THE ON–LINE ENCYCLOPEDIA
OF INTEGER SEQUENCES®

founded in 1964 by N. J. A. Sloane

On-Line Encyclopedia of Integer Sequences and Coding Theory

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Partialy supported by Grant DN 02/2/13.12.2016 of the Bulgarian National Science Fund.

On-Line Encyclopedia of Integer Sequences (OEIS)

- The **On-Line Encyclopedia of Integer Sequences** (**OEIS**) also is an online database of integer sequences.
- It was created and maintained by Neil Sloane. while a researcher at AT&T Labs.
- He transferred the intellectual property and hosting of the OEIS to the **OEIS Foundation** in 2009. Sloane is president of the OEIS Foundation.

Integer Sequences

- ✓ Sequence #1: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, ... A000040 The prime numbers.
- ✓ Sequence #2: 2, 3, 5, 7, 11, 101, 131, 151, 181, 191, 313, 353, 373, 383, 727, 757, 787, 797, 919, 929, ... A002385 Palindromic primes: prime numbers whose decimal expansion is a palindrome.
- ✓ Sequence #3: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, ... A000045 Fibonacci numbers: F(n) = F(n-1) + F(n-2)
- ✓ Sequence #4: 1, 2, 4, 7, 11, 16, 22, 29, 37, 46, 56, 67, 79, 92, 106, 121, 137, 154, ... A000124 Central polygonal numbers n(n+1)/2 + 1; or, maximal number of pieces formed when slicing a pancake with n cuts.
- ✓ Sequence #5: 1, −3, −8, −3, −24, 24, −48, −3, −8, 72, −120, 24, −168, 144, ... A046970 Dirichlet inverse of the Jordan function J_2

Integer Sequences

✓A000001. Number of groups of order n.

0, 1, 1, 1, 2, 1, 2, 1, 5, 2, 2, 1, 5, 1, 2, 1, 14, 1, 5, 1, 5, 2, 2, 1, 15, 2, 2, 5, 4, 1, 4, 1, 51, 1, 2, 1, 14, 1, 2, 2, 14, 1, 6, 1, 4, 2, 2, 1, 52, 2, 5, 1, 5, 1, …

✓A000010. Euler totient function phi(n): count numbers <= n and prime to n.

1, 1, 2, 2, 4, 2, 6, 4, 6, 4, 10, 4, 12, 6, 8, 8, 16, 6, 18, 8, 12, 10, 22, 8, 20, 12, 18, 12, 28, 8, 30, 16, 20, 16, 24, 12, 36, 18, 24, 16, 40, 12, 42, 20, …

✓A100000. Middle column of marks found on the oldest object with logical carvings, the 22000-year-old Ishango bone from the Congo.

3, 6, 4, 8, 10, 5, 5, 7

OEIS – българският принос

Valentin Bakoev:

✓A319511 (author) https://oeis.org/A319511

Triangle read by rows: T(n,k) is the number of Boolean functions on n variables having an algebraic degree equal to k

(for n >= 0 and 0 <= k <= n).

✓A305860 (author) https://oeis.org/A305860

Triangle read by rows, representing a family of sequences M(n), for n = 0, 1, 2, ... The n-th row of the triangle consists of n+1 integers, denoted by #m(n,0), #m(n,1), ..., #m(n,n), which are the terms of the sequence M(n). They are the serial numbers of n+1 binary vectors of size 2^n, denoted by m(n,0), m(n,1), ..., m(n,n), correspondingly. Each vector m(n,k) is a characteristic vector of all vectors from the n-dimensional Boolean cube (hypercube) {0,1}^n, having (Hamming) weight equal to k, for k = 0, 1, ..., n, and for n > 0. The zero row (i.e., M(0)) and its single term 1 are prepended for convenience.

✓A294648 (author) https://oeis.org/A294648

Irregular triangle read by rows, representing a family of sequences L(n), for n=1, 2, 3, ... The sequence L(n) (i.e. the n-th row) is the ordinance of vectors of the n-dimensional Boolean cube (hypercube) {0,1}^n in accordance with their (Hamming) weights, where the lexicographic order is chosen as a second criterion for an ordinance the vectors of equal weights.

OEIS – българският принос

- Krassimir Atanassov - **Institute of Biophysics and Biomedical Engineering, Bulgarian Academy of Sciences**
- Head of Department “Bioinformatics and Mathematical Modelling” (sine Jul 2010)
- **N**otes on **N**umber **T**heory and **D**iscrete **M**athematics

http://nntdm.net/

OEIS and Coding Theory

- https://oeis.org/A034356

Triangle read by rows giving T(n,k) = number of inequivalent linear [n,k] binary codes (n >= 1, 1 <= k <= n).

- https://oeis.org/A003179

Number of self-dual binary codes of length 2n (up to column permutation equivalence).

Таблици и редици от наши публикации

Таблица 1.1: Двоични самодуални кодове с дължина $n \leq 36$ [83]

n	$\natural_I$	$\natural_{II}$	$d_{max,I}$	$\natural_{max,I}$	$d_{max,II}$	$\natural_{max,II}$	Литература
2	1		2^O	1			[115]
4	1		2^O	1			[115]
6	1		2^O	1			[115]
8	1	1	2^O	1	4^E	1	[115]
10	2		2^O	2			[115]
12	3		4^E	1			[115]
14	4		4^E	1			[115]
16	5	2	4^E	1	4^E	2	[115]
18	9		4^E	2			[115]
20	16		4^E	7			[115]
22	25		6^E	1			[119]
24	46	9	6^E	1	8^E	1	[119]
26	103		6^O	1			[37, 40, 116]
28	261		6^O	3			[37, 40, 116]
30	731		6^O	13			[37, 40, 116]
32	3210	85	8^E	3	8^E	5	[16, 37, 41]
34	24147		6^O	938			[15]
36	?		8^E	41			[59]

Таблици и редици от наши публикации

The number of binary SD codes

n	$\sharp_I$	$\sharp_{II}$	$d_{max,I}$	$\sharp_{max,I}$	$d_{max,II}$	$\sharp_{max,II}$
24	46	9	6	1	8	1
26	103		6	1		
28	261		6	3		
30	731		6	13		
32	3 210	85	8	3	8	5
34	24 147		6	938		
36	519 492		8	41		
38	38 682 183*BB		8	2 744		
40	**8 250 058 081**	94 343	8	10 200 655*BBH	8	16 470

*BBH - Bouyuklieva, Bouyukliev, Harada
*BDM - Bouyukliev, Dzhumalieva-Stoeva, Monev

Таблици и редици от наши публикации

Table 1: Classification of binary self-orthogonal codes

$n\backslash k$	3		4		5		6		7		8		9		10	
7	4	1														
8	4	1	4	1												
9	4	1	4	0												
10	4	3	4	3												
11	4	2	4	2	4	1										
12	6	1	4	10	4	5	4	1								
13	6	1	4	6	4	5	4	1								
14	8	1	6	2	4	22	4	10	4	1						
15	8	1	8	1	6	1	4	13	4	3						
16	8	3	8	2	8	1	6	1	4	20	4	3				
17	8	3	8	2	8	1	6	2	4	37	4	4				
18	8	8	8	10	8	5	8	2	6	3	4	45	4	2		
19	10	1	8	12	8	10	8	2	8	1	6	1	4	12		
20	10	2	8	50	8	50	8	23	8	4	8	1	6	1	4	7
21	12	1	10	1	8	101	8	57	8	15	8	2	8	1	6	1
22	12	1	10	6	8	417	8	416	8	117	8	16	8	2	8	1
23	12	3	12	1	10	2	8	1729	8	848	8	104	8	12	8	2
24	12	6	12	4	12	1	10	1	8	9839	8	1824	8	124	8	16
25	12	8	12	6	12	2	10	27	8	96560	8	37625	8	1891	8	60
26	14	1	12	27	12	13	12	2	10	26	8		8		8	1689
27	14	2	12	48	12	60	12	24	12	1	10	1	8		8	
28	16	1	14	1	12	345	12	383	12	61	10	43579	8		8	
29	16	1	14	3	12	1507	12	4468	12	5694	12	73	10		8	
30	16	3	16	1	14	3	12		12		12		12	9	10	
31	16	6	16	2	16	1	12		12		12		12		12	2
32	16	12	16	9	16	3	16	1	12		12		12		12	
33	18	1	16	16	16	8	16	0	12		12		12		12	
34	18	2	16	71	16	63	16	15	14	5399	12		12		12	
35	20	1	16	152	16	380	16	362	16	4	14		12		12	
36	20	1	18	2	16	2876	16	20392	16	7484	16	2	14		12	
37	20	3	18	8	16	17705	16		16		16		14		14	
38	20	6	20	1	18	3	16		16		16		16	47	14	
39	20	12	20	4	18	50	16		16		16		16		14	
40	22	1	20	17	20	3	18	41	16		16		16		16	

Таблици и редици от наши публикации

n/k	2	3	4	5	6	7	8	9	10	11	12	13
5	1											
6	3	1										
7	4	4	1									
8	6	10	5									
9	8	23	23	5								
10	10	42	76	41	4							
11	12	71	207	227	60	3						
12	15	115	509	1012	636	86	2					
13	17	174	1127	3813	4932	1705	110	1				
14	20	255	2340	12836	31559	24998	4467	127	1			
15	23	364	4606	39750	176582	293871	132914	11507	143	1		
16	26	505	8685	115281	896316	2955644	3048590	733778	28947	144		
17	29	686	15797	317464	4226887	26590999	58085499	34053980	4115973	70455	129	
18	33	919	27907	837697	18807438	220135857	971007974	1261661451	393087258	27333440	293458	113

TABLE I
THE NUMBER OF INEQUIVALENT $[n, k, d \geq 3]_2$ CODES FOR $n \leq 18$

k	4	5	6	7	8	9	10	11	12	13
#	8561	129586	1813958	16021319	60803805	73340021	22198835	1314705	11341	24

TABLE II
THE NUMBER OF INEQUIVALENT EVEN $[n, k, d \geq 4]_2$ CODES FOR $n \leq 19$ AND $k \geq 4$

k	3	4	5	6	7	8	10	11
#	726	12817	358997	11697757	246537467	1697180017	62180809	738

TABLE III
THE NUMBER OF EVEN $[n \leq 21, k, d \geq 6]_2$ CODES FOR $3 \leq k \leq 11$, $k \neq 9$