/260
03030303	12120303	31022013	8	58	5	59	3	61	2	64 260 260\260/260
6/	7/	28/								6# Row C1m\Pd1/Pd2
03030303	03031212	02311320	1	63	4	62	6	60	7	57 260 260\260/260
12121212	30302121	31022013	32	34	29	35	27	37	26	40 260 260\260/260
30303030	03031212	02311320	49	15	52	14	54	12	55	9 260 260\260/260
21212121	30302121	31022013	48	18	45	19	43	21	42	24 260 260\260/260
21212121	21213030	02311320	41	23	44	22	46	20	47	17 260 260\260/260
30303030	12120303	31022013	56	10	53	11	51	13	50	16 260 260\260/260
12121212	21213030	02311320	25	39	28	38	30	36	31	33 260 260\260/260
03030303	12120303	31022013	8	58	5	59	3	61	2	64 260 260\260/260
1/	18/	28/								7# Row C1m\Pd1/Pd2
03030303	03032121	02311320	1	63	4	62	10	56	11	53 260 260\260/260
30303030	21210303	31022013	60	6	57	7	51	13	50	16 260 260\260/260
12121212	12123030	02311320	21	43	24	42	30	36	31	33 260 260\260/260
21212121	30301212	31022013	48	18	45	19	39	25	38	28 260 260\260/260
21212121	12123030	02311320	37	27	40	26	46	20	47	17 260 260\260/260
12121212	30301212	31022013	32	34	29	35	23	41	22	44 260 260\260/260
30303030	03032121	02311320	49	15	52	14	58	8	59	5 260 260\260/260
03030303	21210303	31022013	12	54	9	55	3	61	2	64 260 260\260/260
2/	18/	28/								8# Row C1m\Pd1/Pd2
03030303	03032121	02311320	1	63	4	62	10	56	11	53 260 260\260/260
30303030	21210303	31022013	60	6	57	7	51	13	50	16 260 260\260/260
21212121	12123030	02311320	37	27	40	26	46	20	47	17 260 260\260/260
12121212	30301212	31022013	32	34	29	35	23	41	22	44 260 260\260/260
12121212	12123030	02311320	21	43	24	42	30	36	31	33 260 260\260/260
21212121	30301212	31022013	48	18	45	19	39	25	38	28 260 260\260/260
30303030	03032121	02311320	49	15	52	14	58	8	59	5 260 260\260/260
03030303	21210303	31022013	12	54	9	55	3	61	2	64 260 260\260/260

3/	17/	28/											9# Row C1m\Pd1/Pd2
03030303	03032121	02311320	1	63	4	62	10	56	11	53	260 260\260/260		
21212121	30301212	31022013	48	18	45	19	39	25	38	28	260 260\260/260		
12121212	12123030	02311320	21	43	24	42	30	36	31	33	260 260\260/260		
30303030	21210303	31022013	60	6	57	7	51	13	50	16	260 260\260/260		
30303030	03032121	02311320	49	15	52	14	58	8	59	5	260 260\260/260		
12121212	30301212	31022013	32	34	29	35	23	41	22	44	260 260\260/260		
21212121	12123030	02311320	37	27	40	26	46	20	47	17	260 260\260/260		
03030303	21210303	31022013	12	54	9	55	3	61	2	64	260 260\260/260		

4/	16/	28/											10# Row C1m\Pd1/Pd2
03030303	03032121	02311320	1	63	4	62	10	56	11	53	260 260\260/260		
21212121	30301212	31022013	48	18	45	19	39	25	38	28	260 260\260/260		
30303030	03032121	02311320	49	15	52	14	58	8	59	5	260 260\260/260		
12121212	30301212	31022013	32	34	29	35	23	41	22	44	260 260\260/260		
12121212	12123030	02311320	21	43	24	42	30	36	31	33	260 260\260/260		
30303030	21210303	31022013	60	6	57	7	51	13	50	16	260 260\260/260		
21212121	12123030	02311320	37	27	40	26	46	20	47	17	260 260\260/260		
03030303	21210303	31022013	12	54	9	55	3	61	2	64	260 260\260/260		

5/	17/	28/											11# Row C1m\Pd1/Pd2
03030303	03032121	02311320	1	63	4	62	10	56	11	53	260 260\260/260		
12121212	30301212	31022013	32	34	29	35	23	41	22	44	260 260\260/260		
21212121	12123030	02311320	37	27	40	26	46	20	47	17	260 260\260/260		
30303030	21210303	31022013	60	6	57	7	51	13	50	16	260 260\260/260		
30303030	03032121	02311320	49	15	52	14	58	8	59	5	260 260\260/260		
21212121	30301212	31022013	48	18	45	19	39	25	38	28	260 260\260/260		
12121212	12123030	02311320	21	43	24	42	30	36	31	33	260 260\260/260		
03030303	21210303	31022013	12	54	9	55	3	61	2	64	260 260\260/260		

6/	16/	28/											12# Row C1m\Pd1/Pd2
03030303	03032121	02311320	1	63	4	62	10	56	11	53	260 260\260/260		
12121212	30301212	31022013	32	34	29	35	23	41	22	44	260 260\260/260		
30303030	03032121	02311320	49	15	52	14	58	8	59	5	260 260\260/260		
21212121	30301212	31022013	48	18	45	19	39	25	38	28	260 260\260/260		
21212121	12123030	02311320	37	27	40	26	46	20	47	17	260 260\260/260		
30303030	21210303	31022013	60	6	57	7	51	13	50	16	260 260\260/260		
12121212	12123030	02311320	21	43	24	42	30	36	31	33	260 260\260/260		
03030303	21210303	31022013	12	54	9	55	3	61	2	64	260 260\260/260		

7/	4/	28/	13#	1/	21/	27/	37#	10/	8/	15/	61#				
1	63	4	62	18	48	19	45	1	63	18	48	6	60	21	43
60	6	57	7	43	21	42	24	60	6	51	13	57	7	50	16
13	51	16	50	30	36	31	33	21	43	30	36	24	42	31	33
56	10	53	11	39	25	38	28	48	18	39	25	45	19	38	28
37	27	40	26	54	12	55	9	37	27	46	20	40	26	47	17
32	34	29	35	15	49	14	52	32	34	23	41	29	35	22	44
41	23	44	22	58	8	59	5	49	15	58	8	52	14	59	5
20	46	17	47	3	61	2	64	12	54	3	61	9	55	2	64

7/	4/	30/	85#	1/	21/	29/	109#	10/	8/	24/	133#				
1	62	4	63	19	48	18	45	1	62	19	48	7	60	21	42
60	7	57	6	42	21	43	24	60	7	50	13	57	6	51	16
13	50	16	51	31	36	30	33	21	42	31	36	24	43	30	33
56	11	53	10	38	25	39	28	48	19	38	25	45	18	39	28
37	26	40	27	55	12	54	9	37	26	47	20	40	27	46	17
32	35	29	34	14	49	15	52	32	35	22	41	29	34	23	44
41	22	44	23	59	8	58	5	49	14	59	8	52	15	58	5
20	47	17	46	2	61	3	64	12	55	2	61	9	54	3	64

7/	14/	12/	157#	1/	28/	9/	181#	10/	14/	18/	205#				
1	60	6	63	21	48	18	43	1	60	21	48	7	62	19	42
62	7	57	4	42	19	45	24	62	7	50	11	57	4	53	16
11	50	16	53	31	38	28	33	19	42	31	38	24	45	28	33
56	13	51	10	36	25	39	30	48	21	36	25	43	18	39	30
35	26	40	29	55	14	52	9	35	26	47	22	40	29	44	17
32	37	27	34	12	49	15	54	32	37	20	41	27	34	23	46
41	20	46	23	61	8	58	3	49	12	61	8	54	15	58	3
22	47	17	44	2	59	5	64	14	55	2	59	9	52	5	64

7/ 23/ 12/ 229#	1/ 30/ 9/ 253#	10/ 23/ 18/ 277#
1 56 10 63 25 48 18 39	1 56 13 60 10 63 6 51	1 56 25 48 11 62 19 38
62 11 53 4 38 19 45 28	62 11 50 7 53 4 57 16	63 10 39 18 53 4 45 28
7 50 16 57 31 42 24 33	19 38 31 42 28 45 24 33	6 51 30 43 16 57 24 33
60 13 51 6 36 21 43 30	48 25 36 21 39 18 43 30	60 13 36 21 50 7 42 31
35 22 44 29 59 14 52 5	35 22 47 26 44 29 40 17	34 23 58 15 44 29 52 5
32 41 23 34 8 49 15 58	32 41 20 37 23 34 27 46	32 41 8 49 22 35 14 59
37 20 46 27 61 12 54 3	49 8 61 12 58 15 54 3	37 20 61 12 47 26 55 2
26 47 17 40 2 55 9 64	14 59 2 55 5 52 9 64	27 46 3 54 17 40 9 64
13/ 17/ 12/ 301#	13/ 11/ 9/ 325#	13/ 20/ 18/ 349#
1 48 18 63 25 56 10 39	1 48 21 60 18 63 6 43	1 48 25 56 19 62 11 38
62 19 45 4 38 11 53 28	62 19 42 7 45 4 57 24	63 18 39 10 45 4 53 28
7 42 24 57 31 50 16 33	11 38 31 50 28 53 16 33	6 43 30 51 24 57 16 33
60 21 43 6 36 13 51 30	56 25 36 13 39 10 51 30	60 21 36 13 42 7 50 31
35 14 52 29 59 22 44 5	35 14 55 26 52 29 40 9	34 15 58 23 52 29 44 5
32 49 15 34 8 41 23 58	32 49 12 37 15 34 27 54	32 49 8 41 14 35 22 59
37 12 54 27 61 20 46 3	41 8 61 20 58 23 46 3	37 12 61 20 55 26 47 2
26 55 9 40 2 47 17 64	22 59 2 47 5 44 17 64	27 54 3 46 9 40 17 64
1/ 9/ 47/ 361#	1/ 9/ 71/ 721#	1/ 9/ 91/ 1081#
2 64 3 61 5 59 8 58	3 64 2 61 5 58 8 59	4 63 1 62 6 57 7 60
55 9 54 12 52 14 49 15	54 9 55 12 52 15 49 14	53 10 56 11 51 16 50 13
26 40 27 37 29 35 32 34	27 40 26 37 29 34 32 35	28 39 25 38 30 33 31 36
47 17 46 20 44 22 41 23	46 17 47 20 44 23 41 22	45 18 48 19 43 24 42 21
42 24 43 21 45 19 48 18	43 24 42 21 45 18 48 19	44 23 41 22 46 17 47 20
31 33 30 36 28 38 25 39	30 33 31 36 28 39 25 38	29 34 32 35 27 40 26 37
50 16 51 13 53 11 56 10	51 16 50 13 53 10 56 11	52 15 49 14 54 9 55 12
7 57 6 60 4 62 1 63	6 57 7 60 4 63 1 62	5 58 8 59 3 64 2 61
1/ 46/ 12/ 1441#	7/ 47/ 41/ 1801#	1/ 52/ 71/ 2161#
5 64 2 59 9 52 14 55	6 63 10 51 18 43 30 39	7 60 6 57 13 50 16 51
58 3 61 8 54 15 49 12	60 1 56 13 48 21 36 25	62 1 63 4 56 11 53 10
23 46 20 41 27 34 32 37	7 62 11 50 19 42 31 38	19 48 18 45 25 38 28 39
44 17 47 22 40 29 35 26	57 4 53 16 45 24 33 28	42 21 43 24 36 31 33 30
39 30 36 25 43 18 48 21	37 32 41 20 49 12 61 8	35 32 34 29 41 22 44 23
28 33 31 38 24 45 19 42	27 34 23 46 15 54 3 58	26 37 27 40 20 47 17 46
53 16 50 11 57 4 62 7	40 29 44 17 52 9 64 5	55 12 54 9 61 2 64 3
10 51 13 56 6 63 1 60	26 35 22 47 14 55 2 59	14 49 15 52 8 59 5 58
10/ 41/ 92/ 2521#	7/ 88/ 11/ 2881#	7/ 62/ 66/ 3241#
8 59 22 41 5 58 23 44	9 52 14 55 29 40 26 35	11 62 1 56 19 38 25 48
61 2 47 20 64 3 46 17	64 5 59 2 44 17 47 22	53 4 63 10 45 28 39 18
12 55 26 37 9 54 27 40	3 58 8 61 23 46 20 41	16 57 6 51 24 33 30 43
49 14 35 32 52 15 34 29	54 15 49 12 34 27 37 32	50 7 60 13 42 31 36 21
36 31 50 13 33 30 51 16	33 28 38 31 53 16 50 11	44 29 34 23 52 5 58 15
25 38 11 56 28 39 10 53	24 45 19 42 4 57 7 62	22 35 32 41 14 59 8 49
48 19 62 1 45 18 63 4	43 18 48 21 63 6 60 1	47 26 37 20 55 2 61 12
21 42 7 60 24 43 6 57	30 39 25 36 10 51 13 56	17 40 27 46 9 64 3 54
7/ 85/ 107/ 3601#	7/ 91/ 41/ 3961#	13/ 95/ 77/ 4321#
12 54 15 49 27 37 32 34	14 59 2 55 22 35 26 47	15 34 23 58 27 54 3 46
61 3 58 8 46 20 41 23	52 5 64 9 44 29 40 17	52 29 44 5 40 9 64 17
2 64 5 59 17 47 22 44	15 58 3 54 23 34 27 46	14 35 22 59 26 55 2 47
55 9 52 14 40 26 35 29	49 8 61 12 41 32 37 20	49 32 41 8 37 12 61 20
36 30 39 25 51 13 56 10	45 28 33 24 53 4 57 16	45 4 53 28 57 24 33 16
21 43 18 48 6 60 1 63	19 38 31 42 11 62 7 50	18 63 10 39 6 43 30 51
42 24 45 19 57 7 62 4	48 25 36 21 56 1 60 13	48 1 56 25 60 21 36 13
31 33 28 38 16 50 11 53	18 39 30 43 10 63 6 51	19 62 11 38 7 42 31 50
40/ 14/ 25/ 4681#	40/ 8/ 91/ 5041#	40/ 46/ 65/ 5401#
17 44 22 47 23 46 20 41	20 47 17 46 22 41 23 44	23 46 17 44 27 34 29 40
64 5 59 2 58 3 61 8	61 2 64 3 59 8 58 5	58 3 64 5 54 15 52 9
9 52 14 55 15 54 12 49	12 55 9 54 14 49 15 52	8 61 2 59 12 49 14 55
40 29 35 26 34 27 37 32	37 26 40 27 35 32 34 29	41 20 47 22 37 32 35 26
33 28 38 31 39 30 36 25	36 31 33 30 38 25 39 28	39 30 33 28 43 18 45 24
16 53 11 50 10 51 13 56	13 50 16 51 11 56 10 53	10 51 16 53 6 63 4 57
57 4 62 7 63 6 60 1	60 7 57 6 62 1 63 4	56 13 50 11 60 1 62 7
24 45 19 42 18 43 21 48	21 42 24 43 19 48 18 45	25 36 31 38 21 48 19 42

.
[Solution Counts(n1=1)/Total = 360/5760]

[List of Counts according to the Value of n1]

[1] 360, [2] 360, [3] 360, [4] 360, [5] 324, [6] 324, [7] 324, [8] 324,
[9] 252, [10] 252, [11] 252, [12] 252, [13] 216, [14] 216, [15] 216, [16] 216,
[17] 144, [18] 144, [19] 144, [20] 144, [21] 108, [22] 108, [23] 108, [24] 108,
[25] 36, [26] 36, [27] 36, [28] 36, [29] 0, [30] 0, [31] 0, [32] 0,
. [OK!]

** Calculated and Listed by Kanji Setsuda
on May 20, 2012 with MacOSX 10.7.4 & Xcode 4.3.2 **

We could have got 5760 standard solutions in all and 360 ones with n1=1.

I must report I could have also reconstructed the same solution sets by the Binary System and the 8-th Increment System, though I skip listing of their results here.

All of them prove to be the same sets of solutions with the one built by our ordinary method that I reported about here at the beginning of this article. What does it mean?

We have always reconstructed the 'Euler Squares' and nothing else.

Anything like 'Non-Euler Type' could not exist.

It means all of them are of 'Complete Euler Type', I would say.

Every PMS88 of "Composite" type is always made for the Complete Euler Squares.

$$5760 = 2^6 \times 6P_6 \times (1/8) = 64 \times 720 \times (1/8)$$

The factors of total count imply it is certainly the smallest set of solutions for Pan-diagonal Magic Squares of Order 8, theoretically speaking. They might also imply there exists the deepest relation to the fundamental solutions of 6-dimensional Extra-Cube of Order 2 and also imply the possibility of transforming them into some precious three dimensional Magic Cubes of Order 4.

8. How about Another Simultaneous Type: Simply Self-C. and Pan-D.?

What else can we compose for PMS88 by our New Euler's Method?

How about taking off the Composite Conditions from the previous case? I mean the simplest Simultaneous Magic Squares of Order 8: Self-complementary and Pan-diagonal.

But, I must say I have actually got so many Euler Squares as 1232 by the Binary Number System. This count is far more than the one of 'Composite & Pan-diagonal' type. I had to examine so many cases as $616P_6 * 2^6$ even for the solutions with n1=1.

The next list only shows part of my composition.

** Simultaneous Magic Squares 8x8: Self-complementary & Pan-diagonal **

1/	20/	102/	155/	239/	475/							1/	
01010101	01100011	00110101	00111010	01010101	01011001	1	52	29	48	6	43	21	60
10100101	10011100	00111010	00110101	10101010	01010110	51	2	47	30	27	54	12	37
01011010	10010011	11000101	11001010	10101010	10100110	32	45	4	49	39	10	56	25
10101010	01101100	11001010	11000101	01010101	10101001	46	31	50	3	58	23	41	8
10101010	11001001	10101100	01011100	01010101	01101010	57	24	42	7	62	15	34	19
10100101	00110110	01011100	10101100	10101010	10011010	40	9	55	26	16	61	20	33
01011010	11000110	10100011	01010011	10101010	10010101	28	53	11	38	35	18	63	14
01010101	00111001	01010011	10100011	01010101	01100101	5	44	22	59	17	36	13	64
1/	34/	80/	136/	239/	365/								29593/
01010101	00110011	01011001	01100110	01010101	01011010	1	48	21	60	10	39	22	59
10100101	00111100	10011010	10011001	10101010	01010011	47	2	51	30	31	49	12	38
01011010	11000011	10010101	10011001	10101010	11001010	32	50	3	45	40	9	52	29
10101010	11001100	10101001	01100110	01010101	00111100	57	23	46	4	58	24	37	11
10101010	11001100	01101010	10011001	01010101	11000011	54	28	41	7	61	19	42	8
10100101	00111100	01010110	01100110	10101010	10101100	36	13	56	25	20	62	15	33
01011010	11000011	10100110	01100110	10101010	00110101	27	53	16	34	35	14	63	18
01010101	00110011	01100101	10011001	01010101	10100101	6	43	26	55	5	44	17	64

1/	61/	97/	148/	236/	468/	137769/
01010101	01010011	01101001	00111100	00110101	01010101	1 58 15 56 13 40 17 60
10100101	00111010	10010110	10011001	10101100	01011010	47 2 51 30 24 43 26 37
01011010	11001010	10010110	10011001	10100011	10100101	32 49 4 45 53 10 59 8
10101010	11000101	01101001	11000011	01011100	10101010	54 31 42 3 44 19 38 29
10101010	01011100	01101001	00111100	11000101	10101010	36 27 46 21 62 23 34 11
10100101	10101100	10010110	01100110	00111010	01011010	57 6 55 12 20 61 16 33
01011010	10100011	10010110	01100110	11001010	10100101	28 39 22 41 35 14 63 18
01010101	00110101	01101001	11000011	01010011	01010101	5 48 25 52 9 50 7 64

1/ 65/ 36/165/239/468/ 176745/	1/ 66/ 32/167/239/468/ 204513/	1/ 68/ 83/205/234/314/ 232017/
1 52 29 48 9 40 21 60	1 52 29 48 21 40 9 60	1 48 23 53 30 34 11 60
47 2 39 30 28 41 20 53	47 2 39 30 28 53 20 41	41 2 58 16 20 55 29 39
32 49 4 57 55 6 43 14	32 49 4 57 43 6 55 14	32 59 3 57 37 14 40 18
58 31 38 3 46 23 50 11	58 31 38 3 46 11 50 23	56 21 46 4 43 27 50 13
54 15 42 19 62 27 34 7	42 15 54 19 62 27 34 7	52 15 38 22 61 19 44 9
51 22 59 10 8 61 16 33	51 10 59 22 8 61 16 33	47 25 51 28 8 62 6 33
12 45 24 37 35 26 63 18	24 45 12 37 35 26 63 18	26 36 10 45 49 7 63 24
5 44 25 56 17 36 13 64	5 56 25 44 17 36 13 64	5 54 31 35 12 42 17 64

1/ 77/ 36/136/239/432/ 253995/	1/ 80/ 34/136/239/365/ 346443/	1/ 83/ 34/136/239/468/ 374131/
1 55 14 59 9 40 22 60	1 56 13 60 18 39 14 59	1 56 13 44 17 40 29 60
47 2 52 30 31 42 19 37	55 2 43 30 31 41 20 38	55 2 59 30 16 41 20 37
32 50 4 45 39 17 44 29	32 42 3 53 40 17 44 29	32 57 4 53 39 18 43 14
57 16 53 3 58 24 38 11	57 15 54 4 58 16 37 19	42 15 54 3 58 31 38 19
54 27 41 7 62 12 49 8	46 28 49 7 61 11 50 8	46 27 34 7 62 11 50 23
36 21 48 26 20 61 15 33	36 21 48 25 12 62 23 33	51 22 47 26 12 61 8 33
28 46 23 34 35 13 63 18	27 45 24 34 35 22 63 10	28 45 24 49 35 6 63 10
5 43 25 56 6 51 10 64	6 51 26 47 5 52 9 64	5 36 25 48 21 52 9 64

1/ 87/ 24/136/239/432/ 396471/	1/ 90/ 34/124/239/475/ 456687/	1/ 92/ 68/257/267/398/ 481719/
1 55 22 59 9 40 14 60	1 56 25 48 6 51 13 60	1 56 31 42 15 35 18 62
47 2 44 30 31 50 19 37	55 2 43 30 31 42 20 37	53 2 41 20 28 48 29 39
32 42 4 45 39 17 52 29	32 41 4 53 39 18 44 29	16 59 8 61 33 21 52 10
57 24 53 3 58 16 38 11	46 27 54 3 58 15 49 8	60 25 38 7 54 14 43 19
54 27 49 7 62 12 41 8	57 16 50 7 62 11 38 19	46 22 51 11 58 27 40 5
36 13 48 26 20 61 23 33	36 21 47 26 12 61 24 33	55 13 44 32 4 57 6 49
28 46 15 34 35 21 63 18	28 45 23 34 35 22 63 10	26 36 17 37 45 24 63 12
5 51 25 56 6 43 10 64	5 52 14 59 17 40 9 64	3 47 30 50 23 34 9 64

1/ 94/ 34/128/239/594/ 490695/	1/ 96/ 24/136/239/424/ 513277/	1/ 97/ 34/124/239/468/ 571021/
1 56 26 43 5 40 30 59	1 55 22 44 9 40 29 60	1 56 25 48 21 36 13 60
55 2 48 29 15 42 20 49	47 2 59 30 16 50 19 37	55 2 43 30 16 57 20 37
31 46 4 53 51 18 44 13	32 57 4 45 39 17 52 14	32 41 4 53 39 18 59 14
41 28 54 3 57 32 38 7	42 24 53 3 58 31 38 11	46 27 54 3 58 15 34 23
58 27 33 8 62 11 37 24	54 27 34 7 62 12 41 23	42 31 50 7 62 11 38 19
52 21 47 14 12 61 19 34	51 13 48 26 20 61 8 33	51 6 47 26 12 61 24 33
16 45 23 50 36 17 63 10	28 46 15 49 35 6 63 18	28 45 8 49 35 22 63 10
6 35 25 60 22 39 9 64	5 36 25 56 21 43 10 64	5 52 29 44 17 40 9 64

2/ 97/ 33/124/239/467/ 7316571/	2/101/ 19/156/239/475/ 7458807/	2/106/ 19/150/239/475/ 7495939/
1 56 25 48 21 36 13 60	1 44 29 56 6 51 13 60	1 44 29 56 6 39 25 60
55 2 43 30 39 57 20 14	43 2 55 30 39 46 20 25	43 2 55 30 51 46 20 13
32 41 4 53 16 18 59 37	32 53 4 41 27 18 48 37	32 53 4 41 15 18 48 49
46 27 54 3 58 15 34 23	54 31 42 3 58 15 49 8	54 31 42 3 58 27 37 8
42 31 50 7 62 11 38 19	57 16 50 7 62 23 34 11	57 28 38 7 62 23 34 11
28 6 47 49 12 61 24 33	28 17 47 38 24 61 12 33	16 17 47 50 24 61 12 33
51 45 8 26 35 22 63 10	40 45 19 26 35 10 63 22	52 45 19 14 35 10 63 22
5 52 29 44 17 40 9 64	5 52 14 59 9 36 21 64	5 40 26 59 9 36 21 64

.....

It took too long a time for me to continue. I had to give it up on the way.

9. How about Making Another Three-type Simultaneous Magic Squares 8x8?

Let's add one more presupposition to this Simultaneous type in order to get them more rare and precious. How about making the **Multiple 4x4** type of Simultaneous MS88: Self-complementary and Pan-diagonal?

The next list explains its new definition with all the simultaneous equations required.

```
//
/** Basic Conditions for Rows and Columns: S=130; **
// n1+n2+n3+n4=S ... rw1; | n5+n6+n7+n8=S ... rw9;
// n9+n10+n11+n12=S ... rw2; | n13+n14+n15+n16=S ... rw10;
// n17+n18+n19+n20=S ... rw3; | n21+n22+n23+n24=S ... rw11;
// n25+n26+n27+n28=S ... rw4; | n29+n30+n31+n32=S ... rw12;
// n33+n34+n35+n36=S ... rw5; | n37+n38+n39+n40=S ... rw13;
// n41+n42+n43+n44=S ... rw6; | n45+n46+n47+n48=S ... rw14;
// n49+n50+n51+n52=S ... rw7; | n53+n54+n55+n56=S ... rw15;
// n57+n58+n59+n60=S ... rw8; | n61+n62+n63+n64=S ... rw16;
// n1+n9+n17+n25=S ... c1; | n33+n41+n49+n57=S ... c19;
// n2+n10+n18+n26=S ... c12; | n34+n42+n50+n58=S ... c110;
// n3+n11+n19+n27=S ... c13; | n35+n43+n51+n59=S ... c111;
// n4+n12+n20+n28=S ... c14; | n36+n44+n52+n60=S ... c112;
// n5+n13+n21+n29=S ... c15; | n37+n45+n53+n61=S ... c113;
// n6+n14+n22+n30=S ... c16; | n38+n46+n54+n62=S ... c114;
// n7+n15+n23+n31=S ... c17; | n39+n47+n55+n63=S ... c115;
// n8+n16+n24+n32=S ... c18; | n40+n48+n56+n64=S ... c116;
//
/** Basic Form and Basic Equations **
//
// 61 62 63 64 57 58 59 60 61 62 63 64 57 58 59 60
// 5 6 7 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 2 3 4
// 13 14 15 16 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 9 10 11 12
// 21 22 23 24 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 17 18 19 20
// 29 30 31 32 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 25 26 27 28
// 37 38 39 40 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 33 34 35 36
// 45 46 47 48 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 41 42 43 44
// 53 54 55 56 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 49 50 51 52
// 61 62 63 64 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 57 58 59 60
// 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4
//
/** Pandiagonal Conditions: C=260; **
// n1+n10+n19+n28+n37+n46+n55+n64=C ... pd1; n1+n16+n23+n30+n37+n44+n51+n58=C ... pb1;
// n2+n11+n20+n29+n38+n47+n56+n57=C ... pd2; n2+n9+n24+n31+n38+n45+n52+n59=C ... pb2;
// n3+n12+n21+n30+n39+n48+n49+n58=C ... pd3; n3+n10+n17+n32+n39+n46+n53+n60=C ... pb3;
// n4+n13+n22+n31+n40+n41+n50+n59=C ... pd4; n4+n11+n18+n25+n40+n47+n54+n61=C ... pb4;
// n5+n14+n23+n32+n33+n42+n51+n60=C ... pd5; n5+n12+n19+n26+n33+n48+n55+n62=C ... pb5;
// n6+n15+n24+n25+n34+n43+n52+n61=C ... pd6; n6+n13+n20+n27+n34+n41+n56+n63=C ... pb6;
// n7+n16+n17+n26+n35+n44+n53+n62=C ... pd7; n7+n14+n21+n28+n35+n42+n49+n64=C ... pb7;
// n8+n9+n18+n27+n36+n45+n54+n63=C ... pd8; n8+n15+n22+n29+n36+n43+n50+n57=C ... pb8;
/** Self-Complementary Conditions: SC=65; **
// n1+n64=n2+n63=n3+n62=n4+n61=n5+n60=n6+n59=n7+n58=n8+n57=
// n9+n56=n10+n55=n11+n54=n12+n53=n13+n52=n14+n51=n15+n50=n16+n49=
// n17+n48=n18+n47=n19+n46=n20+n45=n21+n44=n22+n43=n23+n42=n24+n41=
// n25+n40=n26+n39=n27+n38=n28+n37=n29+n36=n30+n35=n31+n34=n32+n33=
// n33+n32=n34+n31=n35+n30=n36+n29=SC
/** List-forming Inequality Conditions for the Standard Solutions: **
// n1<n57; n57<n8; and n1<n64;
//
```

Let me show you the sample solution of that type for instance, but only one here.

**** Three-Type Simultaneous Magic Squares of Order 8: Multiple 4x4, Self-complementary and Pan-diagonal; with Decomposition Diagrams ****

```
[Classical], [Mathematica]; So1_Num#; /D8i,/D4i,/D2i; Check_Sums||\|/|
[Classic]          1#|Rw1 Rw2|C11 C12\Pd1/Pd2| /D8i /H|R1R2|C1C2\P1/P2| /L|R1R2|C1C2\P1/P2|
  1 50 47 32 19 54 13 44|130 130|130 130|260|260| 06532615|1414|1414|28|28| 01672543|1414|1414|28|28|
 56  7 26 41  6 27 36 61|130 130|130 130|260|260| 60350347|1414|1414|28|28| 76105234|1414|1414|28|28|
 42 25  8 55 62 35 28  5|130 130|130 130|260|260| 53067430|1414|1414|28|28| 10765234|1414|1414|28|28|
 31 48 49  2 43 14 53 20|130 130|130 130|260|260| 35605162|1414|1414|28|28| 67012543|1414|1414|28|28|
 45 12 51 22 63 16 17 34|130 130|130 130|260|260| 51627124|1414|1414|28|28| 43256701|1414|1414|28|28|
 60 37 30  3 10 57 40 23|130 130|130 130|260|260| 74301742|1414|1414|28|28| 34521076|1414|1414|28|28|
  4 29 38 59 24 39 58  9|130 130|130 130|260|260| 03472471|1414|1414|28|28| 34527610|1414|1414|28|28|
 21 52 11 46 33 18 15 64|130 130|130 130|260|260| 26154217|1414|1414|28|28| 43250167|1414|1414|28|28|

[Mathemtc1]       1# /D4i /H|R1R2|C1C2\P1/P2| /M|R1R2|C1C2\P1/P2| /L|R1R2|C1C2\P1/P2|
  0 49 46 31 18 53 12 43|03211302| 6 6| 6 6|12|12| 00330132| 6 6| 6 6|12|12| 01232103| 6 6| 6 6|12|12|
 55  6 25 40  5 26 35 60|30120123| 6 6| 6 6|12|12| 11221203| 6 6| 6 6|12|12| 32101230| 6 6| 6 6|12|12|
 41 24  7 54 61 34 27  4|21033210| 6 6| 6 6|12|12| 22113021| 6 6| 6 6|12|12| 10321230| 6 6| 6 6|12|12|
 30 47 48  1 42 13 52 19|12302031| 6 6| 6 6|12|12| 33002310| 6 6| 6 6|12|12| 23012103| 6 6| 6 6|12|12|
 44 11 50 21 62 15 16 33|20313012| 6 6| 6 6|12|12| 32013300| 6 6| 6 6|12|12| 03212301| 6 6| 6 6|12|12|
 59 36 29  2  9 56 39 22|32100321| 6 6| 6 6|12|12| 21302211| 6 6| 6 6|12|12| 30121032| 6 6| 6 6|12|12|
  3 28 37 58 23 38 57  8|01231230| 6 6| 6 6|12|12| 03121122| 6 6| 6 6|12|12| 30123210| 6 6| 6 6|12|12|
 20 51 10 45 32 17 14 63|13022103| 6 6| 6 6|12|12| 10230033| 6 6| 6 6|12|12| 03210123| 6 6| 6 6|12|12|

/D2i /1|RrCcPP| /2|RrCcPP| /3|RrCcPP| /4|RrCcPP| /5|RrCcPP| /6|RrCcPP|
01100101|222244| 01011100|222244| 00110011|222244| 00110110|222244| 00111001|222244| 01010101|222244|
10010011|222244| 10100101|222244| 00110101|222244| 11001001|222244| 11000110|222244| 10101010|222244|
10011100|222244| 01011010|222244| 11001010|222244| 00111001|222244| 00110110|222244| 10101010|222244|
01101010|222244| 10100011|222244| 11001100|222244| 11000110|222244| 11001001|222244| 01010101|222244|
10101001|222244| 00111010|222244| 11001100|222244| 10011100|222244| 01101100|222244| 01010101|222244|
11000110|222244| 10100101|222244| 10101100|222244| 01100011|222244| 10010011|222244| 10101010|222244|
00110110|222244| 01011010|222244| 01010011|222244| 01101100|222244| 10011100|222244| 10101010|222244|
01011001|222244| 11000101|222244| 00110011|222244| 10010011|222244| 01100011|222244| 01010101|222244|
```

It looks to keep the original characteristic of Simultaneous MS88: SC & PD very well.
 I tried to make them by our ordinary method at first, but I could not continue. It really took too long a time for me to finish and know the total count of solutions.
 Then I decided to adopt our fast New Euler's Method by the Binary Number System to make them all. I expected it might finish counting in a reasonably short time.

9-1. How to define the Euler Units for the 3-Type Simultaneous MS88

```
/** Basic Conditions for Rows and Columns: S=2; **
// n1+n2+n3+n4=S ... rw1; | n5+n6+n7+n8=S ... rw9;
// n9+n10+n11+n12=S ... rw2; | n13+n14+n15+n16=S ... rw10;
// n17+n18+n19+n20=S ... rw3; | n21+n22+n23+n24=S ... rw11;
// n25+n26+n27+n28=S ... rw4; | n29+n30+n31+n32=S ... rw12;
// n33+n34+n35+n36=S ... rw5; | n37+n38+n39+n40=S ... rw13;
// n41+n42+n43+n44=S ... rw6; | n45+n46+n47+n48=S ... rw14;
// n49+n50+n51+n52=S ... rw7; | n53+n54+n55+n56=S ... rw15;
// n57+n58+n59+n60=S ... rw8; | n61+n62+n63+n64=S ... rw16;
// n1+n9+n17+n25=S ... c11; | n33+n41+n49+n57=S ... c19;
// n2+n10+n18+n26=S ... c12; | n34+n42+n50+n58=S ... c110;
// n3+n11+n19+n27=S ... c13; | n35+n43+n51+n59=S ... c111;
// n4+n12+n20+n28=S ... c14; | n36+n44+n52+n60=S ... c112;
// n5+n13+n21+n29=S ... c15; | n37+n45+n53+n61=S ... c113;
// n6+n14+n22+n30=S ... c16; | n38+n46+n54+n62=S ... c114;
// n7+n15+n23+n31=S ... c17; | n39+n47+n55+n63=S ... c115;
// n8+n16+n24+n32=S ... c18; | n40+n48+n56+n64=S ... c116;
/** Pandiagonal Conditions: C=4; **
// n1+n10+n19+n28+n37+n46+n55+n64=C ... pd1; | n1+n16+n23+n30+n37+n44+n51+n58=C ... pb1;
// n2+n11+n20+n29+n38+n47+n56+n63=C ... pd2; | n2+n9+n24+n31+n38+n45+n52+n59=C ... pb2;
// n3+n12+n21+n30+n39+n48+n49+n58=C ... pd3; | n3+n10+n17+n32+n39+n46+n53+n60=C ... pb3;
// n4+n13+n22+n31+n40+n41+n50+n59=C ... pd4; | n4+n11+n18+n25+n40+n47+n54+n61=C ... pb4;
// n5+n14+n23+n32+n33+n42+n51+n60=C ... pd5; | n5+n12+n19+n26+n33+n48+n55+n62=C ... pb5;
// n6+n15+n24+n25+n34+n43+n52+n61=C ... pd6; | n6+n13+n20+n27+n34+n41+n56+n63=C ... pb6;
// n7+n16+n17+n26+n35+n44+n53+n62=C ... pd7; | n7+n14+n21+n28+n35+n42+n49+n64=C ... pb7;
// n8+n9+n18+n27+n36+n45+n54+n63=C ... pd8; | n8+n15+n22+n29+n36+n43+n50+n57=C ... pb8;
```



```

/** Self-Complementary Conditions: SC=1; **
// n1+n64=n2+n63=n3+n62=n4+n61=n5+n60=n6+n59=n7+n58=n8+n57=
// n9+n56=n10+n55=n11+n54=n12+n53=n13+n52=n14+n51=n15+n50=n16+n49=
// n17+n48=n18+n47=n19+n46=n20+n45=n21+n44=n22+n43=n23+n42=n24+n41=
// n25+n40=n26+n39=n27+n38=n28+n37=n29+n36=n30+n35=n31+n34=n32+n33=
// n33+n32=n34+n31=n35+n30=n36+n29=SC
/** List-forming Inequality Conditions for the Standard Solutions: **
// n1<n57; n57<n8; and n1<n64;

```

Structural similarity must be realized between Euler Units and their whole object. This fundamental presupposition comes from our **New Definition of Euler Squares**.

We must also have one more rule that the number '0' must come just 32 times in any Euler Unit as often as '1', because it should prevent us from making any wrong solution.

9-2. How to make Euler Units and how to Combine them to Compose our Object

Let me show you the program list below I recently dictated for that purpose.

```

/** New 'Euler Squares' for the 3-T Simultaneous Magic Squares 8x8: **
/** Multiple 4x4x4, Self-complementary and Pan-diagonal; **
/** by the Binary Number System and New Euler's Method **
/** 'NEMS88Sm13TBin.c': Dictated by Kanji Setsuda in 2006, 2010; **
/** Revised on May 26, 2012 with MacOSX 10.7.4 & Xcode 4.3.2 **
//
#include <stdio.h>
//
/** Global Variables *
long int cnt, cnt1, cnt2;
long cntr[5][2];
short int ecnt, cnt3;
short LSM, SSM, SC;
short nm[65], uflg[65];
short u1,u2,u3,u4,u5,u6;
short teu[345][65];
short mtc[345][345];
short anm[11][72];
//
/** Sub-Routiens *
void stp01(void), stp02(void), stp03(void), stp04(void);
void stp05(void), stp06(void), stp07(void), stp08(void);
void stp09(void), stp10(void), stp11(void), stp12(void);
void stp13(void), stp14(void), stp15(void), stp16(void);
void stp17(void), stp18(void), stp19(void), stp20(void);
void stp21(void), stp22(void), stp23(void), stp24(void);
void stp25(void), stp26(void), stp27(void), stp28(void);
void stp29(void), stp30(void), stp31(void), stp32(void);
void stp33(void);
void euprint(void), preu(short x);
void reftbl(void);
void cmbcmp(void), cbcp(void);
void prans(void);
void ansxpr(short x);
//
/** Main Program *
int main(){
short n;
printf("\n");
printf("*** Compose 'Euler Squares' for the 3-T Simultaneous MS88:\n");
printf("  Multiple 4x4x4, Self-complementary and Pan-diagonal;\n");
printf("  by the Binary Number System and New Euler's Method **\n");
printf("\n");
printf(" [List of Euler Units]\n");
for(n=0;n<65;n++){nm[n]=0;}; for(n=0;n<2;n++){uflg[n]=0;};

```

```

LSM=4; SSM=2; SC=1; ecnt=0; cnt3=0;
stp01(); //Make the Euler Units
if(cnt3>0){preu(cnt3);}
printf(" [Count of Euler Units = %d]\n",ecnt);
reftbl(); //Make the Reference Table
printf("\n");
printf("*** Reconstruction of the 3-Type Simultanous Magic Squares 8x8:\n");
printf(" Multiple 4x4x4, Self-complementary and Pan-diagonal; **\n");
printf(" by the Binary Number System and New Euler's Method **\n");
printf(" ** Abstract List of Standard Solutions(when n1=1) **\n");
cnt=0; cnt1=0; cnt3=0;
printf(" [Used Units /1/2/3/4/5/6; Solution Number:[n1=1] All#]\n");
cmbcmp(); //Combine EU and Compose Objects
if(cnt3>0){ansxpr(cnt3);}
printf(" [Solutions Count(When n1=1)/All = %ld/%ld] [OK!]\n",cnt1,cnt);
printf("\n");
printf("*** Calculated and Listed by Kanji Setsuda\n");
printf(" on May 26, 2012 with MacOSX 10.7.4 and Xcode 4.3.2 **\n");
printf("\n");
return 0;
}
//
/* Compose All the Euler Units *
// Level #1:
// Set N1 & n64
void stp01(){
short a,b;
for(a=0;a<2;a++){b=SC-a;
if((uflg[a]<32)&&(uflg[b]<32)){
nm[1]=a; nm[64]=b;
uflg[a]++; uflg[b]++;
stp02();
uflg[b]--; uflg[a]--;}
}
}
// Set N2 & n63
void stp02(){
short a,b;
for(a=1;a>=0;a--){b=SC-a;
if((uflg[a]<32)&&(uflg[b]<32)){
nm[2]=a; nm[63]=b;
uflg[a]++; uflg[b]++;
stp03();
uflg[b]--; uflg[a]--;}
}
}
// Set N3 & n62
void stp03(){
short a,b;
for(a=0;a<2;a++){b=SC-a;
if((uflg[a]<32)&&(uflg[b]<32)){
nm[3]=a; nm[62]=b;
uflg[a]++; uflg[b]++;
stp04();
uflg[b]--; uflg[a]--;}
}
}
// Set n4=SSM-n1-n2-n3 & n61
void stp04(){
short a,b;
a=SSM-nm[1]-nm[2]-nm[3];
b=SSM-nm[64]-nm[63]-nm[62];
if((0<=a)&&(a<2)&&(a+b==SC)){
if((uflg[a]<32)&&(uflg[b]<32)){
nm[4]=a; nm[61]=b;

```

```

        uflg[a]++; uflg[b]++;
        stp05();
        uflg[b]--; uflg[a]--;}}
}
// Set N5 & n60
void stp05(){
    short a,b;
    for(a=0;a<2;a++){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[5]=a; nm[60]=b;
            uflg[a]++; uflg[b]++;
            stp06();
            uflg[b]--; uflg[a]--;}
        }
}
// Set N6 & n59
void stp06(){
    short a,b;
    for(a=1;a>=0;a--){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[6]=a; nm[59]=b;
            uflg[a]++; uflg[b]++;
            stp07();
            uflg[b]--; uflg[a]--;}
        }
}
// Set N7 & n58
void stp07(){
    short a,b;
    for(a=0;a<2;a++){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[7]=a; nm[58]=b;
            uflg[a]++; uflg[b]++;
            stp08();
            uflg[b]--; uflg[a]--;}
        }
}
// Set n8=SSM-n5-n6-n7 & n57
void stp08(){
    short a,b;
    a=SSM-nm[5]-nm[6]-nm[7];
    b=SSM-nm[60]-nm[59]-nm[58];
    if((0<=a)&&(a<2)&&(a+b==SC)){
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[8]=a; nm[57]=b;
            uflg[a]++; uflg[b]++;
            stp09();
            uflg[b]--; uflg[a]--;}}
}
// Level #2:
// Set N9 & n56
void stp09(){
    short a,b;
    for(a=1;a>=0;a--){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){cnt2=0;
            nm[9]=a; nm[56]=b;
            uflg[a]++; uflg[b]++;
            stp10();
            uflg[b]--; uflg[a]--;}
        }
}
// Set N17 & n48
void stp10(){
    short a,b;
    for(a=0;a<2;a++){b=SC-a;

```

```

        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[17]=a; nm[48]=b;
            uflg[a]++; uflg[b]++;
            stp11();
            uflg[b]--; uflg[a]--;}
    }
}
// Set n25=SSM-n1-n9-n17 & n40
void stp11(){
    short a,b;
    a=SSM-nm[1]-nm[9]-nm[17];
    b=SSM-nm[64]-nm[56]-nm[48];
    if((0<=a)&&(a<2)&&(a+b==SC)){
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[25]=a; nm[40]=b;
            uflg[a]++; uflg[b]++;
            stp12();
            uflg[b]--; uflg[a]--;}}
}
// Set N33 & n32
void stp12(){
    short a,b;
    for(a=0;a<2;a++){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[33]=a; nm[32]=b;
            uflg[a]++; uflg[b]++;
            stp13();
            uflg[b]--; uflg[a]--;}
    }
}
// Set N41 & n24
void stp13(){
    short a,b;
    for(a=0;a<2;a++){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[41]=a; nm[24]=b;
            uflg[a]++; uflg[b]++;
            stp14();
            uflg[b]--; uflg[a]--;}
    }
}
// Set n49=SSM-n33-n41-n57 & n16
void stp14(){
    short a,b;
    a=SSM-nm[33]-nm[41]-nm[57];
    b=SSM-nm[32]-nm[24]-nm[8];
    if((0<=a)&&(a<2)&&(a+b==SC)){
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[49]=a; nm[16]=b;
            uflg[a]++; uflg[b]++;
            stp15();
            uflg[b]--; uflg[a]--;}}
}
// Level #3:
// Set N10 & n55
void stp15(){
    short a,b;
    for(a=0;a<2;a++){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[10]=a; nm[55]=b;
            uflg[a]++; uflg[b]++;
            stp16();
            uflg[b]--; uflg[a]--;}
    }
}
}

```

```

// Set N11 & n54
void stp16(){
  short a,b;
  for(a=0;a<2;a++){b=SC-a;
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[11]=a; nm[54]=b;
      uflg[a]++; uflg[b]++;
      stp17();
      uflg[b]--; uflg[a]--;}
  }
}
// Set n12=SSM-n9-n10-n11 & n53
void stp17(){
  short a,b;
  a=SSM-nm[9]-nm[10]-nm[11];
  b=SSM-nm[56]-nm[55]-nm[54];
  if((0<=a)&&(a<2)&&(a+b==SC)){
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[12]=a; nm[53]=b;
      uflg[a]++; uflg[b]++;
      stp18();
      uflg[b]--; uflg[a]--;}}
}
// Set N13 & n52
void stp18(){
  short a,b;
  for(a=0;a<2;a++){b=SC-a;
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[13]=a; nm[52]=b;
      uflg[a]++; uflg[b]++;
      stp19();
      uflg[b]--; uflg[a]--;}
  }
}
// Set N14 & n51
void stp19(){
  short a,b;
  for(a=0;a<2;a++){b=SC-a;
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[14]=a; nm[51]=b;
      uflg[a]++; uflg[b]++;
      stp20();
      uflg[b]--; uflg[a]--;}
  }
}
// Set n15=SSM-n13-n14-n16 & n50
void stp20(){
  short a,b;
  a=SSM-nm[13]-nm[14]-nm[16];
  b=SSM-nm[52]-nm[51]-nm[49];
  if((0<=a)&&(a<2)&&(a+b==SC)){
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[15]=a; nm[50]=b;
      uflg[a]++; uflg[b]++;
      stp21();
      uflg[b]--; uflg[a]--;}}
}
// Level #4:
// Set N18 & n47
void stp21(){
  short a,b,sm;
  for(a=0;a<2;a++){b=SC-a;
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[18]=a; nm[47]=b;
      uflg[a]++; uflg[b]++;

```

```

        sm=nm[4]+nm[11]+nm[18]+nm[25]+nm[40]+nm[47]+nm[54]+nm[61];
        if(sm==LSM){stp22();}
        uflg[b]--; uflg[a]--;}
    }
}
// Set N23 & n42
void stp22(){
    short a,b,sm;
    for(a=0;a<2;a++){b=SC-a;
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[23]=a; nm[42]=b;
            uflg[a]++; uflg[b]++;
            sm=nm[5]+nm[14]+nm[23]+nm[32]+nm[33]+nm[42]+nm[51]+nm[60];
            if(sm==LSM){stp23();}
            uflg[b]--; uflg[a]--;}
        }
    }
}
// Set n26=SSM-n2-n10-n18 & n39
void stp23(){
    short a,b;
    a=SSM-nm[2]-nm[10]-nm[18];
    b=SSM-nm[63]-nm[55]-nm[47];
    if((0<=a)&&(a<2)&&(a+b==SC)){
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[26]=a; nm[39]=b;
            uflg[a]++; uflg[b]++;
            stp24();
            uflg[b]--; uflg[a]--;}}
    }
}
// Set n34=SSM-n42-n50-n58 & n31
void stp24(){
    short a,b;
    a=SSM-nm[42]-nm[50]-nm[58];
    b=SSM-nm[23]-nm[15]-nm[7];
    if((0<=a)&&(a<2)&&(a+b==SC)){
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[34]=a; nm[31]=b;
            uflg[a]++; uflg[b]++;
            stp25();
            uflg[b]--; uflg[a]--;}}
    }
}
// Set n19=LSM-n5-n12-n26-n33-n48-n55-n62 & n46
void stp25(){
    short a,b;
    a=LSM-nm[5]-nm[12]-nm[26]-nm[33]-nm[48]-nm[55]-nm[62];
    b=LSM-nm[3]-nm[10]-nm[17]-nm[32]-nm[39]-nm[53]-nm[60];
    if((0<=a)&&(a<2)&&(a+b==SC)){
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[19]=a; nm[46]=b;
            uflg[a]++; uflg[b]++;
            stp26();
            uflg[b]--; uflg[a]--;}}
    }
}
// Set n22=LSM-n4-n13-n31-n40-n41-n50-n59 & n43
void stp26(){
    short a,b;
    a=LSM-nm[4]-nm[13]-nm[31]-nm[40]-nm[41]-nm[50]-nm[59];
    b=LSM-nm[6]-nm[15]-nm[24]-nm[25]-nm[34]-nm[52]-nm[61];
    if((0<=a)&&(a<2)&&(a+b==SC)){
        if((uflg[a]<32)&&(uflg[b]<32)){
            nm[22]=a; nm[43]=b;
            uflg[a]++; uflg[b]++;
            stp27();
            uflg[b]--; uflg[a]--;}}
    }
}

```

```

// Level #5:
// Set n20=SSM-n17-n18-n19 & n45
void stp27(){
  short a,b;
  a=SSM-nm[17]-nm[18]-nm[19];
  b=SSM-nm[48]-nm[47]-nm[46];
  if((0<=a)&&(a<2)&&(a+b==SC)){
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[20]=a; nm[45]=b;
      uflg[a]++; uflg[b]++;
      stp28();
      uflg[b]--; uflg[a]--;}}
}
// Set n21=SSM-n22-n23-n24 & n44
void stp28(){
  short a,b;
  a=SSM-nm[22]-nm[23]-nm[24];
  b=SSM-nm[43]-nm[42]-nm[41];
  if((0<=a)&&(a<2)&&(a+b==SC)){
    if((uflg[a]<32)&&(uflg[b]<32)){
      nm[21]=a; nm[44]=b;
      uflg[a]++; uflg[b]++;
      stp29();
      uflg[b]--; uflg[a]--;}}
}
// Set n27=LSM-n6-n13-n20-n34-n41-n56-n63 & n38
void stp29(){
  short a,b,c,d;
  a=LSM-nm[6]-nm[13]-nm[20]-nm[34]-nm[41]-nm[56]-nm[63];
  b=LSM-nm[2]-nm[9]-nm[24]-nm[31]-nm[45]-nm[52]-nm[59];
  c=SSM-nm[3]-nm[11]-nm[19];
  d=SSM-nm[62]-nm[54]-nm[46];
  if((a==c)&&(b==d)){
    if((0<=a)&&(a<2)&&(a+b==SC)){
      if((uflg[a]<32)&&(uflg[b]<32)){
        nm[27]=a; nm[38]=b;
        uflg[a]++; uflg[b]++;
        stp30();
        uflg[b]--; uflg[a]--;}}}}
}
// Set n35=LSM-n3-n11-n19-n27-n43-n51-n59 & n30
void stp30(){
  short a,b,c,d;
  a=SSM-nm[43]-nm[51]-nm[59];
  b=SSM-nm[22]-nm[14]-nm[6];
  c=LSM-nm[7]-nm[16]-nm[17]-nm[26]-nm[44]-nm[53]-nm[62];
  d=LSM-nm[3]-nm[12]-nm[21]-nm[39]-nm[48]-nm[49]-nm[58];
  if((a==c)&&(b==d)){
    if((0<=a)&&(a<2)&&(a+b==SC)){
      if((uflg[a]<32)&&(uflg[b]<32)){
        nm[35]=a; nm[30]=b;
        uflg[a]++; uflg[b]++;
        stp31();
        uflg[b]--; uflg[a]--;}}}}
}
// Set n28=LSM-n7-n14-n21-n35-n42-n49-n64 & n37
void stp31(){
  short a,b,c,d,e,f;
  a=SSM-nm[4]-nm[12]-nm[20];
  b=SSM-nm[61]-nm[53]-nm[45];
  c=SSM-nm[25]-nm[26]-nm[27];
  d=SSM-nm[40]-nm[39]-nm[38];
  e=LSM-nm[7]-nm[14]-nm[21]-nm[35]-nm[42]-nm[49]-nm[64];
  f=LSM-nm[1]-nm[16]-nm[23]-nm[30]-nm[44]-nm[51]-nm[58];
  if((a==c)&&(a==e)&&(b==d)&&(b==f)){

```

```

        if((0<=a)&&(a<2)&&(a+b==SC)){
            if((uflg[a]<32)&&(uflg[b]<32)){
                nm[28]=a; nm[37]=b;
                uflg[a]++; uflg[b]++;
                stp32();
                uflg[b]--; uflg[a]--;}}
    }
// Set n29=SSM-n5-n13-n21 & n36
void stp32(){
    short a,b,c,d,e,f;
    a=SSM-nm[5]-nm[13]-nm[21];
    b=SSM-nm[60]-nm[52]-nm[44];
    c=SSM-nm[30]-nm[31]-nm[32];
    d=SSM-nm[35]-nm[34]-nm[33];
    e=LSM-nm[2]-nm[11]-nm[20]-nm[38]-nm[47]-nm[56]-nm[57];
    f=LSM-nm[8]-nm[9]-nm[18]-nm[27]-nm[45]-nm[54]-nm[63];
    if((a==c)&&(a==e)&&(b==d)&&(b==f)){
        if((0<=a)&&(a<2)&&(a+b==SC)){
            if((uflg[a]<32)&&(uflg[b]<32)){
                nm[29]=a; nm[36]=b;
                uflg[a]++; uflg[b]++;
                stp33();
                uflg[b]--; uflg[a]--;}}
    }
    /* Check Line-Sums *
void stp33(){
    short sm1,sm2;
    sm1=nm[1]+nm[10]+nm[19]+nm[28]+nm[37]+nm[46]+nm[55]+nm[64];
    sm2=nm[8]+nm[15]+nm[22]+nm[29]+nm[36]+nm[43]+nm[50]+nm[57];
    if((sm1==LSM)&&(sm2==LSM)){euprint();}
}
//
/* Print The EUnits *
void euprint(){
    short n;
    teu[ecnt][0]=ecnt+1;
    for(n=1;n<65;n++){teu[ecnt][n]=nm[n];}
    ecnt++; cnt2++;
    if(cnt2==1){
        anm[cnt3][0]=ecnt;
        for(n=1;n<65;n++){anm[cnt3][n]=nm[n];}
        cnt3++; if(cnt3==10){preu(cnt3); cnt3=0;}
    }
}
//
/* Print x Units *
void preu(short x){
    short l,m,n,l8;
    printf(" ");
    for(m=0;m<x;m++){
        printf("%8d/",anm[m][0]);
    }
    printf("\n");
    for(l=0;l<8;l++){l8=l*8;
        printf(" ");
        for(m=0;m<x;m++){
            printf(" ");
            for(n=1;n<9;n++){printf("%d",anm[m][l8+n]);}
        }
        printf("\n");
    }
}
//
void reftbl(){
    short t,m,n,l;

```



```

printf("%4d/%3d/%3d/%3d/%3d/%3d/",
      anm[m][65], anm[m][66], anm[m][67], anm[m][68], anm[m][69], anm[m][70]);}
printf("\n");
for(m=0; m<x; m++){printf(" [%8ld]%12ld#", cntn[m][1], cntn[m][0]);}
printf("\n");
for(l=0; l<8; l++){l8=l*8;
  for(m=0; m<x; m++){
    printf(" ");
    for(n=1; n<9; n++){printf("%3d", anm[m][l8+n]);}}
  printf("\n");
}
printf("\n");
}
//

```

9-3. List of Execution Result

The next lists demonstrate the recent results of our execution.

** Compose 'Euler Squares' for the 3-T Simultaneous MS88: Multiple 4x4x4, Self-complementary and Pan-diagonal; by the Binary System and New Euler's Method **

[List of Euler Units]

1/	12/	20/	23/	25/	33/	41/	49/	57/	60/
01010101	01010101	01010110	01010110	01010011	01010011	01011100	01011100	01011001	01011001
10101010	00111010	10101001	00111001	10101010	00111010	10101010	00111010	10100110	00110110
01100110	11000101	01101010	11001001	01010101	11000101	01010101	11000101	01010110	11000110
10011001	10101010	10010101	10100110	10101100	10101100	10100011	10100011	10101001	10101001
01100110	10101010	01010110	10011010	11001010	11001010	00111010	00111010	01101010	01101010
10011001	01011100	10101001	01101100	01010101	01011100	01010101	01011100	10011010	10011100
10101010	10100011	01101010	01100011	10101010	10100011	10101010	10100011	10011010	10010011
01010101	01010101	10010101	10010101	00110101	00110101	11000101	11000101	01100101	01100101
62/	70/	78/	83/	87/	91/	95/	96/	101/	109/
01011010	01011010	01100101	01100110	01100011	01101100	01101001	01101010	00110101	00110101
10101010	00111010	10011010	10011001	10011010	10011010	10010110	10010101	10101010	00111010
01010101	11000101	10100110	01100110	10010101	10010101	10010110	01010110	01010101	11000101
10100101	10100101	01011001	10011001	01101100	01100011	01101001	10101001	11001010	11001010
01011010	01011010	01100110	01100110	11001001	00111001	01101001	01101010	10101100	10101100
01010101	01011100	10011010	10011001	01010110	01010110	10010110	10010101	01010101	01011100
10101010	10100011	10100110	01100110	10100110	10100110	10010110	01010110	10101010	10100011
10100101	10100101	01011001	10011001	00111001	11001001	01101001	10101001	01010011	01010011
117/	119/	121/	129/	137/	145/	153/	155/	157/	165/
00110110	00110110	00110011	00110011	00111100	00111100	00111001	00111001	00111010	00111010
10101001	00111001	10101010	00111010	10101010	00111010	10100110	00111010	10101010	00111010
01011001	11001001	01010101	11000101	01010101	11000101	01010110	11000110	01010101	11000101
11000110	11000110	11001100	11001100	11000011	11000011	11001001	11001001	11000101	11000101
10011100	10011100	11001100	11001100	00111100	00111100	01101100	01101100	01011100	01011100
01100101	01101100	01010101	01011100	01010101	01011100	10010101	10011100	01010101	01011100
01101010	01100011	10101010	10100011	10101010	10100011	10011010	10010011	10101010	10100011
10010011	10010011	00110011	00110011	11000011	11000011	01100011	01100011	10100011	10100011
173/	181/	189/	191/	193/	201/	209/	217/	225/	227/
11000101	11000101	11000110	11000110	11000011	11000011	11001100	11001100	11001001	11001001
10101010	00111010	10101001	00111001	10101010	00111010	10101010	00111010	10100110	00111010
01010101	11000101	01011001	11001001	01010101	11000101	01010101	11000101	01010110	11000110
00111010	00111010	00110110	00110110	00111100	00111100	00110011	00110011	00111001	00111001
10100011	10100011	10010011	10010011	11000011	11000011	00110011	00110011	01100011	01100011
01010101	01011100	01100101	01101100	01010101	01011100	01010101	01011100	10010101	10011100
10101010	10100011	01101010	01100011	10101010	10100011	10101010	10100011	10011010	10010011
01011100	01011100	10011100	10011100	00111100	00111100	11001100	11001100	01101100	01101100
229/	237/	245/	250/	251/	255/	259/	263/	268/	276/
11001010	11001010	10010101	10010110	10010011	10011100	10011001	10011010	10100101	10100101
10101010	00111010	01101010	01101001	01101010	01101010	01100110	01101010	10101010	00111010
01010101	11000101	01100101	01101001	01100101	01100101	01100110	01100101	01010101	11000101
00110101	00110101	10011010	10010110	10011100	10010011	10011001	10010101	01011010	01011010
01010011	01010011	10100110	10010110	11000110	00110110	01100110	01010110	10100101	10100101
01010101	01011100	01011001	01101001	01011001	01011001	10011001	01011001	01010101	01011100
10101010	10100011	10101001	01101001	10101001	10101001	10011001	10101001	10101010	10100011
10101100	10101100	01010110	10010110	00110110	11000110	01100110	10100110	01011010	01011010

284/	286/	289/	297/	305/	313/	321/	323/	326/	334/
10100110	10100110	10100011	10100011	10101100	10101100	10101001	10101001	10101010	10101010
10101001	01011001	10101010	00111010	10101010	00111010	10100110	00110110	10101010	01010101
01011001	01100101	01010101	11000101	01010101	11000101	01010110	11000110	01010101	01100110
01011010	10011010	01011000	01011100	01010011	01010011	01011001	01011001	01010101	10011001
10010101	10100110	11000101	11000101	00110101	00110101	01100101	01100101	01010101	01100110
01100101	01011001	01010101	01011100	01010101	01011100	10010101	10011100	01010101	10011001
01101010	01100101	10101010	10100011	10101010	10100011	10011010	10010011	10101010	01010101
10011010	10011010	00111010	00111010	11001010	11001010	01101010	01101010	10101010	10101010

[Count of Euler Units = 344]

** Reconstruction of the 3-Type Simultaneous Magic Squares 8x8:

** Abstract List 1 of Standard Solutions(when n1=1) **

[Used Units /1/2/3/4/5/6; Solution Number:[n1=1] A11;(Check_Sums:|Row|Column\Pd1/Pd2|)]

1/	11/	19/	65/	84/	126/	[1]	1 Row C1m\Pd1/Pd2
01010101	01010101	01010101	01011010	01100110	00110011	1 63 4 62 5 59 8 58	260 260\260/260
10101010	10101010	01010101	11001100	10011001	10100101	56 13 50 11 55 14 49 12	260 260\260/260
01100110	10011001	10101010	00110011	01010101	01011010	25 36 45 24 26 35 46 23	260 260\260/260
10011001	01100110	01010101	10100101	10101010	11001100	48 18 31 33 44 22 27 37	260 260\260/260
01100110	10011001	10101010	01011010	10101010	11001100	28 38 43 21 32 34 47 17	260 260\260/260
10011001	01100110	10101010	00110011	01010101	10100101	42 19 30 39 41 20 29 40	260 260\260/260
10101010	10101010	01010101	11001100	01100110	01011010	53 16 51 10 54 15 52 9	260 260\260/260
01010101	01010101	01010101	10100101	10011001	00110011	7 57 6 60 3 61 2 64	260 260\260/260

1/	19/	11/	65/	84/	126/	[48385]	387073 Row C1m\Pd1/Pd2
01010101	01010101	01010101	01011010	01100110	00110011	1 63 4 62 5 59 8 58	260 260\260/260
10101010	10101010	10101010	11001100	10011001	10100101	48 21 42 19 47 22 41 20	260 260\260/260
01100110	10101010	10011001	00110011	01010101	01011010	25 36 53 16 26 35 54 15	260 260\260/260
10011001	10101010	01100110	10100101	10101010	11001100	56 10 31 33 52 14 27 37	260 260\260/260
01100110	10101010	10011001	01011010	10101010	11001100	28 38 51 13 32 34 55 9	260 260\260/260
10011001	10101010	01100110	00110011	01010101	10100101	50 11 30 39 49 12 29 40	260 260\260/260
10101010	01010101	10101010	11001100	01100110	01011010	45 24 43 18 46 23 44 17	260 260\260/260
01010101	01010101	01010101	10100101	10011001	00110011	7 57 6 60 3 61 2 64	260 260\260/260

1/	21/	19/	59/	79/	124/	[57121]	456961 Row C1m\Pd1/Pd2
01010101	01010110	01010101	01011001	01100101	00110011	1 63 4 62 5 59 18 48	260 260\260/260
10101010	10101001	01010101	10100110	10011010	11001100	56 10 53 11 52 14 39 25	260 260\260/260
01100110	01011001	10101010	10011010	10010101	00110011	15 49 42 24 29 35 46 20	260 260\260/260
10011001	10100110	10101010	01100101	01101010	11001100	58 8 31 33 44 22 27 37	260 260\260/260
01100110	10011010	10101010	01011001	10101001	11001100	28 38 43 21 32 34 57 7	260 260\260/260
10011001	01100101	10101010	10100110	01010110	00110011	45 19 30 36 41 23 16 50	260 260\260/260
10101010	01101010	01010101	10011010	10100110	11001100	40 26 51 13 54 12 55 9	260 260\260/260
01010101	10010101	01010101	01100101	01011001	00110011	17 47 6 60 3 61 2 64	260 260\260/260

1/	32/	11/	52/	84/	114/	[65761]	595201 Row C1m\Pd1/Pd2
01010101	01010011	01010101	01011100	01100110	00110101	1 63 4 62 5 48 19 58	260 260\260/260
10101010	11000101	10101010	01011100	10011001	00110101	59 21 42 8 47 22 41 20	260 260\260/260
01100110	00111010	10011001	10100011	01010101	11001010	14 36 53 27 26 35 54 15	260 260\260/260
10011001	10101100	01100110	10100011	10101010	11001010	56 10 31 33 52 25 16 37	260 260\260/260
01100110	11001010	10011001	00111010	10101010	10101100	28 49 40 13 32 34 55 9	260 260\260/260
10011001	10100011	01100110	00111010	01010101	10101100	50 11 30 39 38 12 29 51	260 260\260/260
10101010	01011100	10101010	11000101	01100110	01010011	45 24 43 18 57 23 44 6	260 260\260/260
01010101	00110101	01010101	11000101	10011001	01010011	7 46 17 60 3 61 2 64	260 260\260/260

1/	36/	11/	48/	84/	114/	[71809]	643585 Row C1m\Pd1/Pd2
01010101	01010011	01010101	01011100	01100110	00110101	1 63 4 62 5 48 19 58	260 260\260/260
10101010	01011100	10101010	11000101	10011001	00110101	47 21 42 20 59 22 41 8	260 260\260/260
01100110	10100011	10011001	00111010	01010101	11001010	26 36 53 15 14 35 54 27	260 260\260/260
10011001	10101100	01100110	10100011	10101010	11001010	56 10 31 33 52 25 16 37	260 260\260/260
01100110	11001010	10011001	00111010	10101010	10101100	28 49 40 13 32 34 55 9	260 260\260/260
10011001	00111010	01100110	10100011	01010101	10101100	38 11 30 51 50 12 29 39	260 260\260/260
10101010	11000101	10101010	01011100	01100110	01010011	57 24 43 6 45 23 44 18	260 260\260/260
01010101	00110101	01010101	11000101	10011001	01010011	7 46 17 60 3 61 2 64	260 260\260/260

1/	38/	11/	48/	84/	112/	[80545]	713473 Row C1m\Pd1/Pd2
01010101	01010011	01010101	01011100	01100110	00110101	1 63 4 62 5 48 19 58	260 260\260/260
10101010	00110101	10101010	11000101	10011001	01011100	47 6 57 20 44 22 41 23	260 260\260/260
01100110	11001010	10011001	00111010	01010101	10100011	26 51 38 15 29 35 54 12	260 260\260/260
10011001	10101100	01100110	10100011	10101010	11001010	56 10 31 33 52 25 16 37	260 260\260/260
01100110	11001010	10011001	00111010	10101010	10101100	28 49 40 13 32 34 55 9	260 260\260/260
10011001	10101100	01100110	10100011	01010101	00111010	53 11 30 36 50 27 14 39	260 260\260/260
10101010	01010011	10101010	01011100	01100110	11000101	42 24 43 21 45 8 59 18	260 260\260/260
01010101	00110101	01010101	11000101	10011001	01010011	7 46 17 60 3 61 2 64	260 260\260/260

1/	39/	11/	48/	84/	112/	[86593]	761857	Row C1m\Pd1/Pd2
01010101	01010011	01010101	01011100	01100110	00110101	1 63 4 62 5 48 19 58	260 260\260/260	
10101010	01010011	10101010	11000101	10011001	01011100	47 22 41 20 44 6 57 23	260 260\260/260	
01100110	10101100	10011001	00111010	01010101	10100011	26 35 54 15 29 51 38 12	260 260\260/260	
10011001	10101100	01100110	10100011	10101010	11001010	56 10 31 33 52 25 16 37	260 260\260/260	
01100110	11001010	10011001	00111010	10101010	10101100	28 49 40 13 32 34 55 9	260 260\260/260	
10011001	11001010	01100110	10100011	01010101	00111010	53 27 14 36 50 11 30 39	260 260\260/260	
10101010	00110101	10101010	01011100	01100110	11000101	42 8 59 21 45 24 43 18	260 260\260/260	
01010101	00110101	01010101	11000101	10011001	01010011	7 46 17 60 3 61 2 64	260 260\260/260	

1/	48/	11/	36/	84/	114/	[95329]	831745	Row C1m\Pd1/Pd2
01010101	01011100	01010101	01010011	01100110	00110101	1 63 4 62 17 60 7 46	260 260\260/260	
10101010	11000101	10101010	01011100	10011001	00110101	59 21 42 8 47 22 41 20	260 260\260/260	
01100110	00111010	10011001	10100011	01010101	11001010	14 36 53 27 26 35 54 15	260 260\260/260	
10011001	10100011	01100110	10101100	10101010	11001010	56 10 31 33 40 13 28 49	260 260\260/260	
01100110	00111010	10011001	11001010	10101010	10101100	16 37 52 25 32 34 55 9	260 260\260/260	
10011001	10100011	01100110	00111010	01010101	10101100	50 11 30 39 38 12 29 51	260 260\260/260	
10101010	01011100	10101010	11000101	01100110	01010011	45 24 43 18 57 23 44 6	260 260\260/260	
01010101	11000101	01010101	00110101	10011001	01010011	19 58 5 48 3 61 2 64	260 260\260/260	

1/	52/	11/	32/	84/	114/	[101377]	928513	Row C1m\Pd1/Pd2
01010101	01011100	01010101	01010011	01100110	00110101	1 63 4 62 17 60 7 46	260 260\260/260	
10101010	01011100	10101010	11000101	10011001	00110101	47 21 42 20 59 22 41 8	260 260\260/260	
01100110	10100011	10011001	00111010	01010101	11001010	26 36 53 15 14 35 54 27	260 260\260/260	
10011001	10100011	01100110	10101100	10101010	11001010	56 10 31 33 40 13 28 49	260 260\260/260	
01100110	00111010	10011001	11001010	10101010	10101100	16 37 52 25 32 34 55 9	260 260\260/260	
10011001	00111010	01100110	10100011	01010101	10101100	38 11 30 51 50 12 29 39	260 260\260/260	
10101010	11000101	10101010	01011100	01100110	01010011	57 24 43 6 45 23 44 18	260 260\260/260	
01010101	11000101	01010101	00110101	10011001	01010011	19 58 5 48 3 61 2 64	260 260\260/260	

1/	54/	11/	32/	84/	112/	[110113]	1068289	Row C1m\Pd1/Pd2
01010101	01011100	01010101	01010011	01100110	00110101	1 63 4 62 17 60 7 46	260 260\260/260	
10101010	00110101	10101010	11000101	10011001	01011100	47 6 57 20 44 22 41 23	260 260\260/260	
01100110	11001010	10011001	00111010	01010101	10100011	26 51 38 15 29 35 54 12	260 260\260/260	
10011001	10100011	01100110	10101100	10101010	11001010	56 10 31 33 40 13 28 49	260 260\260/260	
01100110	00111010	10011001	11001010	10101010	10101100	16 37 52 25 32 34 55 9	260 260\260/260	
10011001	10101100	01100110	10100011	01010101	00111010	53 11 30 36 50 27 14 39	260 260\260/260	
10101010	01010011	10101010	01011100	01100110	11000101	42 24 43 21 45 8 59 18	260 260\260/260	
01010101	11000101	01010101	00110101	10011001	01010011	19 58 5 48 3 61 2 64	260 260\260/260	

1/	55/	11/	32/	84/	112/	[116161]	1165057	Row C1m\Pd1/Pd2
01010101	01011100	01010101	01010011	01100110	00110101	1 63 4 62 17 60 7 46	260 260\260/260	
10101010	01010011	10101010	11000101	10011001	01011100	47 22 41 20 44 6 57 23	260 260\260/260	
01100110	10101100	10011001	00111010	01010101	10100011	26 35 54 15 29 51 38 12	260 260\260/260	
10011001	10100011	01100110	10101100	10101010	11001010	56 10 31 33 40 13 28 49	260 260\260/260	
01100110	00111010	10011001	11001010	10101010	10101100	16 37 52 25 32 34 55 9	260 260\260/260	
10011001	11001010	01100110	10100011	01010101	00111010	53 27 14 36 50 11 30 39	260 260\260/260	
10101010	00110101	10101010	01011100	01100110	11000101	42 8 59 21 45 24 43 18	260 260\260/260	
01010101	11000101	01010101	00110101	10011001	01010011	19 58 5 48 3 61 2 64	260 260\260/260	

1/	59/	19/	21/	79/	124/	[124897]	1304833	Row C1m\Pd1/Pd2
01010101	01011001	01010101	01010110	01100101	00110011	1 63 4 62 17 47 6 60	260 260\260/260	
10101010	10100110	01010101	10101001	10011010	11001100	56 10 53 11 40 26 51 13	260 260\260/260	
01100110	10011010	10101010	01011001	10010101	00110011	27 37 42 24 29 35 58 8	260 260\260/260	
10011001	01100101	10101010	10100110	01101010	11001100	46 20 31 33 44 22 15 49	260 260\260/260	
01100110	01011001	10101010	10011010	10101001	11001100	16 50 43 21 32 34 45 19	260 260\260/260	
10011001	10100110	10101010	01100101	01010110	00110011	57 7 30 36 41 23 28 38	260 260\260/260	
10101010	10011010	01010101	01101010	10100110	11001100	52 14 39 25 54 12 55 9	260 260\260/260	
01010101	01100101	01010101	10010101	01011001	00110011	5 59 18 48 3 61 2 64	260 260\260/260	

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**** Another Abstract List 2 of Standard Solutions(when n1=1) ****

[Used Units /1/2/3/4/5/6; Solution Number:[n1=1] All#]

1/	11/	19/	65/	84/126/	2/	10/	19/	65/	83/126/	3/	10/	18/	64/	83/125/	4/	10/	17/	63/	83/125/				
[1]			1#	[469441]			7511041#	[1241281]			19860481#	[1935361]			30965761#				
1	63	4	62	5	59	8	58	1	63	4	62	5	59	8	58	1	63	4	62	5	59	8	58
56	13	50	11	55	14	49	12	56	13	50	11	55	14	49	12	56	13	50	11	55	13	50	12
25	36	45	24	26	35	46	23	25	36	31	38	26	35	32	37	25	36	31	38	26	16	51	37
48	18	31	33	44	22	27	37	48	18	45	19	44	22	41	23	48	18	45	19	44	22	41	23
28	38	43	21	32	34	47	17	42	24	43	21	46	20	47	17	42	24	43	21	46	20	47	17
42	19	30	39	41	20	29	40	28	33	30	39	27	34	29	40	28	14	49	39	27	34	29	40
53	16	51	10	54	15	52	9	53	16	51	10	54	15	52	9	53	35	32	10	54	15	52	9
7	57	6	60	3	61	2	64	7	57	6	60	3	61	2	64	7	57	6	60	3	61	2	64

5/ 10/ 16/ 62/ 83/126/ 6/ 10/ 15/ 63/ 83/123/ 7/ 10/ 14/ 62/ 83/124/ 8/ 10/ 13/ 62/ 83/124/
 [2629441] 42071041# [3375361] 54005761# [4069441] 65111041# [4775041] 76400641#
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 56 33 30 11 55 34 29 12 56 10 53 11 32 13 50 35 56 10 53 11 32 34 29 35 56 34 29 11 32 10 53 35
 25 16 51 38 26 15 52 37 25 39 28 38 49 36 31 14 25 39 28 38 49 15 52 14 25 15 52 38 49 39 28 14
 48 18 45 19 44 22 41 23 48 18 45 19 44 22 41 23 48 18 45 19 44 22 41 23 48 18 45 19 44 22 41 23
 42 24 43 21 46 20 47 17 42 24 43 21 46 20 47 17 42 24 43 21 46 20 47 17 42 24 43 21 46 20 47 17
 28 13 50 39 27 14 49 40 51 34 29 16 27 37 26 40 51 13 50 16 27 37 26 40 51 37 26 16 27 13 50 40
 53 36 31 10 54 35 32 9 30 15 52 33 54 12 55 9 30 36 31 33 54 12 55 9 30 12 55 33 54 36 31 9
 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64

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 [5520961] 88335361# [6226561] 99624961# [21407041] 342512641# [21876481] 350023681#
 1 63 4 62 5 59 8 58 1 63 4 62 5 59 8 58 1 63 4 62 5 59 8 58 1 63 4 62 5 59 8 58
 56 34 29 11 32 37 26 35 56 13 50 11 55 14 49 12 56 13 50 11 55 14 49 12 32 18 45 35 48 21 42 19
 25 15 52 38 49 12 55 14 41 20 47 22 42 19 48 21 41 20 29 40 42 19 30 39 41 39 28 22 25 36 31 38
 48 18 45 19 44 22 41 23 32 34 29 35 28 38 25 39 32 34 47 17 28 38 43 21 56 10 53 11 52 14 49 15
 42 24 43 21 46 20 47 17 26 40 27 37 30 36 31 33 44 22 27 37 48 18 31 33 50 16 51 13 54 12 55 9
 51 10 53 16 27 13 50 40 44 17 46 23 43 18 45 24 26 35 46 23 25 36 45 24 27 34 29 40 43 37 26 24
 30 39 28 33 54 36 31 9 53 16 51 10 54 15 52 9 53 16 51 10 54 15 52 9 46 23 44 17 30 20 47 33
 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64

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 41 39 28 22 25 23 44 38 41 23 44 22 25 39 28 38 41 23 44 22 25 20 47 38 41 40 27 22 42 39 28 21
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 50 16 51 13 54 12 55 9 50 16 51 13 54 12 55 9 50 16 51 13 54 12 55 9 50 16 51 13 54 12 55 9
 27 21 42 40 43 37 26 24 27 37 26 40 43 21 42 24 27 18 45 40 43 21 42 24 44 37 26 23 43 38 25 24
 46 36 31 17 30 20 47 33 46 20 47 17 30 36 31 33 46 39 28 17 30 36 31 33 29 20 47 34 30 19 48 33
 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64

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 [25473601] 407577601# [26179201] 418867201# [26884801] 430156801# [27750721] 444011521#
 1 63 4 62 5 59 8 58 1 63 4 62 5 59 8 58 1 63 4 62 5 59 8 58 1 63 4 62 5 32 35 58
 32 17 46 35 31 37 26 36 32 37 26 35 31 17 46 36 32 37 26 35 31 38 25 36 59 18 45 8 48 21 42 19
 41 40 27 22 42 20 47 21 41 20 47 22 42 40 27 21 41 20 53 16 42 19 54 15 14 39 28 49 25 36 31 58
 56 10 53 11 52 14 49 15 56 10 53 11 52 14 49 15 56 10 47 17 52 14 43 21 56 10 53 11 52 41 22 15
 50 16 51 13 54 12 55 9 50 16 51 13 54 12 55 9 44 22 51 13 48 18 55 9 50 43 24 13 54 12 55 9
 44 18 45 23 43 38 25 24 44 38 25 23 43 18 45 24 50 11 46 23 49 12 45 24 27 34 29 40 16 37 26 51
 29 39 28 34 30 19 48 33 29 19 48 34 30 39 28 33 29 40 27 34 30 39 28 33 46 23 44 17 57 20 47 6
 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 57 6 60 3 61 2 64 7 30 33 60 3 61 2 64

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 59 18 45 8 48 34 29 19 59 34 29 8 48 18 45 19 59 34 29 8 48 37 26 19 59 17 46 8 31 18 45 36
 14 39 28 49 25 23 44 38 14 23 44 49 25 39 28 38 14 23 44 49 25 20 47 38 14 40 27 49 42 39 28 21
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 50 43 24 13 54 12 55 9 50 43 24 13 54 12 55 9 50 43 24 13 54 12 55 9 50 43 24 13 54 12 55 9
 27 21 42 40 16 37 26 51 27 37 26 40 16 21 42 51 27 18 45 40 16 21 42 51 44 37 26 23 16 38 25 51
 46 36 31 17 57 20 47 6 46 20 47 17 57 36 31 6 46 39 28 17 57 36 31 6 29 20 47 34 57 19 48 6
 7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64

30/ 4/ 10/ 50/ 83/113/ 31/ 3/ 10/ 51/ 83/113/ 32/ 1/ 11/ 52/ 84/114/ 33/ 5/ 10/ 45/ 83/114/
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 59 17 46 8 31 37 26 36 59 37 26 8 31 17 46 36 59 37 26 8 31 38 25 36 31 17 46 36 59 18 45 8
 14 40 27 49 42 20 47 21 14 20 47 49 42 40 27 21 14 20 53 43 42 19 54 15 42 40 27 21 14 39 28 49
 56 10 53 11 52 41 22 15 56 10 53 11 52 41 22 15 56 10 47 17 52 41 16 21 56 10 53 11 52 41 22 15
 50 43 24 13 54 12 55 9 50 43 24 13 54 12 55 9 44 49 24 13 48 18 55 9 50 43 24 13 54 12 55 9
 44 18 45 23 16 38 25 51 44 38 25 23 16 18 45 51 50 11 46 23 22 12 45 51 16 37 26 51 44 38 25 23
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 42 40 27 21 14 20 47 49 42 20 47 21 14 40 27 49 42 20 53 15 14 19 54 43 42 51 16 21 45 40 27 18
 56 10 53 11 52 41 22 15 56 10 53 11 52 41 22 15 56 10 47 17 52 41 16 21 56 10 53 11 52 41 22 15

50 43 24 13 54 12 55 9 50 43 24 13 54 12 55 9 44 49 24 13 48 18 55 9 50 43 24 13 54 12 55 9
16 18 45 51 44 38 25 23 16 38 25 51 44 18 45 23 22 11 46 51 50 12 45 23 47 38 25 20 44 49 14 23
57 39 28 6 29 19 48 34 57 19 48 6 29 39 28 34 57 40 27 6 29 39 28 34 26 19 48 37 29 8 59 34
7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64

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[37181761] 594908161# [37927681] 606842881# [38793601] 620697601# [39499201] 631987201#
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31 6 57 36 28 38 25 39 31 38 25 36 28 6 57 39 31 38 25 36 28 49 14 39 56 10 53 11 30 36 57 7
42 51 22 15 45 19 54 12 42 19 54 15 45 51 22 12 42 19 48 21 45 8 59 18 27 37 26 40 23 41 52 14
56 10 47 17 52 41 16 21 56 10 47 17 52 41 16 21 56 10 53 11 52 41 22 15 46 20 47 17 44 22 15 49
44 49 24 13 48 18 55 9 44 49 24 13 48 18 55 9 50 43 24 13 54 12 55 9 16 50 43 21 48 18 45 19
53 11 46 20 50 43 14 23 53 43 14 20 50 11 46 23 47 6 57 20 44 17 46 23 51 13 24 42 25 39 28 38
26 40 27 37 29 8 59 34 26 8 59 37 29 40 27 34 26 51 16 37 29 40 27 34 58 8 29 35 54 12 55 9
7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64 7 30 33 60 3 61 2 64 5 59 34 32 3 61 2 64

58/ 10/ 12/ 22/ 82/122/ 59/ 1/ 19/ 21/ 79/124/ 60/ 4/ 10/ 23/ 82/122/ 61/ 2/ 10/ 24/ 82/124/
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27 10 53 40 23 41 52 14 43 21 26 40 45 19 58 8 47 38 25 20 15 49 44 22 47 17 46 20 15 49 44 22
46 20 47 17 44 22 15 49 30 36 47 17 28 38 15 49 54 12 55 9 52 14 23 41 54 12 55 9 52 14 23 41
16 50 43 21 48 18 45 19 16 50 27 37 48 18 29 35 24 42 51 13 56 10 53 11 24 42 51 13 56 10 53 11
51 13 24 42 25 12 55 38 57 7 46 20 25 39 44 22 43 21 16 50 45 40 27 18 43 21 16 50 45 19 48 18
58 8 29 35 54 39 28 9 52 14 23 41 54 12 55 9 58 8 29 35 26 19 48 37 58 8 29 35 26 40 27 37
5 59 34 32 3 61 2 64 5 59 34 32 3 61 2 64 5 59 34 32 3 61 2 64 5 59 34 32 3 61 2 64

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3 61 36 30 2 31 33 64 3 61 36 30 2 31 33 64

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[Solutions Count(When n1==1)/All = 83280960/1332495360] [OK!]

** Calculated and Listed by Kanji Setsuda
on May 26, 2012 with MacOSX 10.7.4 and Xcode 4.3.2 **

I printed out only the solutions with n1=1 above, since I could not make the smart list with the sorted data. But I really counted all of them in the background.
We could have got it at last, though it took several hours to finish our calculations.
How big the total count is, even though we have made the rare 'Euler Type' of object!

9-4: Reconstruction of the same Object by the 4-th Increment Number System

Let's reconstruct the same Simultaneous MS88 here by the 4-th Increment System.
Can we have got the same solution set with that one above by the Binary System?

** Compose 'Euler Squares' for the same 3-T Simultaneous MS88
by the 4-th Increment Number System and New Euler's Method **
[Count of Euler Units = 12692]

```

** Abstract List of Standard Solutions Reconstructed when n1=1 **
[Used Units: /1/2/3; Solution Number# Check_Sums: |Row1,Row2|C1m1,C1m2\Pd1/Pd2|]
4/      807/      7202/
1#|Rw1,Rw2|C11,C12\Pd1/Pd2|
03030303 03031212 02310231 1 63 4 62 5 59 8 58|130,130|130,130|260|260|
30303030 12120303 31022013 56 10 53 11 51 13 50 16|130,130|130,130|260|260|
12211221 21213030 02131302 25 39 42 24 30 36 45 19|130,130|130,130|260|260|
21122112 30302121 31203120 48 18 31 33 44 22 27 37|130,130|130,130|260|260|
12211221 21213030 31203120 28 38 43 21 32 34 47 17|130,130|130,130|260|260|
21122112 30302121 13020213 46 20 29 35 41 23 26 40|130,130|130,130|260|260|
30303030 03031212 02311320 49 15 52 14 54 12 55 9|130,130|130,130|260|260|
03030303 12120303 20132013 7 57 6 60 3 61 2 64|130,130|130,130|260|260|
5/      817/      7198/
48385#|Rw1,Rw2|C11,C12\Pd1/Pd2|
03030303 03031212 02310231 1 63 4 62 5 59 8 58|130,130|130,130|260|260|
30301032 13022301 30123102 56 13 50 11 28 14 49 39|130,130|130,130|260|260|
12123210 20311032 03210231 25 36 31 38 53 35 32 10|130,130|130,130|260|260|
21212121 30302121 31023102 48 18 45 19 44 22 41 23|130,130|130,130|260|260|
21212121 21213030 13201320 42 24 43 21 46 20 47 17|130,130|130,130|260|260|
32101212 10322031 20132103 55 33 30 12 27 34 29 40|130,130|130,130|260|260|
10323030 23011302 13201230 26 16 51 37 54 15 52 9|130,130|130,130|260|260|
03030303 12120303 20132013 7 57 6 60 3 61 2 64|130,130|130,130|260|260|
6/      816/      7197/
137089#|Rw1,Rw2|C11,C12\Pd1/Pd2|
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30301212 13022031 30123012 56 13 50 11 28 33 30 39|130,130|130,130|260|260|
12123030 20311302 03210321 25 36 31 38 53 16 51 10|130,130|130,130|260|260|
21212121 30302121 31023102 48 18 45 19 44 22 41 23|130,130|130,130|260|260|
21212121 21213030 13201320 42 24 43 21 46 20 47 17|130,130|130,130|260|260|
30301212 13022031 21032103 55 14 49 12 27 34 29 40|130,130|130,130|260|260|
12123030 20311302 12301230 26 35 32 37 54 15 52 9|130,130|130,130|260|260|
03030303 12120303 20132013 7 57 6 60 3 61 2 64|130,130|130,130|260|260|

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10323210	23011032	03210321	25	16	51	38	53	36	31	10	130,130	130,130	260	260												
21212121	30302121	31023102	48	18	45	19	44	22	41	23	130,130	130,130	260	260												
21212121	21213030	13201320	42	24	43	21	46	20	47	17	130,130	130,130	260	260												
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10323210	23011032	12301230	26	15	52	37	54	35	32	9	130,130	130,130	260	260												
03030303	12120303	20132013	7	57	6	60	3	61	2	64	130,130	130,130	260	260												
8/	814/	7198/	319681# Rw1,Rw2 C11,C12\Pd1/Pd2																							
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31202121	10322031	20132103	55	17	46	12	43	18	45	24	130,130	130,130	260	260												
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30302121	13022031	30123012	56 13 50 11 44 17 46 23	130,130 130,130 260 260
21213030	20311302	03210321	41 20 47 22 53 16 51 10	130,130 130,130 260 260
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12121212	21213030	13201320	26 40 27 37 30 36 31 33	130,130 130,130 260 260
30302121	13022031	21032103	55 14 49 12 43 18 45 24	130,130 130,130 260 260
21213030	20311302	12301230	42 19 48 21 54 15 52 9	130,130 130,130 260 260
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[Used Units: /1/2/3; Solution Number#]

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26 40 27 37 30 36 31 33	52 14 39 25 56 10 53 11	50 27 40 13 54 12 55 9	50 27 40 13 54 12 55 9
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50 23 44 13 46 11 56 17	45 50 27 8 42 24 43 21	29 24 43 34 45 51 16 18	42 39 28 21 30 51 16 33
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47 49 14 20 31 22 27 50	22 39 28 41 54 36 31 9	42 51 16 21 46 20 47 17	27 18 45 40 59 7 42 22
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42 35 46 7 26 8 59 37	25 15 52 38 57 12 55 6	25 39 28 38 29 8 59 34	14 50 31 35 46 39 28 17
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14 39 28 49 30 23 44 33	52 6 57 15 44 23 54 9	22 51 16 41 54 27 40 9	37 11 56 26 29 43 24 34
56 10 53 11 40 13 50 27	30 36 31 33 28 39 14 49	60 6 57 7 44 37 26 23	60 6 57 7 44 53 10 23
38 15 52 25 54 12 55 9	16 51 26 37 32 34 29 35	42 39 28 21 58 8 59 5	42 55 12 21 58 8 59 5
32 21 42 35 16 37 26 51	56 11 42 21 50 8 59 13	56 25 38 11 24 49 14 43	31 41 22 36 39 9 54 28
41 36 31 22 57 20 47 6	53 10 43 24 45 27 40 18	13 36 31 50 45 12 55 18	38 20 47 25 30 52 15 33
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47 17 46 20 31 35 58 6	29 34 15 52 59 8 41 22	53 11 38 28 56 35 29 10	53 36 13 28 15 26 38 51
54 12 55 9 52 29 8 41	40 26 55 9 38 28 53 11	44 22 59 5 57 24 42 7	44 22 59 5 41 8 58 23
24 57 36 13 56 10 53 11	54 12 37 27 56 10 39 25	58 23 41 8 60 6 43 21	42 7 57 24 60 6 43 21
59 7 30 34 45 19 48 18	43 24 57 6 13 50 31 36	55 36 30 9 37 27 54 12	14 27 39 50 37 52 29 12
42 22 15 51 26 40 27 37	14 49 32 35 44 23 58 5	13 26 40 51 16 50 31 33	54 35 31 10 16 25 56 33
5 44 49 32 3 61 2 64	19 45 4 62 17 47 2 64	4 45 19 62 17 47 2 64	20 61 3 46 17 47 2 64

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55 9 40 26 62 33 31 4	55 9 40 26 31 41 54 4	43 13 54 20 16 57 40 17	39 25 8 58 56 49 14 11
44 22 59 5 41 54 12 23	44 22 59 5 42 7 28 53	30 36 27 37 42 7 26 55	28 38 59 5 42 24 43 21
42 53 11 24 60 6 43 21	12 37 58 23 60 6 43 21	10 39 58 23 28 38 29 35	44 22 41 23 60 6 27 37
61 34 32 3 39 25 56 10	61 11 24 34 39 25 56 10	48 25 8 49 45 11 52 22	54 51 16 9 7 57 40 26
7 28 38 57 14 52 29 35	38 20 15 57 14 52 29 35	51 6 61 12 24 50 47 9	13 12 55 50 30 36 61 3
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[Solutions Count(When n1= 1)/All] = 100918656/1614698496] [OK!]

** Calculated and Listed by Kanji Setsuda on May 26, 2012 with MacOSX 10.7.4 and Xcode 4.3.2 **

/D2i	/1 RrCcPP 	/2 RrCcPP 	/3 RrCcPP 	/4 RrCcPP 	/5 RrCcPP 	/6 RrCcPP
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10100011 221154	11001101 223423	11000000 224145	01010110 222455	10011001 222226	10101010 222244	
00111010 223343	01001100 111146	11111100 441034	10010101 220255	01100110 222262	01010101 222244	
10101010 222234	10100101 221254	01011001 223264	10010110 224234	10010110 222264	11001100 222244	
10101010 222245	01011010 222342	01100101 222144	10010110 222043	10010110 222246	11001100 222244	
10100011 221154	11001101 333335	11000000 004323	01010110 222453	10011001 222222	01010101 222244	
00111010 223343	01001100 220145	11111100 223056	10010101 220235	01100110 222222	10101010 222244	
01010101 222234	10010101 222264	01100101 221244	01010101 224234	01101001 222264	00110011 222244	

Sample 1# is the complete example of Euler Square by any base of decomposition. But, S2# is the typical example of 'Non-Euler Square' by any means.

[C1sc]	S3#	Rw1	Rw2	C1	C12	Pd1/Pd2	/D8i	/H	R1R2	C1C2	\P1/P2	/L	R1R2	C1C2	\P1/P2		
1	50	47	32	19	54	13	44	130	130	130	130	260	260	06532615	1414 1414 28 28	01672543	1414 1414 28 28
56	3	30	41	8	25	38	59	130	130	130	130	260	260	60350347	1414 1414 28 28	72507052	1414 1414 28 28
42	29	4	55	60	37	26	7	130	130	130	130	260	260	53067430	1414 1414 28 28	14363416	1414 1414 28 28
31	48	49	2	43	14	53	20	130	130	130	130	260	260	35605162	1414 1414 28 28	67012543	1414 1414 28 28
45	12	51	22	63	16	17	34	130	130	130	130	260	260	51627124	1414 1414 28 28	43256701	1414 1414 28 28
58	39	28	5	10	61	36	23	130	130	130	130	260	260	74301742	1414 1414 28 28	16341436	1414 1414 28 28
6	27	40	57	24	35	62	9	130	130	130	130	260	260	03472471	1414 1414 28 28	52707250	1414 1414 28 28
21	52	11	46	33	18	15	64	130	130	130	130	260	260	26154217	1414 1414 28 28	43250167	1414 1414 28 28

[Math]	S3#	/D4i	/H	R1R2	C1C2	\P1/P2	/M	R1R2	C1C2	\P1/P2	/L	R1R2	C1C2	\P1/P2															
0	49	46	31	18	53	12	43	03211302	6	6	6	6	12	12	00330132	6	6	6	5	12	12	01232103	6	6	6	10	12	12	
55	2	29	40	7	24	37	58	30120123	6	6	6	6	12	12	10321212	6	6	6	7	12	12	32103012	6	6	6	2	12	12	
41	28	3	54	59	36	25	6	21033210	6	6	6	6	12	12	23012121	6	6	6	7	12	12	10323012	6	6	6	2	12	12	
30	47	48	1	42	13	52	19	12302031	6	6	6	6	12	12	33002310	6	6	6	5	12	12	23012103	6	6	6	10	12	12	
44	11	50	21	62	15	16	33	20313012	6	6	6	6	12	12	32013300	6	6	6	7	6	12	03212301	6	6	6	2	6	12	12
57	38	27	4	9	60	35	22	32100321	6	6	6	6	12	12	21212301	6	6	6	5	6	12	12301032	6	6	6	10	6	12	12
5	26	39	56	23	34	61	8	01231230	6	6	6	6	12	12	12121032	6	6	6	5	6	12	12303210	6	6	6	10	6	12	12
20	51	10	45	32	17	14	63	13022103	6	6	6	6	12	12	10230033	6	6	6	7	6	12	03210123	6	6	6	2	6	12	12

/D2i	/1 RrCcPP 	/2 RrCcPP 	/3 RrCcPP 	/4 RrCcPP 	/5 RrCcPP 	/6 RrCcPP
01100101 222244	01011100 222244	00110011 222244	00110110 222144	00111001 222444	01010101 222244	
10010011 222244	10100101 222244	00110101 222244	10101010 222344	11001001 222044	10101010 222244	
10011100 222244	01011010 222244	11001010 222244	01010101 222344	00111001 222044	10101010 222244	
01101010 222244	10100011 222244	11001100 222244	11000110 222144	11001001 222444	01010101 222244	
10101001 222244	00111010 222244	11001100 222244	10011100 223244	01101100 220244	01010101 222244	
11000110 222244	10100101 222244	10101100 222244	01010101 221244	01100011 224244	10101010 222244	
00110110 222244	01011010 222244	01010011 222244	10101010 221244	01101100 224244	10101010 222244	
01011001 222244	11000101 222244	00110011 222244	10010011 223244	01100011 220244	01010101 222244	

[C1sc]	S4#	Rw1	Rw2	C1	C12	Pd1/Pd2	/D8i	/H	R1R2	C1C2	\P1/P2	/L	R1R2	C1C2	\P1/P2					
1	50	31	48	3	22	45	60	130	130	130	130	260	260	06350257	1414 1415 28 28	01672543	1414 14	6	28	28
52	11	38	29	26	7	56	41	130	130	130	130	260	260	61433065	1414 1413 28 28	32541670	1414 1422	28	28	
30	37	12	51	42	55	8	25	130	130	130	130	260	260	34165603	1414 1413 28 28	54321670	1414 1422	28	28	
47	32	49	2	59	46	21	4	130	130	130	130	260	260	53607520	1414 1415 28 28	67012543	1414 14	6	28	28
61	44	19	6	63	16	33	18	130	130	130	130	260	260	75207142	1414 1314 28 28	43256701	1414 2214	28	28	
40	57	10	23	14	53	28	15	130	130	130	130	260	260	47121634	1414 1514 28 28	70165432	1414 614	28	28	
24	9	58	39	36	27	54	13	130	130	130	130	260	260	21744361	1414 1514 28 28	70163254	1414 614	28	28	
5	20	43	62	17	34	15	64	130	130	130	130	260	260	02572417	1414 1314 28 28	43250167	1414 2214	28	28	

[Math]	S4#	/D4i	/H	R1R2	C1C2	\P1/P2	/M	R1R2	C1C2	\P1/P2	/L	R1R2	C1C2	\P1/P2														
0	49	30	47	2	21	44	59	03120123	6	6	6	6	12	12	00330132	6	6	6	6	12	12	01232103	6	6	6	6	12	12
51	10	37	28	25	6	55	40	30211032	6	6	6	6	12	12	02132112	6	6	6	6	12	12	32101230	6	6	6	6	12	12
29	36	11	50	41	54	7	24	12032301	6	6	6	6	12	12	31202112	6	6	6	6	12	12	10321230	6	6	6	6	12	12
46	31	48	1	58	45	20	3	21303210	6	6	6	6	12	12	33002310	6	6	6	6	12	12	23012103	6	6	6	6	12	12
60	43	18	5	62	15	32	17	32103021	6	6	6	6	12	12	32013300	6	6	6	6	12	12	03212301	6	6	6	6	12	12
39	56	9	22	13	52	27	34	23010312	6	6	6	6	12	12	12213120	6	6	6	6	12	12	30121032	6	6	6	6	12	12
23	8	57	38	35	26	53	12	10322130	6	6	6	6	12	12	12210213	6	6	6	6	12	12	30123210	6	6	6	6	12	12
4	19	42	61	16	33	14	63	01231203	6	6	6	6	12	12	10230033	6	6	6	6	12	12	03210123	6	6	6	6	12	12

/D2i	/1 RrCcPP 	/2 RrCcPP 	/3 RrCcPP 	/4 RrCcPP 	/5 RrCcPP 	/6 RrCcPP
01010011 222244	01100101 222244	00110011 222344	00110110 222044	00111001 222244	01010101 222244	
10100011 222244	10011010 222244	01011001 222144	00110110 222444	11000110 222244	10101010 222244	
01011100 222244	10010101 222244	10101001 222144	11000110 222444	00110110 222244	10101010 222244	
10101100 222244	01101010 222244	11001100 222344	11000110 222044	11001001 222244	01010101 222244	
11001010 222244	10101001 222244	11001100 221244	10011100 224244	01101100 222244	01010101 222244	
11000101 222244	01010110 222244	01101010 223244	10011100 220244	10010011 222244	10101010 222244	
00111010 222244	10100110 222244	01100101 223244	10010011 220244	10011100 222244	10101010 222244	
00110101 222244	01011001 222244	00110011 221244	10010011 224244	01100011 222244	01010101 222244	

Samples 3# and 4# look curious. S3# is the Euler Type by the 8-th Increment System, while it is Non-Euler Type by the 4-th Increment System and also by the Binary System.

S4# is Euler Type only by the 4-th Increment Number System, while it is Non-Euler Type by the 8-th Increment System and also by the Binary System.

Existence of these irregular patterns of decomposition above should surely be the true reason why the two solution sets of Euler Squares are different from each other.

It warns us against describing all objects in one form or under one rule.

10. Last Comment

As soon as we take off the Composite Conditions from the Simultaneous definitions, we have to come up to these "Non-Euler Squares" of Order 8.

This is the fact we must always face and study about with respect, however curious, ambiguous and annoying it might look.

I must admit I don't yet know how to define those 'Non-Euler Squares' on the whole or our 'Complete Euler Squares' of Order 8 for that type.

What we can only do now is to study the case with precise definitions and methods. We must honestly report what we have found about it in details as much as we can. And we must consciously warn ourselves against talking too big with too few materials.

But, I have recently known all the 1332495360 solutions of Euler Type reconstructed by the Binary Number System are always of Euler Types both by the 4-th and 8-th Increment Number Systems at the same time. Every essential parts of Decomposed Units should always add up to the constant sums and nothing irregular could be found.

All of them look like the Sample Solution #1 listed above. I was so moved by this beautiful result that I would like to call them for our "Complete Euler Squares".

What I want to report at the end of this article is that our **New Euler's Method** did its jobs quite smart with wonderful speed. We could have known about the total scales of solution sets of various PMS88 and also about the inner structures of them very well.

We owe our success to the high ability and execution speed of this method.

I recommend you to know how to deal with the Positional Number System of the Base N and master how to reconstruct your objects by our New Euler's Method.

It should be one of your necessary tools to study with, especially for high orders.

I myself can do nothing for high orders without taking this New Euler's Method.

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