A Bibliography of Publications on Floating-Point Arithmetic

Norbert Juffa
2445 Mission College Blvd.
Santa Clara, CA 95054
USA
Tel: +1-408-727-1885
FAX: +1-408-727-1265

E-mail: juffa@ira.uka.de (Internet)

Nelson H. F. Beebe
University of Utah
Department of Mathematics, 110 LCB
155 S 1400 E RM 233
Salt Lake City, UT 84112-0090
USA

Tel: +1 801 581 5254
FAX: +1 801 581 4148

E-mail: beebe@math.utah.edu, beebe@acm.org, beebe@computer.org (Internet)
WWW URL: https://www.math.utah.edu/~beebe/

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Introduction

This is a bibliography of material on floating-point arithmetic that I came up with while doing research on a floating-point package of my own. I don't claim it to be anywhere near complete. The material listed is only what I myself possess.

My main interest was in software based, binary floating-point arithmetic on a microprocessor, so you won't find much material about the hardware used in floating-point arithmetic (e.g. adders, carry propagation schemes, higher radix

representation for multiplication and division, etc.) in this list. There is also not too much on non-binary floating-point arithmetic.

For most fields covered in this bibliography, the important or historically relevant articles should be included. There is also some material on integer arithmetic in this list as some of the methods used with integer arithmetic contain interesting ideas that may be useful in the realization of a floating-point arithmetic package.

Also, depending on the type of microprocessor used, one may need to implement integer multiplication and division for use in the floating-point package, so articles about this topic are included as well.

As I am German, there is a bit of material in German in this bibliography. However, English translations are provided for all non-English titles.

Thanks to the people who have helped me with previous versions of this document by sending me papers or additional references:

- Steven Sommars (`sesv@research.bell-labs.com`),
- Jim Kiernan (`jmk@teak.cray.com`),
- Warren Ferguson (`ferguson@seas.smu.edu`),
- Nhuan Doduc (`ndoduc@framentec.fr`),
- K. C. Ng (`kwok.ng@eng.sun.com`),
- Nelson H. F. Beebe (`beebe@math.utah.edu`).

Bibliography entries in the **Books** section are ordered alphabetically by author; ordering is by ascending year in the remaining sections.

Warning: it has yet not been possible to bring this citation list up-to-date with the entries in the BibTeX

Books, hardware oriented

[1721, 281, 1286, 1216, 3111, 3315, 1916, 841, 1164, 1000, 1457, 843, 1343, 7216, 7217, 1557]

Books, software oriented or theory

[1273, 466, 469, 470, 119, 1420, 2393, 908, 1049, 352, 2952, 2434, 2969, 2270, 320, 527, 7070]

Books, machine specific

[2175, 3217, 3113, 2436, 1767, 1903, 2289, 1935, 2471]

Journal Publications, Conference Papers, Technical Reports, Ph.D. Dissertations, Book Contributions, etc.

1 Choice of base, floating point formats

[498, 750, 752, 730, 727, 893, 1141, 1131, 2036, 2267, 2391, 2544, 2771, 2785]

1.1 Precision and Rounding

[433, 558, 745, 847, 881, 896, 964, 1032, 1041, 1045, 1194, 1296, 1435, 1376, 1538, 1729, 2280, 2456, 2529, 2842, 3158, 3280]

1.2 Determination of parameters of floating point arithmetic

[686, 823, 1636, 2273, 2201]

1.3 IEEE standards for floating point arithmetic

[993, 1197, 1223, 1206, 1234, 1196, 1203, 1340, 1326, 1327, 1280, 1300, 1458, 1385, 1409, 1387, 1725, 1824, 1862, 1863, 1860, 2087, 2172, 2339, 2573, 3053]

1.4 Floating point arithmetic, general and implementation issues

[633, 719, 1014, 1035, 1083, 1095, 1094, 1236, 1238, 1210, 1274, 1266, 1475, 1493, 1992, 2012, 2217, 2218, 2372, 2446, 2349, 2528, 2772, 2773, 2701, 2770, 3011]

1.5 Floating point packages

[1287, 1700, 1679, 1773, 1731, 1884, 1849, 1885, 1967, 2080, 2102, 2204, 2298, 2299, 2300, 2479, 2480, 1352]

1.6 Floating point units

[416, 1153, 1320, 1278, 1330, 1354, 1323, 1349, 1270, 1315, 1324, 1498, 1540, 1497, 1533, 1556, 1662, 1576, 1578, 1579, 1680, 1610, 1607, 1615, 1642, 1716, 1618, 1789, 1776, 1716, 1757, 1786, 1718, 1797, 2008, 1970, 1998, 1964, 2017, 1956, 1949, 1950, 2128, 2082, 2153, 2245, 2274, 2307, 2250, 2276, 2251, 2184, 2213, 2320, 2262, 2214, 2287, 2461, 2407, 2408, 2432, 2322, 2443, 2405, 2402, 2314, 2424, 2463, 2363, 2323, 2444, 2328, 2564, 2499, 2519, 2559, 2514, 2491, 2562, 2545, 2536, 2659, 2768, 2731, 2957, 2870, 2940, 3097, 3047, 3188, 3347]

1.7 Test of floating point routines

[500, 1454, 1726, 1870, 1869, 2020, 2021, 1965, 2106, 2469, 2597, 2605, 2673, 2672, 2788, 2767, 2753, 3052]

2 Addition and Subtraction

[375, 1513]

2.1 Floating-point Summation

[325, 345, 362, 361, 570, 639, 677, 831, 1661, 2275, 2352]

2.2 Multiplication

[680, 1246, 1260, 1476, 1543, 1516, 1574, 1601, 1593, 1619, 1676, 1591, 1758]

2.3 Division

[209, 238, 223, 322, 348, 438, 1017, 1064, 1311, 1403, 1567, 1645, 1623, 1606, 1770, 1890, 2015, 1994, 2387, 2777, 2722, 2967, 3016, 7238, 2949]

3 Elementary functions, general

[384, 398, 586, 650, 615, 1122, 1265, 1627, 1656, 1756, 1719, 1717, 1794, 1840, 7157, 1945, 2051, 2154, 2098, 2277, 7176, 2560, 2597, 2547, 3334, 2549, 2518, 2697, 2850, 2661, 2812, 2813, 2690, 3367, 3335]

3.1 Elementary functions, CORDIC and related algorithms

[190, 191, 248, 264, 373, 523, 551, 659, 651, 667, 733, 855, 1068, 1084, 1293, 1451, 1699, 1897, 1708, 1811, 1963, 2159, 2381, 2310, 2541, 2567, 2716, 2810, 3010, 3005, 3128, 3068, 3114]

3.2 Elementary functions, function approximation

[240, 241, 481, 623, 768, 767, 983, 1021, 1162, 2000, 2052, 2610, 2685, 2783, 2784]

3.2.1 Polynomial evaluation

[259, 279, 304, 426, 1061, 1228, 2351]

3.3 Square root, general

[1082, 1187, 1481, 1598, 1651, 2565, 2677]

3.3.1 Square root, bit-oriented, iterative, and table methods of computation

[120, 153, 359, 1022, 1008, 1151, 1353, 1444, 1406, 1372, 1426, 1537, 1825, 1922, 1834, 1887, 1971, 1952, 2035, 1955, 2006, 2046, 2089, 2139, 2179, 2253, 2390, 2577, 2534, 2709, 3038]

3.3.2 Square root, Newton's method

[158, 280, 302, 374, 347, 343, 383, 451, 427, 513, 518, 532, 596, 585, 579, 581, 702, 1328, 1317, 1397, 1583, 2333, 3018, 2947]

3.4 Sine and Cosine

[180, 1068, 1018, 1023, 1176, 1398, 1544, 1666, 1665, 1765, 1853, 1953, 2120, 2231, 2606, 2961, 2958, 2880, 2980, 3074]

3.5 Logarithm

[154, 271, 331, 690, 998, 1112, 1299, 1529, 2107, 2108, 2607, 2735]

3.6 Exponential function

[141, 409, 1183, 1361, 1518, 1748, 1847, 2470, 2608, 3002]

3.7 Arctangent

[143, 160, 207]

3.8 Other transcendental functions

[499, 613, 161, 1024, 365, 275, 360, 2100, 1157, 2860, 3054]

4 Binary-decimal conversion

[189, 173, 222, 475, 576, 684, 1165, 1291, 1292, 1405, 1654, 1709, 2002, 1975, 2509, 2601, 2525, 2856]

5 BCD arithmetic

[674, 726, 777, 778, 779, 780, 781, 782, 783, 1382, 1492, 1705, 1640, 2037, 2646, 2960]

6 Multiple precision arithmetic

[292, 330, 410, 428, 632, 616, 953, 1002, 1099, 1098, 1265, 1350, 1430, 1542, 2805, 2789, 3033, 3224]

7 Conferences on computer arithmetic

[7096, 7106, 7111, 7120, 7123, 7136, 7154, 7155, 7197, 7227, 7235, 7229, 7261]

8 Additional contributions from Nelson H. F. Beebe

[121, 136, 169, 215, 297, 346, 367, 449, 752, 555, 848, 877, 921, 922, 974, 988, 1002, 1007, 1070, 1072, 1099, 1098, 1192, 1163, 1221, 1245, 1264, 1271, 1288, 1388, 1425, 1430, 1459, 1460, 7136, 1714, 1724, 1727, 1741, 1747, 1855, 1861, 1895, 1923, 1979, 2022, 2033, 2061, 2103, 2116, 2124, 2169, 2275, 2276, 2329, 2486, 7209, 2531, 2535, 2548, 2555, 2564, 2605, 2617, 7235, 2740, 2741, 2765, 2769, 2786, 2805, 2858, 2859, 2972, 3052, 3267, 208, 215, 216, 252, 282, 294, 306, 307, 311, 342, 362, 421, 440, 473, 492, 526, 570, 592, 616, 639, 710, 794, 827, 829, 845, 864],[897, 899, 904, 926, 947, 973, 975, 982, 984, 1016, 1063, 1071, 1252, 1283, 1357, 1430, 1437, 1461, 1464, 1559, 1564, 1624, 1638, 1647, 1648, 1703, 1744, 1784, 1788, 1807, 1808, 1813, 1815, 1832, 1843, 1844, 1936, 1968, 2013, 2024, 2097, 2141, 2170, 2186, 2249, 2264, 2279, 2301, 2360, 2371, 2375, 2457, 2481, 2487, 2532, 2579, 2593, 2656, 2666, 2702, 2746, 2797, 2861, 2928, 2934, 2968, 2994, 3002, 3037, 3090, 3098, 3176, 3190, 3193, 3237, 3278, 3325, 7067, 7104, 7112, 7121, 7122, 7147, 7159, 7156, 7202]

Title word cross-reference

#26 [5487].

$((2^n)^m)$ [3796]. $(10^{31} - 1)/9$ [1976]. (2^m) [4349, 4370, 4553, 4562, 4468]. $(2^n + 1)$ [1081, 4785, 3909]. $(2^n - 1)$ [5004]. $(2^n - 1, 2^{n+p}, 2^n + 1)$ [6266]. $(2^n 2^q 1)$ [6072]. $(2^n \pm 1)$ [5514, 4136]. $(2m)$ [4433]. $(2n + 3)$ [6521]. $(2n - (2p \pm 1))$ [4847]. $(a \cdot x) \cdot x?$ [6793]. (d, r) [789]. (M, p, k) [5800]. $(\mathcal{R})$ [2908]. (p) [4349, 4433].

$(x+y)*(x-y)$ [6667]. -2 [743, 183, 206, 949, 801]. $-\infty < n < +\infty$ [141, 160]. 0 [5632]. $0 < N < 1$ [161]. $0 \div 0$ [699]. **$1** [3739]. 1 [4984, 4342, 5149, 5633, 3694, 2165]. $1,000,000$ [618]. $1/\sqrt{x}$ [5771]. $1/t$ [2174]. 10 [530, 6003]. 116 [4018]. 128 [4853]. 15 [530]. 16 [2504, 4183, 4071]. 17×69 [3047]. 2 [1005, 4300, 2049, 5669, 3229, 3990, 618, 6036, 430, 4342, 5005, 3283, 3459, 1760, 3469, 3140, 3476, 5607, 3491, 530, 321, 3681, 3815, 4449, 3694, 5093, 3361, 4937]. $2,576,980,370,000$ [5634]. $22n+1$ [2146]. 256 [4436]. 27 [433]. $2(n+1)+1\}$ [3967]. $2^{2n+1}-1$ [6018]. $2^{2n+2}-1$ [6018]. 2^{2q} [6008]. 2^8-1 [2856]. 2^k [4481, 4992, 5494, 5033, 5041]. 2^k+1 [866]. 2^{k-1} [4481]. 2^m [4554]. 2^n [1568, 6018, 3967]. 2^n+1 [3967, 4984, 5713, 4459]. $2^{n+1}-1$ [6511]. 2^{n+k} [6511]. $2^n-(2^{n-2}+1)$ [5336]. 2^N-1 [2987, 4820, 6511, 4212, 3967]. $2^q \pm 1$ [6008]. $2^q \pm 3$ [6008]. $2^x p^y \pm 1$ [6234]. 2×2 [5906]. 3 [377, 4986, 4177, 430, 4033, 4201, 4038, 5025, 4870, 321, 6203, 4117, 6595, 4934, 4935]. $3-j$ [298]. 32 [3983, 4436]. 3×3 [2493]. 4 [3967, 4314, 4657, 2521, 2522, 430, 3428, 5718, 5520, 4381, 4713, 2950, 4071, 4073, 2811, 3001, 1932, 3524, 3529]. **$49.95** [3706]. 5 [6008, 4797]. 54×54 [3483]. $6-j$ [298]. 64×64 [2278]. 8 [433, 3441, 4071, 3491]. 84 [307]. **$85.00** [4141, 4142]. 88062 [530]. $8k$ [6830]. 8×8 [5093]. $9-j$ [298]. $<$ [6211]. $>$ [6211]. $[0,1]$ [5149]. ^{0} [4355]. ^{2} [5731]. ^{4} [2796]. ^{5} [3896]. ^{e} [1159]. $^{\text{th}}$ [1159]. ^{TM} [4624]. $A(N+C)$ [1910]. $a+b$ [3638]. $a+b+c$ [6292]. $AB+CAB+C$ [6938]. $ab+cd$ [6087]. $ab+cd+e$ [7049]. $a \cdot (x \cdot\ x)$ [6793]. $A \cdot T$ [4064]. $\arctan Z$ [143]. $a \times b + c \times d$ [6292]. β [6323, 7023]. $C+AB^2$ [4279]. $c/\sqrt{(a^2+b^2)}$ [6274]. CLP(R) [2928]. $\cos^{-1}$ [3128]. $\cos N$ [180]. $\cos x$ [373]. $\cot^{-1} x$ [373]. d [4691, 5497, 3802]. Δ_2^0 [4938]. e [459]. e^n [141]. e^x [409]. ϵ [3472]. η_T [5661]. ηT [5241]. $\exp(x)$ [1361]. $\exp x$ [373]. $f(x)=0$ [1222]. G_α [809]. GF(2)[x] [5854]. $GF(2^m)$ [4403, 4770, 4386, 6037, 4971, 5427, 4902, 5858]. GF($2n$) [4198]. $GF(p^m)$ [4649]. H [5166]. I^2L [3238]. ∞/∞ [5012]. K [5435, 4300, 5908, 2107, 5991, 6323, 5949]. $k < m$ [6323]. L [4342]. L^2 [5249]. L^∞ [5248]. l_2 [6047]. $\ln(x)$ [1529]. $\ln x$ [373]. $\log n$ [1228]. $\log Z$ [143]. LU [6782, 6543]. M [4834, 180, 4131, 2626, 2631, 2640, 2918, 5330, 581, 6323]. $M^E \bmod N$ [2776]. $\mathbf{F}_2[X]$ [7022]. $\mathbf{f}_{2^m}$ [4228]. $\mathbf{F}_{5^{5n}}$ [5678]. $\mathbf{F}_{7^{7n}}$ [5678]. $\mathbf{R}^n$ [6891]. $\mathbf{Z}^2$ [4059, 5032]. GF(2) [5304, 1692]. $\text{GF}(2^4)^2$ [6150]. $\text{GF}(2^{4n})$ [3920]. $\text{GF}(2^8)$ [6150]. $\text{GF}(2^{\text{k}})$ [4959, 3767, 4917]. $\text{GF}(2^{\text{m}})$ [5477, 4670, 4977, 3872, 4525, 5138, 3581, 4531, 3883, 5506, 2896, 2897, 3751, 4857, 5304, 5167, 4712, 4384, 5029, 2428, 5428, 4602, 4743, 4903, 5432, 3198, 4279, 4932, 4769, 2308]. $\text{GF}(2^{\text{n}})$ [4991]. GF(p) [2081]. $\text{GF}(\text{p}^{\text{m}})$ [3487]. $\text{GF}(\text{p}_{\text{k}})$ [4645]. $\text{GF}(\text{q}^{\text{n}})$ [4693]. MECIPTI [282]. μ [1426, 4863, 4905, 2309]. μP [1610, 2008]. N [3962, 808, 2333, 2334, 160, 161, 180, 4573, 5065, 4923, 5949, 5680, 4158, 6047, 1294, 3622]. $n^{\text{ième}}$ [1159]. $N_0' = -N_0^{-1} \bmod W$ [4256]. $N \geq 32$ [5843]. $n \log(n)$ [6459]. $n \times n$ [3139]. $O(1)$ [6359]. $O(n)$ [1195, 3431, 1547]. $O(n^2)$ [2777, 2778]. $O(n \log n)$ [6508]. Ω [4919]. Arccos$x$ [207]. Arcsin$x$ [207]. Arctan$x$ [207]. mod$p$ [1915]. P [6499, 4634, 2059, 1130, 894, 1044, 1635, 7023, 4272, 4620, 3349]. p^k [6675]. π [1630, 2233, 2234, 4599, 268, 5634, 1693, 459]. $p \times p$ [4578, 4722]. q [5773]. $q*m-n$ [1628]. QR [6112]. R [3602, 3061, 1605, 1613, 6402, 5843]. $r = m^k$ [1438]. r^a [4942]. r^b-1 [4942]. r^c+1 [4942]. $\{r^n-2, r^n-1, r^n\}$ [5295].

$r \geq 8$ [5843]. s [4874]. sin(**BIG**) [5230]. $\sin^{-1}$ [3128]. $\sin N$ [180]. $\sin x$ [373]. $\sqrt{(a^2 + b^2)}$ [6274]. $\sqrt{(x)}$ [1481]. $\sqrt{(x/d)}$ [3844]. $\sqrt{2}$ [6967]. $\sqrt{x}$ [1307, 451]. $\sqrt{x^2 + y^2}$ [5669]. T [6559]. $\tan^{-1} x$ [373]. $\theta(\log N)$ [2354]. $\times$ [4064, 3914, 4130]. w [4730]. X [1542, 2893]. $x^2 + ny^2$ [3706]. x^n [5972, 3307]. y [4412]. Z [5327].

-2 [1004]. **-adic** [1130, 1044, 1635, 2059, 894]. **-approximations** [5248, 5249]. **-ary** [2918, 4131]. **-b** [3483]. **-Bit** [3983, 6830, 307, 5949, 5065]. **-body** [4573, 4923]. **-circulant** [6402]. **-Coordinate** [4412]. **-count** [6559]. **-D** [5669, 4177, 4201, 3283, 6203, 4117, 5093, 3361, 2165]. **-Depth** [3431]. **-Digit** [433]. **-Dimensional** [5497, 2049, 4691]. **-Fold** [5435]. **-Friendly** [5800]. **-function** [5166]. **-gram** [5680]. **-Matrix** [4834]. **-Moduli** [6008, 3967, 4657, 4797]. **-Norms** [6047]. **-Order** [3602]. **-Partition** [5991]. **-Real** [4938]. **-select** [4158]. **-sets** [3061]. **-spaces** [4874]. **-th** [5908, 3802, 5773, 2334]. **-transform** [5327]. **-Vectors** [6047].

.NET [6412, 5068].

/m [4863]. **/spl** [4863].

0.18-CMOS [5767]. **0.4.1rc** [6413]. **0.80pJ** [6547]. **0.80pJ/flop** [6547]. **'00** [7337, 7342, 2540]. **'01** [7351]. **'03** [7380]. **'04** [7389, 7397]. **'07** [7432, 7438, 7440, 7445]. **'08** [7449, 3032, 5375].

1 [217, 3547, 6633, 3412, 2876, 228, 63, 65, 67, 563, 3275, 6665, 4064, 4406, 1163, 5767, 1933, 3864]. **1-GHz** [6633, 4406, 5767]. **1-Output** [5341]. **1.0** [3865]. **1.24Tflop** [6547]. **1.24Tflop/sW** [6547]. **1.5** [5649]. **10** [5731]. **10-kA** [5731]. **10-kA/cm** [5731]. **10/20** [958]. **100** [2889, 2890]. **100-MFLOPS** [2889, 2890]. **1014** [6738]. **1057** [1981]. **10858** [1746]. **10967** [4360, 5155]. **10967-1** [3275]. **10967-2** [4360]. **10967-3** [5155]. **10th** [7147, 7481, 7229, 7358, 7371, 27, 7128, 2763]. **'11** [7476, 1110, 1391, 1507, 1408, 1312]. **11-bit** [4905]. **11/780** [2036, 1569, 1570, 1803, 1019]. **116** [270]. **1164/WTL** [2033]. **11i** [4920]. **11th** [7349, 7242, 7260, 7261, 3183]. **120B** [1120]. **128-bit** [6314, 4115]. **12th** [7392, 7458, 7103, 7284, 3454, 7444]. **13** [4319, 2090]. **132-Bit** [342]. **13th** [7377, 7119, 7303, 7273, 7431, 3843, 3771, 7501]. **14-Port** [3914]. **14th** [7264, 7348, 7379, 7430, 7342, 7328]. **15** [2766]. **15-b** [4451]. **15-bit** [4120]. **15C** [1629]. **15th** [7167, 7438, 7103, 7446, 7350, 7396]. **16-19** [7067]. **16-b** [6448]. **16-Bit** [4530, 6673, 6688, 7033, 6830, 3023, 1260, 1601, 4989, 3076, 1759, 6313, 1476]. **16-bit-** [1610]. **16-bit-Multiplikation** [1476]. **16-by-8-bit** [1645]. **16-Digit** [5361]. **160-ns** [2835]. **160-Word** [3914]. **1620** [255]. **164** [1815]. **167** [3491, 3529]. **16BST** [1817, 1733, 1734, 1736, 1740, 1750, 1763, 1772, 1689]. **16F/400** [917]. **16th** [7421, 7412, 4646, 7376, 7418]. **17** [287, 838]. **17-Bit** [648, 647]. **1788** [6535]. **1788-2015** [6061]. **17th** [7483, 7423, 7339, 7413, 7416]. **'18** [7494, 562]. **18-21** [7429]. **18.Mai** [1484]. **18th** [7448, 7437, 7443, 5467].

18th-Century [5467]. **1945** [61]. **1947** [7059]. **196** [5676, 5687]. **1962** [7067]. **1965** [7071, 7073]. **1967** [7078, 7080]. **1968** [7083]. **1969** [7081, 7082, 587]. **1971** [7093]. **1972** [7091, 4045]. **1973** [4122, 4123]. **1975** [7100]. **1976** [7101, 7103]. **1977** [7104, 7129, 1652]. **1979** [7109, 7112]. **1980** [7113, 7119, 1525, 7124, 7121]. **1981** [7126, 7131]. **1983** [7147]. **1984** [7156]. **1985** [7173]. **1987** [2087]. **1988** [7176, 7187]. **1989** [7200, 2579]. **1989-01** [2385]. **1989/Taipei** [7200]. **1991** [2635, 7222, 2763]. **1992** [2855, 7285]. **1993** [7253, 7296, 3183]. **1994** [7274]. **1994-12** [3275]. **1995** [7275, 7287, 3454]. **1998** [7313, 7315, 3891]. **1998-12** [3890]. **1999** [7325, 7326, 7331, 7333]. **19th** [7456, 7426]. **1st** [7310].

2 [2176, 6460, 2517, 1734, 64, 66, 68, 4360, 4034, 4571, 6420, 3917, 4888, 528, 2014, 3513, 4115, 4762, 2821, 3013]. **2-D** [3513]. **2-Digit** [4171]. **2-dimensional** [2988]. **2.0** [3618]. **2.44** [4033, 4201]. **20** [2665, 2399]. **20-MFLOPS** [2400, 2399]. **200-ns** [1485]. **'2000** [7336, 7335, 7336, 7342]. **2001** [7347, 7348, 7350, 4822, 7352, 7358, 7359]. **2002** [7361, 7362, 7364, 7365, 7366, 7373]. **2003** [7376, 7377, 7380, 7381]. **2004** [7388, 7389, 7391, 7397, 7398, 4880]. **2005** [7405, 7406, 7408, 7411, 7417]. **2006** [7420, 7421, 7424, 7428]. **2006Petrozavodsk** [7478]. **2007** [7432, 7434, 7435, 7437, 7440, 7442, 7452, 7447]. **2008** [7448, 7449, 5479, 7451, 6520, 5913, 5914, 6684, 5531, 5750, 5553]. **2009** [7454, 7458, 7461, 7462, 5512]. **2010** [7471, 7472, 7474]. **2011** [7477]. **2013** [7482]. **2015** [7485, 7486]. **2016** [7490]. **2017** [7491]. **2018** [6433]. **2019** [6486, 7496, 7497]. **2020** [6615, 6613, 6614, 6616, 6617, 6619, 6640, 7498, 6664]. **2020s** [6723]. **2021** [6723, 6724, 6725, 6726, 6734, 7502, 6779, 6797]. **2022** [6835, 6836, 6837, 7504, 6864, 6865]. **20th** [7460, 7500, 7479, 7441]. **21-23** [7458]. **2100** [2558]. **21064** [3341]. **210uW** [6383]. **210uW/MHz** [6383]. **21164** [3386]. **21st** [7466, 7394, 7338, 7482, 7455]. **22** [337]. **22-nm** [6633]. **22nd** [7486]. **22nm** [6547]. **23-28** [7425]. **23nd** [7490]. **23rd** [7212, 7469, 7472]. **24** [1127]. **24-26** [7378]. **24-bit** [2364]. **24.und** [7129]. **24732** [5157]. **248GOPS** [6810]. **248GOPS/W** [6810]. **24b** [2461]. **24th** [7491, 7311, 7314, 7368, 7474, 7129]. **25-28** [7337]. **256** [6271]. **25th** [7208, 7324, 7129, 7439, 7495]. **26-28** [7389]. **26th** [7474, 7497]. **27th** [7498, 7471]. **281** [3055]. **286** [3637]. **28nm** [6810]. **28th** [7502, 7319]. **29.95** [3706]. **29th** [7327, 7504]. **2B** [645]. **2DFFT** [1883]. **2nd** [7470, 4575, 7092]. **2Sum** [6126, 6233].

3 [3093, 5155, 6396, 2769, 6101]. **3-ps** [5767]. **30-bit** [2421]. **30-MFLOP** [2245]. **30-ns** [3469]. **300** [4201, 1229]. **300-MHz** [4201]. **300MHz** [4033]. **312** [432]. **3171** [2499]. **31st** [7181]. **32** [5111, 2061]. **32-** [6899]. **32-Bit** [3714, 2312, 2183, 2325, 5471, 4800, 3412, 1403, 5001, 1623, 2734, 2406, 2407, 2408, 2409, 2557, 1996, 2431, 3309, 2569, 3187, 3949, 2484, 3202]. **320** [3096]. **320-MFLOPS** [3097, 3096]. **320C25** [3287]. **32b** [2245]. **33** [2213]. **33rd** [7292, 7343, 7236]. **34** [512]. **34-MFLOP** [2484]. **360** [417, 418, 504, 383, 391, 392, 681, 439, 480, 1441, 6429, 537]. **3600** [302]. **36th**

[7256]. **370** [1945, 2036, 2478]. **37th** [7442]. **390** [4075, 3810, 3811, 4101, 4102]. **39th** [7432, 7449]. **3CT** [3381]. **3DNow** [3917, 4034]. **3DTV** [5756]. **3m** [6338]. **3rd** [7308, 7096, 7414]. **3X** [5433].

4 [3391, 4786]. **4-2** [1167]. **4-Input** [5341]. **4-Input/1-Output** [5341]. **4.4ns** [3483]. **40** [2408]. **40-MFLOPS** [2406, 2408]. **40-ns** [648]. **400** [917]. **4000** [497]. **400MHz** [3914]. **400th** [7285]. **4096-Core** [6824, 6711]. **40ns** [647]. **41** [443]. **432** [1856]. **44th** [7428]. **45th** [3758]. **48th** [7411]. **4d** [4668]. **4m** [6338]. **4th** [7106, 7337, 7231, 7359, 7505].

5 [3539, 6919]. **50** [2323]. **50-Megacycle** [149]. **50-MHz** [2323]. **501** [3775, 3628]. **50th** [7268]. **512** [6346, 6972]. **512-bit** [6850]. **528** [1118, 4016]. **53*53** [3261]. **53nd** [7467]. **54** [338]. **54-b** [2835]. **55-b** [3469]. **5th** [7375, 7457, 7123, 7426, 7282].

6.7-MFLOPS [2442, 2444]. **60** [605, 578, 410]. **600** [3982]. **600-MHz** [3982]. **6000** [3381, 2535, 636, 2560, 2564, 1242, 3363, 717]. **6000/7000** [1036, 1242]. **600MHz** [4075]. **601** [3341]. **603e** [3611]. **60M** [2634]. **60M-flops** [2634]. **64** [4775, 3989, 4163, 4024, 4189, 4190, 6506, 4235, 4111]. **64-active-instruction** [3525]. **64-b** [3637, 2957, 3525]. **64-Bit** [2432, 3914, 7019, 2320, 2323, 5382, 5124, 4983, 3069, 3429, 5149, 2711, 3443, 2399, 2400, 2545, 2404, 2924, 6899, 2768, 2259, 3323, 4921, 2033]. **64-bit-Universal-Floating-Point-ISA-Compute-Engine** [6506]. **6400** [1694]. **64b** [2322]. **65** [624]. **65-nm** [7019]. **65/6600** [624]. **650** [2089]. **651** [2048]. **65nm** [6383]. **6600** [731, 554, 624, 591, 1345]. **6600/7600** [731]. **665** [2201]. **68000** [1884]. **68000-Einplatinenrechner** [2080]. **693** [2805]. **6th** [7422, 4830, 7387, 7136, 7326, 7441, 7304, 7417, 7391].

7-9 [7460]. **70** [5672]. **7000** [1242]. **7094** [397, 472]. **7094-II** [472]. **714** [3052]. **715** [3054, 3665]. **719** [3033]. **722** [3053]. **7289** [6967]. **73** [1029]. **754** [3837, 5562, 2857, 4302, 3394, 6023, 3973, 4508, 5479, 6486, 6863, 3865, 4324, 6757, 4819, 6763, 6764, 1409, 6517, 6776, 6158, 1861, 6520, 2093, 3449, 3614, 5921, 5318, 4230, 5040, 5176, 6896, 6556, 7014, 7015, 2271, 6433, 6320, 7023, 1679, 4749, 3935, 5627, 2016, 1458, 6704, 3350, 5553, 5778, 7038]. **754-1985** [1860, 1861]. **754-2008** [5418, 5479, 6520, 5553]. **754-2019** [6519, 6486]. **754-Posit** [6896]. **754r** [5409, 5114, 5127, 5259, 5480, 5160, 5213, 5159, 5172, 5361]. **7600** [731]. **77** [1190, 4016, 1331]. **780** [2036, 1569, 1570, 1803]. **786** [3938]. **'79** [7109, 7112]. **7th** [7113, 7115, 7420, 7154, 7184, 7425].

8 [1295]. **8-Bit** [3804, 6822, 6951, 1967, 6985, 7003, 6905, 6444]. **8-to-64** [6547]. **80** [1483]. **80*87** [3014]. **80-bit** [1928]. **80-FLOPS** [2957]. **8000** [3443]. **80287** [1903]. **8080/8085** [1583, 1133, 1219]. **8080A** [1487]. **8085A** [2386]. **8086/80286** [1935]. **8087** [1629, 1315, 1903]. **8087/80287** [1935, 1903]. **8087/80287/80387** [2289]. **8088/8087** [1733]. **80960** [2241].

80960KB [2242]. **80b** [2443]. **80h** [1295]. **80's** [7118]. **814** [4439]. **8231A** [4140]. **826** [6383]. **'83** [7139]. **83S87** [2512]. **'84** [7148]. **842** [4994]. **'85** [7153, 480]. **854** [3401, 3402, 2087, 3473]. **854-1987** [2039, 2087]. **'86** [7160, 7161]. **86**^{TM} [3913]. **871** [5438]. **'88** [7182, 7183, 7186, 2305]. **881** [5495]. **'89** [7194, 7201]. **89/TI** [4452, 4453]. **8s** [765]. **8th** [7206, 7406, 7315, 7168, 5616].

9 [516, 695]. **9-11** [7434]. **9.4** [6810]. **'90** [7204, 7213, 7228, 4295, 3385, 4954, 4955, 2675, 3481, 4439, 3829]. **908** [5645]. **90nm** [4786]. **'91** [7225, 7228, 416, 395]. **'92** [7234, 7237, 7240, 7248, 4452, 4453]. **'93** [7251]. **'94** [7263, 7264, 7273]. **'95** [7280, 3842, 4435, 4746]. **954** [6039]. **'96** [7294, 7298]. **96-bit** [2255]. **97** [3707]. **'98** [7311, 7319, 3959, 7309]. **980A** [1015]. **'99** [7324, 7325, 7326]. **9th** [7197, 7472, 7429, 7131, 2356].

= [2799, 2800, 3343, 7093].

A-Priori [2100]. **A.K** [4663]. **a.k.a** [5526]. **A/D** [3881, 905, 3343, 4120, 4451, 801]. **A/D-konverter** [3343]. **A1** [1098, 1192]. **Aarhus** [7136, 7136]. **Abacus** [202, 1026, 5530]. **Abbreviating** [7]. **abc}** [4804]. **ABE** [546]. **ABI** [6831]. **abnormal** [6012]. **Abotec** [3177]. **Absolute** [3388, 3389, 2759, 2249, 432]. **Abstract** [5570, 4536, 5603, 525, 5324, 5838, 6333, 4831, 2908, 2111, 5839, 4883, 4895, 2982]. **abstraction** [5466, 5817, 1329]. **abstraction-based** [5466]. **Abstracts** [7252, 7343]. **Abu** [407]. **Acadiana** [7315]. **ACBAM** [6917]. **ACBAM-Accuracy-Configurable** [6917]. **Accelerate** [6567, 6265, 4573]. **Accelerated** [6762, 5007, 5478, 5684, 6415, 6939, 7032]. **Accelerating** [5458, 6017, 4792, 3860, 5693, 6871, 6761, 6149, 6999, 4229, 6681, 6304, 4720, 6309, 5759]. **Acceleration** [6655, 6782, 6174, 6775, 6405]. **Accelerator** [6019, 6735, 6466, 5676, 6971, 5712, 6984, 6282, 6886, 6300, 2250, 6420, 7013, 5993, 6914, 4903, 7031, 6932, 6593, 6360, 2263]. **Accelerators** [6875, 6977, 6529, 6787, 7005, 6424, 7037, 4765, 6943, 5271, 3497]. **Acceptance** [3481]. **Access** [2142, 5102, 3394, 4576, 4630, 6939]. **Accessibility** [7404]. **Account** [3]. **Accumulate** [6481, 4978, 6382, 6778, 6401, 6690, 6922, 5943, 3818, 6606, 6714, 4500, 6546, 3666]. **Accumulated** [1367, 574, 976]. **Accumulation** [6237, 2055, 1958, 179, 5910, 6165, 5300, 6067, 5537, 4422, 77, 453, 1071, 3701, 5798, 3727, 3751, 5738, 573, 5534, 2762, 95, 5441]. **accumulations** [4229]. **Accumulator** [3854, 4758, 6210, 379, 2692, 1031, 3309, 5768, 5853, 4760]. **Accumulators** [6474, 6302, 370, 1072]. **accuracies** [2599]. **Accuracy** [4638, 217, 6214, 6955, 6845, 1714, 5463, 860, 1014, 4790, 5382, 6746, 6747, 2673, 5882, 6029, 3235, 5889, 6137, 5267, 5135, 6144, 1840, 227, 228, 7046, 433, 389, 1289, 1851, 3604, 4545, 4357, 2377, 6392, 1745, 1980, 2539, 1620, 6986, 1983, 5905, 6278, 1627, 2397, 3114, 752, 5170, 6679, 831, 5175, 3786, 6917, 5765, 3160, 6199, 165, 6922, 1684, 2020, 2021, 6704, 410, 3521, 6820, 6934, 493, 6715, 6716, 5373, 6945, 5865, 5656, 5797, 1812, 4652, 5880, 6246, 6754, 6034, 6878, 3090, 1744, 6667, 2543, 2097, 1993, 5169, 5827, 5171, 6414, 3779, 1755, 5333, 6094, 7020, 1678, 107]. **accuracy** [2457, 1688, 1921, 1784, 6331, 2296, 3190, 6443, 3834,

544, 5107, 2051, 1210, 3642, 650, 1352, 2567]. **accuracy-adjustable** [7020]. **accuracy-guaranteed** [5333]. **Accurate** [5564, 5111, 1804, 2645, 2648, 2864, 1384, 4334, 4520, 4521, 4522, 4673, 4814, 4815, 3732, 4338, 5967, 6139, 6251, 4001, 5272, 2690, 6039, 4688, 4827, 4829, 5278, 2697, 5397, 5502, 5508, 4354, 6518, 6060, 5904, 5587, 5730, 5908, 5909, 3280, 5910, 6165, 230, 2547, 2236, 6887, 6539, 3294, 904, 570, 3464, 639, 5748, 6555, 7157, 4886, 4887, 5058, 5994, 2973, 1535, 5066, 5434, 5435, 5436, 5540, 5617, 5935, 5936, 3674, 3807, 3809, 4914, 5082, 4110, 2605, 6002, 6817, 3016, 597, 5950, 4480, 1794, 5787, 3045, 5245, 3236, 3415, 4674, 4168, 2361, 5501, 6257, 4195, 5903, 1867, 5906, 2730, 3118, 757, 758]. **accurate** [2948, 4727, 2956, 4729, 6092, 4244, 2145, 4443, 5208, 3003, 2837, 5451, 5227, 1094]. **Accurately** [3555, 6479, 2509, 5728, 5026, 2601, 4913, 6480, 6241, 4801, 4802, 5600, 5624]. **ACE** [945, 5099]. **achieved** [3020]. **Achieving** [6011, 5382, 5674, 6254, 1840, 4733, 5846]. **ACL2** [7361, 4261]. **ACL2-2002** [7361]. **ACM** [7176, 7263, 7388, 7389, 7404, 7405, 7419, 7432, 7448, 7449, 7424, 7351, 7367, 2090, 7373, 7390, 2343, 7281, 7228]. **ACM/IEEE** [7419]. **ACM/SIGDA** [7388, 7405]. **ACM/SIGPLAN** [7390]. **Acoustics** [7160, 7226, 7380, 7397]. **Acousto** [1906]. **Acousto-Optic** [1906]. **acquisition** [2498, 2665]. **ACRITH** [1980, 1812, 2539, 1983, 1869, 2102]. **ACRITH-XSC** [2539]. **across** [5318]. **ACSSC** [7452]. **ACT8837** [2335]. **ACTION** [6889]. **Activation** [6639]. **Activations** [6285]. **active** [5756, 3525]. **Activity** [5863]. **Actual** [5311, 6470]. **acyclic** [3205]. **Ada** [7263, 7206, 7242, 1872, 7263, 2318, 2641, 2642, 2866, 2867, 3225, 2502, 2658, 3418, 2349, 2073, 6041, 2523, 7242, 1525, 1749, 2103, 1756, 3634, 2764, 2137, 2808, 1701, 2836, 1483]. **Ada-Europe** [7242]. **Ada83** [3036]. **adaptable** [4326]. **Adaptation** [2869, 4396, 6805]. **adapted** [5975]. **Adapting** [2928, 4016]. **Adaptive** [5809, 6524, 4216, 3109, 1633, 2918, 6678, 6785, 6181, 2445, 1769, 3679, 3680, 3812, 1462, 1549, 6932, 2173, 1947, 1582, 1720, 4799, 4970, 6388, 5150, 2389, 3773, 3905, 1755, 2425, 6082, 2959, 3144, 5764, 3691, 5635]. **ADC** [4350, 2450, 4130, 4941]. **ADCOM** [7438]. **Add** [6463, 5464, 3047, 4655, 4968, 6237, 4317, 5476, 6140, 5146, 2536, 6661, 5296, 3444, 6398, 3892, 4378, 5314, 5315, 5316, 3120, 5745, 5538, 5614, 5425, 5426, 5065, 6918, 4750, 6203, 6342, 6605, 6489, 4481, 2327, 4794, 3051, 3579, 4999, 4022, 5006, 6154, 4550, 5010, 4563, 4864, 4063, 5982, 5043, 4729, 3148, 5623, 4757, 4928, 1704, 4632, 4772]. **add/sub** [3579]. **Addendum** [1230, 762]. **Adder** [6018, 3714, 3965, 4301, 4800, 5475, 4974, 1102, 5261, 2885, 335, 6874, 1124, 5724, 6396, 5731, 753, 3781, 6560, 5928, 5992, 3790, 3655, 6561, 5336, 5337, 4421, 4261, 4909, 5627, 6926, 533, 589, 936, 5357, 5553, 6819, 6441, 6341, 5364, 5556, 133, 5226, 5371, 802, 2183, 4969, 2674, 5963, 3059, 2882, 3252, 5707, 4544, 2900, 3105, 3106, 3107, 3108, 1428, 2747, 5923, 2111, 4872, 5750, 2953, 4242, 2791, 6919, 1167, 5768, 5853, 4612, 5439, 4921, 2478, 5779]. **Adder-Based** [6018, 3105, 3106, 3107, 3108]. **Adder/Subtractor** [5724, 6396, 6819, 4872, 5750]. **Adders** [6011, 4298, 607, 5673, 3048, 4155, 5473, 866, 6758, 6759, 6378, 5701, 2075, 2077, 5585, 5399, 5514, 4212, 5017, 4049, 4373, 6066, 6407, 6176, 6788, 5177, 7004, 7052, 6686, 2001, 6693, 2782, 3802, 4266, 4437, 5361, 4459, 1180, 1191, 1494, 2331, 2660, 3857,

3990, 2725, 1899, 5754, 4731, 4080, 3328, 5213, 2474, 4456, 4763]. **Addictive** [1871]. **Adding** [1382, 3391, 2324, 3865]. **Addition** [1360, 6450, 2038, 1086, 803, 1371, 6961, 463, 550, 4312, 4968, 3722, 4154, 4317, 1823, 4975, 1107, 671, 6372, 1393, 5579, 5275, 3072, 1513, 506, 4992, 6146, 1125, 1612, 3433, 5586, 6521, 5299, 743, 4856, 1873, 4374, 4052, 5911, 6072, 4714, 4866, 5031, 1143, 4873, 362, 3139, 1438, 5930, 1443, 5336, 4085, 3158, 2275, 1675, 2138, 454, 3807, 5071, 6925, 786, 213, 932, 3817, 4110, 3184, 5547, 5217, 6442, 5557, 414, 1705, 376, 5103, 4136, 3221, 4151, 4309, 4794, 3856, 4660, 3566, 4161, 4667, 6375, 2520, 4681, 1512, 1968, 508, 6650, 2895, 3255, 4198, 2915, 4862]. **addition** [2737, 3630, 4229, 1647, 1648, 3642, 2760, 3919, 2260, 3795, 4082, 4250, 2583, 2974, 921, 922, 652, 710, 4910, 926, 3689, 375, 845, 1927, 3190, 3694, 492, 3831, 2627]. **Addition-based** [4992]. **Addition-Related** [5930]. **Addition/Subtraction** [4154, 5911, 4714, 6925, 3856, 4660]. **additional** [3365]. **additions** [3609, 3456, 1936]. **Additive** [4516, 5033, 5748, 484, 3591, 1663]. **Additively** [6558]. **Address** [2671]. **Addressable** [5053, 1560]. **adds** [1372, 6079]. **Adelaide** [7328]. **adequate** [2186]. **Adiabatic** [4758]. **adic** [1130, 1044, 1635, 2059, 894]. **Adjustable** [2103, 5544, 7020]. **adjustment** [3731]. **Ado** [2091]. **ADPCM** [3171, 3172]. **ADSP** [2558, 2942]. **ADSP-2100** [2558, 2942]. **Advance** [6781, 4792]. **Advanced** [3842, 4341, 5290, 3443, 7438, 4560, 7172, 7295, 7329, 7340, 7369, 7383, 7400, 3471, 3481, 5538, 7243, 7232, 1540, 2286, 933, 5219, 4466, 1812, 6850, 7422, 2031, 7356, 7415]. **Advances** [7061, 7072, 1220]. **Advancing** [2328]. **Advection** [6846]. **Adversarial** [6774]. **Aerospace** [7374]. **AES** [6729, 6150, 6432]. **af** [1367]. **Affair** [3407]. **affiliated** [7361]. **Affine** [6462, 4581, 6603, 4811, 5251, 4686, 5717, 5326, 5196]. **Affirmative** [3]. **AFIPS** [7065, 7152]. **after** [2014, 3688]. **Afternotes** [3688]. **Again** [6372, 1908]. **Against** [6340, 4401, 4585, 4587, 4730, 4631]. **Age** [5002]. **aggregation** [5335, 5419]. **aggressive** [4063]. **ago** [6098]. **Ahead** [5212, 802, 605]. **Ahmad** [407]. **ähnliche** [1699]. **AI** [6878, 6881, 6419, 7027, 7029, 6822, 5879]. **AI/ML** [6881]. **Aid** [14, 681, 5054, 1561]. **Aided** [7455, 7281, 7351, 7398, 7230, 7298]. **Aiken** [4122]. **air** [4548]. **Aircraft** [51]. **Airy** [5879]. **Aizu** [7333]. **Aizu-Wakamatsu** [7333]. **al** [407, 407, 407]. **al-Fusul** [407]. **al-Hasan** [407]. **al-Hindi** [407]. **al-Uqlidisi** [407]. **ALA'01** [4822]. **Alabama** [7240]. **Alamos** [2750]. **Alan** [7407, 703]. **Albena** [7227]. **Albuquerque** [7225]. **Alegre** [7434]. **Alessandro** [7332]. **Algebra** [3546, 4499, 1580, 7153, 7265, 4334, 6374, 4822, 6790, 3481, 7027, 5955, 6236, 2066, 3876, 4696, 6668, 6669, 5831, 832, 2954]. **Algebraic** [7436, 7109, 5126, 429, 2366, 4182, 7309, 388, 5294, 5729, 3761, 3625, 7294, 4380, 2143, 7385, 1070, 3819, 5207, 7345, 5093, 7248, 7475, 7070, 7076, 4286, 45, 5247, 1826, 514, 515, 4220, 4379, 3300, 2117, 7112, 5845, 2968, 1678, 5196, 4764, 457]. **Algebraic-integer** [2366]. **Algebraicznych** [457]. **ALGOL** [578, 734, 757, 578, 491, 539, 272, 410]. **algorism** [4669, 1026]. **Algorithm** [1708, 5232, 1709, 1260, 3958, 4950, 6458, 3035, 3218, 3712, 3848, 1806, 3038, 725, 6845, 5241, 1372, 807, 1492, 2048, 5465, 6354, 6626, 6468, 6738, 1098, 1814, 3398, 4967, 3557, 1497, 5677, 3722, 814, 5681, 1820, 2200, 5258, 3981, 2339, 2059, 1017, 1825, 2869, 5132, 2347, 1831, 3068, 4001, 5694, 6380, 1115, 1835,

428, 4012, 4829, 6147, 5503, 3431, 4844, 3601, 3753, 4028, 4546, 4030, 4199, 4200, 6516, 2381, 2716, 1617, 5008, 5716, 5718, 740, 3447, 972, 5516, 2090, 5732, 1630, 1873, 5304, 3288, 2735, 828, 6886, 5915, 6070, 3457, 313, 5309, 5310, 4059, 2421, 5033, 1048, 5599]. **Algorithm** [2105, 569, 2107, 262, 640, 4723, 2113, 6897, 762, 2947, 1649, 1890, 2115, 2254, 5330, 2566, 6183, 6423, 1654, 1897, 4410, 2774, 2960, 4412, 1532, 1661, 2777, 2778, 3660, 5993, 4894, 5424, 5758, 1157, 2589, 6099, 4900, 923, 2139, 924, 775, 4608, 1243, 2015, 5628, 6001, 372, 3814, 4112, 3184, 4117, 4447, 5085, 1693, 6204, 456, 4455, 2822, 3518, 2155, 489, 5552, 5773, 5857, 5945, 595, 3698, 1478, 244, 3206, 3531, 5104, 4278, 2630, 1710, 603, 2173, 2040, 4780, 6459, 3549, 3849, 5237, 6353, 3399, 1582, 1720, 4799, 2661, 2662, 3403, 5125, 3229, 2669, 2507, 3979, 3567, 3412, 5686, 3726]. **algorithm** [3415, 3238, 4331, 4332, 3869, 3870, 6251, 3578, 3070, 465, 4680, 4682, 4990, 4007, 3579, 1204, 5283, 4833, 2215, 5815, 5700, 6257, 1971, 3883, 4193, 3257, 3436, 3437, 4198, 2899, 514, 515, 2715, 4031, 3888, 5906, 4706, 5015, 2398, 748, 5734, 2732, 2733, 5163, 2550, 2736, 6677, 5828, 4564, 3459, 4567, 4568, 3627, 3777, 5036, 2937, 2246, 5834, 573, 4876, 761, 577, 1762, 2948, 4879, 5045, 1891, 983, 5415, 5987, 3305, 6316, 2776, 5843, 3145, 5536, 2779, 2967, 1907, 2968, 2448, 4738, 5423, 2131, 2583, 4599, 4744, 4904, 997, 1064, 3336, 3176, 3684, 3513, 1922, 3514, 2602, 293, 1927, 2811]. **algorithm** [3001, 5086, 4761, 5445, 5446, 4275, 3190, 6443, 659, 2483, 3199, 3361, 4768, 5451, 5101, 6007, 3371, 7056, 4939, 6643, 3033, 3550, 2048, 6738, 1192, 2201, 3052, 3053, 3054, 3055, 384, 6039, 1118, 1205, 4994, 5495, 432, 4016, 512, 6387, 564, 2089, 3665, 5438, 270, 2805, 3938, 4439, 5645, 6784]. **algorithm-based** [2246, 3513, 3199, 3361, 3371]. **Algorithmen** [2393, 2231, 2567, 1699, 2300]. **Algorithmes** [4672, 5319, 4340, 2756]. **Algorithmic** [5810, 7425, 3896, 252, 3656, 2796]. **Algorithmics** [7012, 4478, 5081]. **Algorithmique** [5081, 4478]. **Algorithms** [850, 2037, 6612, 4141, 4142, 722, 1805, 3847, 855, 665, 1011, 6844, 7406, 3223, 5378, 5665, 6233, 1265, 1375, 5384, 5386, 1584, 275, 3055, 6242, 3862, 4666, 1105, 5803, 2874, 4518, 4519, 4672, 3243, 4520, 3728, 6036, 1022, 1023, 1024, 1112, 6872, 5395, 3072, 4006, 4172, 6495, 5138, 2071, 2359, 6763, 6764, 5494, 3074, 467, 3738, 736, 823, 877, 6651, 1517, 6046, 5501, 883, 4189, 5148, 2534, 7450, 4197, 4356, 3604, 4545, 3605, 3887, 1519, 1412, 1521, 3273, 4204, 4703, 4704, 3098, 3099, 5723, 2541, 3100, 6164, 6670, 2393, 2231, 4213, 827, 521, 1420, 3898, 7473, 522, 6675, 3111]. **Algorithms** [4555, 3289, 4375, 630, 5826, 5311, 2930, 1528, 4060, 3120, 2933, 3295, 7295, 7415, 1049, 6792, 3636, 1639, 1887, 686, 1640, 690, 1641, 4875, 7173, 7187, 4397, 5042, 4580, 3299, 447, 356, 476, 360, 3643, 5046, 4403, 2567, 3789, 7008, 4407, 1322, 3792, 3315, 1440, 3796, 1443, 4248, 1444, 1770, 5994, 2789, 3801, 7244, 5996, 6806, 5935, 5936, 7232, 6921, 4606, 774, 2456, 3502, 5342, 925, 711, 3682, 373, 4111, 1341, 2603, 2812, 2813, 5771, 5856, 3005, 939, 2824, 3827, 1699, 2300, 5555, 3359, 1473, 3367, 7055, 5103, 5372, 551, 3209, 1083, 3548, 5458, 5955, 4495, 4961, 4307, 5121]. **algorithms** [6126, 6231, 6740, 6848, 7195, 2664, 2199, 221, 3858, 1960, 419, 3988, 1827, 1199, 2681, 3060, 3416, 4814, 2205, 1836, 3246, 4679, 6876, 3425, 225, 5140, 5143, 6049, 6384, 7222, 4022, 4699, 5710, 1299, 3269, 5298, 1982,

741, 2918, 4377, 2411, 3116, 4569, 1754, 2422, 3779, 830, 1755, 1882, 1637, 5601, 7329, 7340, 7356, 7369, 7383, 7400, 4065, 2561, 4725, 3131, 2756, 5044, 5179, 2433, 2565, 5181, 5416, 6425, 4076, 5844, 4078, 1442, 1663, 5612, 6190, 2266, 4895, 2452, 4599, 2591, 4088, 3928, 4607, 3166, 3167, 3504, 5344, 2462, 1784, 2023, 5208, 4759, 3000, 1073, 2823, 3191, 492, 1703]. **algorithms** [4932, 5370, 3018, 4940, 2345, 2046, 7173, 7187, 357, 2006, 1061, 1537, 4663]. **Algorithmus** [2046, 384, 2006, 1537]. **Alignment** [5930, 3851, 3915]. **alignments** [1920]. **all-one** [4971]. **Allerton** [7079]. **Alley** [3601]. **allgemeine** [1094, 1210]. **allgemeiner** [1352]. **Allocatable** [3470, 3481]. **Allocation** [6589, 4537, 5734, 4582, 4584, 4456, 3351]. **Alloy** [5837, 5984]. **Almost** [7063, 2279, 5036]. **Alpha** [2985, 3386, 2877, 3507, 3341]. **alphabetical** [101]. **Alps** [6785]. **also** [2961]. **Alternanten** [767]. **Alternate** [4415]. **alternating** [3633]. **Alternative** [1279, 6654, 6532, 6898, 6359, 961, 574, 6320, 4630]. **Alternatives** [4298, 1142, 6416, 3129, 4593, 4709]. **Alto** [7312, 7298]. **ALU** [4292, 5457, 5654, 6383, 2095, 1902, 1659, 5769, 2033, 1798, 2844]. **ALUs** [2166]. **always** [6115]. **am** [1652, 7129, 2609]. **Am25S05** [620]. **Am29000** [2263]. **Am29027** [2263]. **Am29050** [2570]. **Am29C327** [2314]. **Am9511A** [1380]. **Am9511A/Am9512** [1380]. **Am9512** [1270, 1380]. **ambiguity** [4943]. **AMD** [6832, 6498, 4034, 3917, 4076, 3927, 3928, 4090, 4261]. **AMD-K7**^{TM} [4076, 3928]. **AMD5** [3913]. **ameliorating** [1037]. **amélioration** [4307]. **America** [23]. **American** [2039, 7132, 7067, 2855, 31]. **Amherst** [7495]. **Amidst** [6769]. **Among** [1221, 4071]. **amount** [4020]. **Amounts** [3734, 3875, 4002]. **amplifier** [2220]. **Amplifiers** [184]. **Amplifying** [1718]. **Amsterdam** [7435, 7500]. **AN-Codes** [4342]. **AN/UYK** [838]. **AN/UYK-17** [838]. **Anaheim** [7164, 7192, 7220]. **Analog** [462, 111, 4184, 3593, 139, 140, 230, 113, 232, 443, 369, 4091, 132, 150, 4135, 2888, 4842, 4032, 689, 4905, 1687, 3690, 2309]. **Analog-To-Digital** [4135, 4184, 4842, 3690]. **Analogrechenschaltungen** [547]. **analogue** [547, 1063, 3205]. **analogue-to-digital** [3205]. **Analyse** [5682, 40, 7093]. **Analyses** [4347, 3895, 1466, 2814]. **Analysis** [602, 2169, 7114, 152, 4290, 1803, 5115, 7278, 6625, 6462, 4304, 6463, 6232, 3396, 6628, 171, 5677, 5470, 1584, 2331, 2664, 5681, 1588, 2670, 1385, 1017, 6750, 7252, 6134, 3864, 6642, 6491, 2351, 6378, 6973, 818, 4834, 7146, 112, 5702, 4838, 5704, 5816, 2894, 3083, 6512, 6513, 126, 4546, 2220, 7499, 4034, 6663, 396, 3274, 7169, 2909, 6161, 2389, 397, 627, 2724, 2912, 742, 1138, 1045, 399, 6286, 6679, 3775, 831, 5743, 6176, 6542, 6788, 2746, 1147, 6307, 4398, 355, 913, 5046, 6085, 5331, 2765, 1898, 763, 836, 4884, 2962, 1056, 1661, 4081, 987, 1155, 1906, 4897, 5760]. **Analysis** [1536, 2795, 705, 6807, 7024, 5850, 5341, 5765, 2457, 4267, 784, 38, 42, 3678, 931, 2990, 3510, 1070, 1341, 2812, 2813, 7068, 5209, 6704, 6333, 2822, 3828, 6596, 1474, 7131, 216, 5223, 7431, 7093, 2845, 2846, 411, 2630, 2170, 5454, 1947, 2040, 3548, 495, 1488, 1089, 1189, 1368, 1807, 2180, 2497, 2181, 4299, 5797, 3717, 1582, 1720, 2662, 3403, 6361, 3050, 40, 422, 1827, 2063, 3061, 6251, 2205, 465, 4682, 4990, 4007, 4686, 505, 3425, 3583, 225, 510, 6042, 5811, 4996, 5143, 2371, 2706, 7147, 3595, 2219, 308, 824, 2079, 1744, 3265, 3266, 5717, 5298, 1982, 5719, 7103]. **analysis** [5906, 3279, 472, 3282, 6065, 628,

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3397, 2050, 1718, 6023, 2501, 2051, 727, 2328, 5249, 5875, 6127, 105, 1266, 1267, 1376, 6471, 4312, 4794, 4968, 6358, 6629, 6966, 3555, 6474, 2503, 5468, 247, 6360, 864, 5676, 171, 3227, 3402, 1497, 1498, 5384, 5124, 6633, 2659, 1583, 5570, 2663, 3561, 4317, 5471, 5802, 6852, 1270, 2666, 2667, 2668, 5959, 6025, 6240, 3051, 3980, 1724, 2509, 730, 1196, 1385, 1501, 1502, 1725, 1824, 2202, 2339, 3053, 3983, 6131, 3985, 1197, 1198, 1274, 1387, 1726, 5881, 3862, 3989, 5127]. **Floating** [5259, 5479, 5480, 2869, 4320, 4803, 3410, 3411, 3570, 2061, 2062, 3413, 3726, 6138, 6134, 3571, 3864, 3866, 4325, 6752, 2344, 2513, 2514, 6642, 3995, 3996, 4327, 2204, 4812, 616, 2346, 2879, 3242, 4334, 4520, 4522, 4673, 4815, 5887, 5888, 6032, 6757, 6137, 1964, 5265, 4677, 6869, 5267, 5135, 6491, 3732, 4338, 6760, 1965, 2065, 501, 6140, 3874, 1732, 1832, 2883, 2885, 1967, 5394, 504, 1394, 1833, 6379, 6648, 4526, 5275, 5491, 3421, 3736, 4006, 4172, 3248, 5492, 1837, 4686, 6143, 2211, 1278, 6763, 6764, 962, 1511, 3422, 1203, 6496, 1513, 4687, 6144, 5581, 4178, 6975, 821, 2213, 6497]. **Floating** [6649, 6976, 4993, 5809, 1279, 2214, 2889, 4528, 2697, 5696, 2524, 3251, 3739, 227, 228, 1607, 1970, 5497, 823, 877, 4018, 5812, 880, 1284, 6768, 1740, 2368, 2700, 2701, 4695, 965, 5396, 5900, 6255, 6652, 966, 1032, 1402, 1609, 6653, 4347, 4536, 5502, 306, 1610, 307, 677, 2217, 2218, 2372, 1848, 1849, 4184, 6978, 5705, 5706, 2707, 6151, 6259, 6260, 6261, 6770, 4843, 3745, 969, 391, 392, 3432, 3750, 4025, 4187, 4188, 5147, 5287, 3884, 6506, 3255, 2534, 1035, 1036, 3599, 3085, 6772, 5585, 1615, 1975, 1296, 435, 6659, 4356, 970, 6514, 3440, 5511, 2536]. **Floating** [5712, 1298, 2538, 2712, 2902, 6155, 6661, 6270, 1300, 1409, 5296, 5818, 3887, 1131, 6158, 1618, 5152, 3890, 6519, 1860, 1861, 1862, 2086, 2087, 6520, 6985, 4206, 5157, 5721, 6664, 3096, 3097, 4201, 3273, 342, 1864, 4205, 5154, 5586, 6062, 2907, 5904, 3098, 3099, 5724, 6273, 5516, 5727, 5729, 5905, 5907, 6274, 6400, 4038, 4363, 3892, 5517, 1303, 1626, 1221, 2391, 6164, 6278, 6670, 255, 6280, 1627, 5910, 6165, 626, 344, 1223, 1307, 1416, 1986, 2913, 3759, 3893, 3894, 4210, 4364, 4552, 4851, 4852, 5013, 5403, 4367, 3761, 742, 745, 3283, 5300, 3284, 1870, 5733, 2545, 6529, 1750, 890, 1041, 258]. **Floating** [2546, 3287, 5520, 827, 4218, 3455, 2407, 2920, 2921, 1138, 5305, 5306, 5823, 4376, 3768, 750, 751, 893, 1987, 4558, 895, 1045, 752, 6067, 5825, 5913, 3291, 6536, 6537, 6887, 6888, 6285, 6286, 4563, 4864, 6676, 6071, 6168, 6289, 6291, 5170, 1636, 6074, 5028, 2103, 349, 2417, 2740, 2742, 2929, 6170, 4566, 4866, 5031, 6171, 6294, 6539, 6787, 1528, 440, 5314, 5315, 6994, 6996, 6175, 1141, 6415, 2105, 5174, 5980, 6416, 831, 904, 1430, 570, 5742, 6176, 3295, 2934, 2935, 2245, 2424, 6302, 6545, 2746, 1889, 4880, 2555, 94, 6547, 1759, 639, 686, 2557, 5924, 3639, 979, 6419, 1640, 2753]. **Floating** [7001, 1642, 6178, 3127, 5835, 6791, 4577, 525, 576, 910, 1147, 3783, 5749, 402, 2562, 1148, 4398, 6897, 6308, 1998, 6309, 3471, 3136, 5605, 4399, 7004, 7052, 982, 2253, 5531, 5324, 3786, 449, 5985, 5986, 6312, 6313, 6314, 6556, 6557, 362, 2432, 5533, 1531, 1763, 6181, 641, 1895, 2116, 2256, 2436, 2437, 3141, 5049, 5609, 6183, 6422, 1437, 3914, 1151, 2117, 2765, 7014, 4406, 2443, 2444, 6424, 6560, 6688, 5927, 915, 5056, 5928, 5992, 3790, 5183, 5332, 7013, 3481, 2774, 4077, 3651, 3653, 3655, 3793, 3794, 4076, 5059, 2569, 2962, 2570, 5930, 4413, 2777, 2778, 5418, 7016, 2003]. **Floating** [644, 1058, 1324, 2573, 2262, 4252,

6189, 645, 6694, 1156, 1234, 1326, 5932, 5993, 5613, 2127, 7019, 701, 4255, 4421, 5994, 2266, 2785, 2786, 3152, 2007, 6565, 5538, 837, 2789, 2973, 1772, 6098, 2582, 3155, 4897, 5614, 5425, 5426, 2008, 6429, 6430, 2272, 991, 2976, 2273, 1238, 3669, 6192, 2274, 993, 3158, 2275, 4603, 5615, 2276, 6194, 2797, 5066, 5434, 5435, 5617, 5937, 4261, 6697, 6435, 1540, 6326, 1679, 453, 1680, 6327, 3930, 3931, 5068, 1543, 4093, 2594, 1454, 1775, 4908, 5070, 5342, 2282, 4101, 4267, 4437, 4750, 5071, 5766, 4610, 5073, 2983, 1685, 7029, 1776, 5627, 5852, 2595, 3680]. **Floating** [4912, 2461, 269, 212, 2147, 2984, 2017, 5769, 1546, 2463, 787, 1686, 2805, 2990, 3178, 3179, 3180, 3342, 3685, 3686, 2287, 5942, 6202, 6926, 3343, 6103, 6104, 6577, 2020, 2021, 1689, 1690, 2995, 5943, 2601, 4913, 5201, 5202, 5203, 5204, 5439, 5440, 5441, 5442, 5443, 2809, 2996, 843, 1338, 1458, 1459, 1785, 5544, 3940, 3941, 5084, 1340, 2291, 4112, 2025, 5855, 4270, 6203, 3943, 1786, 5546, 2470, 2607, 2608, 3002, 5087, 5088, 1465, 5547, 6704, 1789, 5211, 5355, 3517, 4920, 6106, 6590, 4120, 592, 3347, 4454, 6333, 6002, 7036, 6440, 1072, 5356, 2027, 3826, 848, 5357, 5548, 2822, 3190]. **Floating** [3518, 2824, 6706, 3350, 6334, 2826, 2827, 1349, 5091, 1075, 5549, 5857, 3695, 1350, 3829, 3193, 6208, 6441, 6442, 2299, 3947, 215, 6342, 1469, 1701, 2617, 1702, 5097, 5220, 5364, 5365, 5556, 5557, 5638, 5641, 6444, 1556, 1354, 1471, 1472, 1473, 1474, 3951, 2033, 5778, 7038, 2034, 3011, 3012, 5947, 216, 3201, 2302, 6210, 2836, 4280, 6111, 134, 1797, 5223, 5948, 2625, 799, 1357, 3019, 1706, 3529, 5371, 5781, 4135, 948, 1941, 6711, 6824, 6825, 5950, 6605, 5104, 5560, 5645, 5105, 5372, 5229, 6607, 5576, 5690, 5884, 4622, 6337, 4278, 1937, 2172, 3375, 5373, 662, 2851, 1943, 1944]. **floating** [6446, 3956, 1564, 5648, 6212, 3023, 3705, 3841, 5453, 5454, 6012, 6115, 6013, 720, 296, 1485, 2492, 2634, 3029, 3214, 3380, 3381, 3382, 3383, 4487, 6348, 6455, 6456, 6952, 2493, 1085, 1010, 5653, 1800, 2312, 1801, 1802, 1362, 2314, 1569, 1570, 2041, 2315, 4780, 6119, 4144, 1487, 2496, 2861, 3037, 5566, 5871, 2043, 1368, 1807, 2180, 2497, 2181, 5872, 4299, 2045, 2319, 6956, 2643, 3221, 3039, 2320, 4302, 5239, 5240, 1091, 2182, 1370, 2323, 5797, 4784, 2498, 1190, 5120, 3851, 2324, 6229, 2325, 2186, 2646, 2647, 3045, 1813, 4307, 4502, 4651, 4787, 4788, 4789]. **floating** [5121, 5243, 5957, 6231, 3717, 1716, 299, 2187, 666, 5246, 5568, 4310, 3852, 1015, 4792, 5381, 5569, 6963, 7045, 2188, 1016, 1193, 6357, 5801, 6630, 3226, 4969, 3556, 1815, 2190, 2656, 6359, 1954, 6475, 1377, 6476, 3401, 6238, 1378, 4799, 4970, 2661, 3228, 379, 1585, 6361, 3855, 4973, 1818, 2056, 2665, 3723, 3857, 5878, 1380, 1722, 2200, 2335, 4508, 5476, 3978, 3979, 5960, 4801, 4802, 3982, 1589, 5478, 5684, 6132, 4161, 2674, 1104, 1961, 3988, 4669, 4515, 421, 5481, 3412, 5686, 2342, 2870, 2871, 2872, 3865, 3994, 3237, 6248, 2679, 6249, 5390, 5391, 959, 1276, 2681, 6371]. **floating** [5963, 5691, 3059, 2878, 3241, 3416, 4521, 4674, 4814, 6136, 6034, 3997, 3061, 249, 4818, 5134, 5264, 4335, 961, 4524, 5577, 6645, 5136, 2516, 5269, 2517, 4983, 2348, 4168, 2882, 5270, 2205, 502, 1733, 1734, 2884, 4000, 1202, 5272, 5137, 5489, 734, 1116, 4989, 4173, 4174, 6876, 4684, 4685, 5580, 1512, 1968, 2360, 1736, 1969, 819, 508, 3737, 1204, 5279, 1029, 6254, 2890, 2364, 4832, 6650, 4691, 5811, 4692, 282, 3076, 3252, 4694, 4835, 3077, 2526, 621, 879, 1030, 1208, 1283, 1739, 3428, 2892, 3078, 1031, 2702, 1843, 5499, 1844, 2530, 1845, 5700, 2370, 4838, 4839, 1846].

floating [5397, 5972, 6048, 6501, 1287, 2371, 252, 178, 3881, 2375, 1850, 4350, 4842, 3882, 2532, 4021, 6657, 6658, 3080, 4022, 5001, 3593, 5817, 6980, 4023, 4539, 4698, 6505, 2894, 2895, 3595, 6388, 3083, 3434, 3596, 1291, 1407, 1213, 1974, 3598, 2219, 3435, 1408, 1297, 3260, 3090, 4029, 2220, 4547, 2900, 2535, 3091, 2711, 5292, 5293, 1744, 2903, 6393, 6518, 6662, 5714, 2084, 5715, 516, 826, 1215, 2383, 5717, 681, 2385, 1218, 1863, 1746, 3275, 3608, 5155, 5156, 5158, 5512, 2223, 2224, 4033, 4550, 3607, 1133, 1219, 1866, 2386, 4705, 5903, 2906, 5725, 5726, 1624, 3278, 5974, 6162, 6275, 6276]. **floating** [6399, 201, 2088, 3611, 6403, 2227, 2911, 3102, 3279, 5975, 2229, 2395, 2396, 2230, 3103, 2092, 2093, 3449, 3614, 3615, 4209, 4211, 5731, 4707, 2915, 3281, 3451, 3617, 3282, 6065, 628, 473, 744, 2399, 2400, 2401, 2402, 746, 747, 1224, 2235, 2097, 1632, 311, 520, 4858, 4859, 2734, 1225, 1226, 2406, 2408, 2409, 1751, 1874, 1527, 1752, 5594, 6782, 3623, 3900, 4377, 3115, 3290, 4862, 5596, 2924, 3456, 5307, 829, 897, 973, 1993, 4221, 5914, 6069, 4863, 2551, 3292, 899, 975, 2926, 6991, 2241, 2242, 5916, 6408, 6288, 3903, 3904, 5827, 5171, 7050, 6173, 755, 2741, 2928, 3117, 4565]. **floating** [5830, 6075, 5978, 5920, 4867, 3776, 4391, 4571, 351, 4573, 3907, 4868, 524, 571, 5600, 1757, 5318, 3630, 5601, 5922, 1638, 5320, 5321, 4229, 5982, 4870, 6546, 2247, 1050, 1995, 1313, 2941, 3637, 573, 640, 757, 758, 401, 688, 689, 574, 5983, 2249, 4872, 1996, 1997, 980, 909, 3126, 1434, 2561, 4578, 4722, 6082, 3129, 2251, 2114, 2756, 5043, 2252, 5323, 3135, 6683, 7003, 1646, 1647, 1648, 695, 2563, 5750, 5838, 3473, 5325, 4879, 5045, 5327, 5328, 5329, 5413, 5532, 6899, 2564, 1999, 3913, 5048, 5415, 319, 1894, 2255, 2435, 2438, 2762, 3647, 5988, 2954, 2955, 917, 7010, 2441]. **floating** [2442, 984, 4242, 3309, 4729, 2259, 3144, 6186, 3310, 3311, 3919, 2446, 3795, 4888, 6910, 3316, 580, 4889, 5333, 5844, 6188, 480, 4244, 3146, 3147, 5334, 5536, 6094, 5845, 985, 4247, 4082, 4250, 5756, 765, 986, 3798, 4083, 4735, 3323, 6096, 4892, 1327, 2004, 5757, 2263, 208, 700, 989, 2264, 2968, 2265, 3800, 7020, 2267, 2579, 3325, 526, 7021, 3492, 2268, 7058, 2583, 2791, 2975, 4898, 2271, 3328, 4086, 5760, 2451, 2586, 2795, 2587, 2588, 1773, 2135, 1332, 921, 922, 5063, 6805, 992, 528, 1240, 1241, 1333, 706, 1062, 2977, 1063, 3329, 1677, 483, 4904, 3496, 773, 5934, 5619]. **floating** [5620, 5847, 6197, 5763, 3927, 3928, 4090, 1336, 4905, 4605, 1913, 3159, 107, 5764, 5623, 6436, 997, 2978, 2457, 3929, 5624, 3672, 3332, 776, 2013, 2279, 2593, 2141, 7025, 4906, 6000, 709, 710, 3170, 3810, 4102, 4749, 5541, 2459, 3932, 4438, 4910, 4911, 5767, 3934, 3677, 2799, 2800, 2981, 2982, 2801, 3339, 3175, 2284, 3679, 3812, 4611, 926, 3176, 3505, 2016, 3506, 1065, 3936, 5197, 4109, 4439, 6700, 3813, 2466, 1688, 1921, 2994, 4613, 2288, 1169, 2467, 2468, 4440, 4441, 4615, 5078, 5079, 5080, 5205, 5206, 5347, 5348, 5349, 5350, 1784, 1460, 292, 1461, 2024, 4757]. **floating** [3689, 4115, 375, 323, 4759, 845, 2817, 2818, 3186, 3187, 5086, 1928, 3690, 147, 1464, 1787, 1930, 2294, 1934, 1788, 3003, 5210, 6331, 3004, 1696, 846, 3346, 4451, 4921, 1071, 3348, 1346, 4121, 4276, 1791, 3692, 1792, 1697, 1936, 4124, 4277, 2029, 941, 6335, 4924, 4925, 715, 794, 3693, 1793, 2615, 2476, 2478, 4457, 4458, 2031, 5218, 1351, 2829, 2160, 492, 3196, 2481, 849, 3949, 2484, 3007, 4766, 4930, 5219, 5366, 5777, 6209, 2485, 1795, 1703, 1355, 1796, 540, 541, 542, 2162, 2301, 5098, 795, 2486, 2487, 1255, 294, 1704, 2163, 3202, 3365, 1938, 1559, 2304, 2488, 1356].

floating [2621, 4128, 1798, 1560, 4933, 5225, 5559, 5779, 947, 2624, 4130, 4281, 4934, 4935, 5780, 598, 797, 2841, 6939, 194, 2843, 2307, 2489, 2845, 2846, 3205, 3836, 7056, 5227, 4940, 4941, 5106, 5108, 4632, 4772, 4773, 2309, 6717, 6944, 5130, 2345, 2682, 1252, 6466, 1731, 3891, 4865, 1884, 3644, 3188, 2298, 2299, 2300, 2479, 2480, 1475, 5575, 995]. **floating-** [5373, 5878]. **Floating-Decimal** [134]. **Floating-Point** [2039, 6953, 3954, 2629, 4635, 4945, 5233, 5785, 5562, 4636, 6949, 4946, 3958, 6450, 6950, 6214, 4641, 5114, 6347, 6349, 6618, 6951, 5651, 5652, 5791, 5792, 5868, 6730, 4956, 3388, 3965, 4146, 4147, 4148, 1949, 4496, 2322, 6733, 2499, 3716, 5663, 860, 1014, 1094, 2047, 2649, 2864, 5244, 5665, 5873, 6020, 6021, 6022, 6354, 6736, 3396, 3397, 2050, 6023, 2501, 2051, 727, 2328, 5875, 6127, 1266, 1267, 1376, 4312, 6358, 6629, 6966, 3555, 6474, 5468, 247, 864, 5676, 3227, 3402, 5124, 6633, 2659, 1583, 5570, 2663, 3561, 4317, 5471, 5802, 6852, 1270, 6240, 730, 1385, 1502, 1725]. **Floating-Point** [2339, 3053, 3983, 6131, 3985, 1198, 1274, 1726, 5881, 3862, 3989, 5127, 5259, 5479, 5480, 2869, 4320, 3410, 3411, 3570, 2061, 6138, 6134, 4325, 6752, 2513, 2514, 6642, 4327, 4812, 616, 5887, 5888, 6032, 6757, 6869, 5267, 5135, 6491, 4338, 1965, 2065, 6140, 3874, 1732, 2883, 2885, 5394, 504, 6648, 4526, 5275, 5491, 3421, 4006, 4172, 1837, 6143, 2211, 1278, 6763, 6764, 1511, 6144, 4178, 6975, 2213, 6497, 4993, 5809, 1279, 2214, 2889, 4528, 5696, 3739, 1970, 5497, 877, 4018, 880, 1284, 6768, 2700, 2701, 4695, 5396, 5900, 6255, 6652, 1402, 1609, 6653, 4347, 4536]. **Floating-Point** [5502, 306, 2217, 2218, 2372, 1849, 4184, 6978, 5706, 6770, 4843, 969, 391, 392, 5287, 3884, 2534, 6772, 5585, 1975, 970, 6514, 2538, 2712, 2902, 6155, 6270, 1300, 5296, 5818, 3887, 1131, 6158, 1618, 6519, 1860, 1861, 1862, 2086, 2087, 6520, 5157, 5721, 6664, 3096, 3097, 4201, 342, 5586, 6062, 5904, 5516, 5727, 5729, 5905, 5907, 6274, 6400, 4363, 3892, 5517, 1221, 6164, 6278, 6670, 1627, 5910, 6165, 344, 1223, 1307, 1416, 1986, 2913, 3759, 3893, 3894, 4210, 4364, 4552, 4851, 4852, 5013, 5403, 4367, 3761, 742, 745, 5300, 1870, 2545, 6529, 890, 1041, 3287, 5520, 827, 2407, 2921, 5305]. **Floating-Point** [5306, 5823, 3768, 750, 751, 893, 1045, 5913, 3291, 6536, 6537, 6887, 6888, 6286, 6168, 6291, 6074, 5028, 2742, 6170, 4866, 5031, 6171, 6294, 6539, 1528, 440, 5314, 5315, 6994, 6996, 2105, 5174, 5980, 831, 904, 1430, 570, 5742, 6176, 3295, 2934, 2935, 2245, 2424, 6302, 2746, 4880, 2555, 6547, 639, 686, 2557, 5924, 6419, 1640, 2753, 7001, 5835, 6791, 4577, 525, 576, 1148, 3471, 5605, 4399, 7004, 7052, 982, 5531, 5324, 2432, 5533, 1763, 6181, 641, 1895, 2116, 2256, 2436, 2437, 3141, 5049, 5609, 6183, 6422, 1151, 2765, 2443, 2444, 6424, 6560, 6688, 915, 5056, 5183]. **Floating-Point** [5332, 2774, 4077, 3653, 3655, 3793, 2962, 5930, 2777, 2778, 5418, 7016, 2003, 644, 1324, 2573, 2262, 6694, 5993, 7019, 701, 4255, 5994, 2785, 2786, 3152, 6565, 5538, 4897, 5614, 5425, 5426, 6430, 2272, 2273, 1238, 3669, 6192, 2274, 993, 3158, 2275, 4603, 2276, 2797, 5066, 5434, 5435, 5617, 5937, 6697, 6435, 1680, 6327, 3931, 1543, 4093, 1454, 1775, 4908, 5070, 5342, 4437, 4750, 5071, 5766, 5073, 2983, 7029, 5627, 5852, 3680, 2461, 212, 2984, 2805, 2990, 3178, 3179, 3342, 3685, 3686, 2287, 5942, 6202, 6926, 6103, 6104, 6577, 2020, 2995, 2601, 4913, 1458, 1459, 1785, 5544, 5084, 1340, 5855]. **Floating-Point** [1786, 5546, 2470, 2607, 2608, 3002, 1465, 5547, 6704, 1789, 3517, 4920,

6106, 6590, 4120, 592, 3347, 6333, 6002, 7036, 5356, 2027, 848, 5548, 2822, 3518, 2824, 6706, 3350, 6334, 5857, 3829, 3193, 6208, 6442, 2299, 215, 1469, 1701, 2617, 5097, 5220, 5364, 5365, 5556, 5557, 5641, 1354, 2033, 3012, 216, 3201, 2302, 6210, 5223, 2625, 799, 3019, 1706, 5371, 4135, 6824, 6825, 6605, 5104, 5560, 5645, 5105, 5372, 5229, 6607, 5690, 5884, 4622, 6337, 4488, 6947, 4483, 2170, 2171, 416, 3215, 1947, 4296, 6464, 2326, 6960, 6961, 1578, 1579, 1718, 5249, 6471, 4794, 4968, 2503, 6360, 2666, 2667, 2668]. **Floating-point** [5959, 6025, 1501, 1824, 2202, 2062, 3726, 5265, 4677, 1394, 4686, 2524, 2368, 307, 3745, 5147, 1296, 5511, 1298, 3890, 6985, 4206, 4205, 4038, 3283, 258, 2920, 4558, 895, 6067, 6285, 4563, 4864, 6676, 2417, 6787, 6415, 1759, 3639, 979, 3127, 6897, 6308, 2253, 3914, 2117, 2570, 5613, 2007, 2008, 6194, 3930, 4267, 4912, 2147, 2463, 2291, 2025, 4270, 6203, 3826, 5357, 3190, 2826, 2827, 1075, 3695, 1350, 6441, 1471, 1472, 1473, 1474, 5948, 6711, 5576, 1937, 2172, 3375, 2851, 3956, 1564, 6212, 5454, 6115, 720, 1485, 2634, 3029, 3380, 3381, 3382, 4487, 6348, 6455, 2493, 1085, 5653]. **floating-point** [1800, 2312, 1801, 1802, 6119, 4144, 2861, 3037, 5566, 5871, 5872, 2319, 6956, 2643, 2320, 4302, 5239, 5240, 2182, 2323, 5797, 4784, 5120, 2325, 2186, 2646, 3045, 1813, 4307, 4787, 4788, 5121, 5957, 6231, 3717, 2187, 5246, 5568, 4310, 1015, 4792, 5381, 5569, 6963, 2188, 1016, 1193, 6357, 5801, 6630, 3226, 4969, 2190, 6475, 1377, 3401, 4970, 1585, 6361, 4973, 2056, 2665, 3857, 4508, 3979, 3982, 1589, 5478, 5684, 6132, 1961, 3988, 4669, 5481, 2342, 2870, 2871, 2872, 3994, 6249, 5390, 5391, 2681, 6371, 5691, 3059, 4521, 3997, 3061, 249, 4818, 5134, 5264, 4335, 961, 4524, 5136]. **floating-point** [4983, 2348, 4168, 2882, 5270, 502, 1733, 1734, 5272, 734, 1116, 4174, 6876, 1968, 1736, 1969, 819, 508, 5279, 1029, 6254, 2890, 2364, 4832, 6650, 4691, 4694, 4835, 3077, 621, 879, 1030, 1208, 1283, 1739, 3428, 2892, 3078, 1843, 5499, 1844, 2530, 1845, 5700, 4838, 4839, 5972, 6048, 6501, 1287, 252, 178, 1850, 4350, 4842, 6657, 6658, 5001, 3593, 5817, 4023, 4539, 4698, 2894, 2895, 3434, 3596, 1407, 1213, 1974, 3435, 3260, 4547, 2535, 5292, 5293, 1744, 6393, 6518, 6662, 5714, 2084, 5715, 1215, 5717, 2385, 1218, 1863, 1746, 3608, 5156, 5158, 5512, 2223, 2224, 4033, 1133, 1219, 1866]. **floating-point** [4705, 5903, 2906, 5725, 5726, 1624, 5974, 6162, 6275, 6276, 6399, 2229, 2395, 2396, 3103, 2092, 2093, 3449, 3614, 3615, 4209, 4211, 5731, 4707, 2915, 3281, 3451, 3282, 628, 473, 744, 2399, 2400, 2401, 2402, 4858, 2734, 2406, 2408, 2409, 1527, 1752, 5594, 6782, 3623, 3900, 4862, 5596, 3456, 829, 897, 973, 4221, 5914, 6069, 4863, 2551, 3292, 6991, 2241, 2242, 5916, 6408, 6288, 3903, 3904, 5827, 6173, 755, 2741, 2928, 3117, 4565, 6075, 5978, 5920, 4867, 4391, 4571, 4573, 3907, 4868, 524, 571, 5600, 1757, 5318, 5601, 5922, 1638, 4229, 5982, 4870, 6546, 1050, 1995, 573, 640, 757, 758]. **floating-point** [401, 688, 574, 5983, 4872, 1996, 1997, 1434, 6082, 2251, 2114, 2756, 5043, 5323, 1647, 1648, 695, 2563, 5750, 5838, 3473, 5325, 4879, 5045, 5327, 5328, 5329, 5413, 5532, 6899, 2564, 1999, 3913, 5048, 5415, 1894, 2255, 2435, 2438, 2762, 3647, 5988, 2954, 2955, 7010, 2441, 2442, 984, 4242, 4729, 2259, 3144, 6186, 3311, 3919, 6910, 4889, 5333, 5844, 6188, 480, 4244, 3146, 5334, 5536, 5845, 985, 5756, 986, 3798, 4083, 4735, 4892, 5757, 2263, 700, 989, 2264, 2968, 3800, 7020, 2267, 2579, 3325, 2583, 2791, 2975, 4898, 4086, 1332, 921, 922, 5063, 6805,

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pixel-level [4130]. **pixels** [3327]. **PL** [562, 6935]. **PL-NPU** [6935]. **PL/I** [562]. **PLA** [2358, 2521]. **Place** [7134, 7239, 6098, 3257]. **placement** [3533]. **Places** [1630]. **plain** [6507]. **Plains** [7204]. **PLAM** [6903]. **Plane** [294]. **planes** [4509]. **planetary** [2584]. **Planning** [246, 63, 64, 65, 66, 67, 68]. **PLAs** [1180]. **Platform** [4641, 5763, 4618]. **platforms** [5185]. **PLAUs** [7007]. **Plaza** [7160]. **pLiner** [6658]. **PLL** [5767]. **PLM** [985]. **plotter** [528]. **plotting** [5196]. **Plovdiv** [7278]. **Plug** [1997]. **Plug-in** [1997]. **Plus** [6123, 5741, 5919, 1765, 4452, 4453]. **Plus-Minus** [6123]. **PLX** [4934, 4935]. **PMNS** [6868, 6870]. **PNCL** [1389]. **PNU** [6632]. **PNU-IP** [6632]. **Pocket** [931]. **Pod** [6910]. **Pod-racing** [6910]. **Point** [2039, 6953, 3954, 2629, 5784, 2036, 6448, 4635, 4945, 5233, 5785, 6009, 6114, 6612, 4482, 5562, 4636, 3839, 6831, 6949, 4485, 4946, 217, 3958, 5649, 6213, 6450, 6950, 6214, 5863, 1484, 2852, 2853, 2854, 3024, 3025, 3026, 3027, 3028, 3211, 3212, 3213, 3538, 4641, 5112, 5114, 6014, 6347, 6349, 6618, 6951, 5789, 5651, 5652, 5791, 5792, 169, 1803, 5115, 5868, 6730, 2316, 4956, 1367, 1808, 3387, 5956, 1012, 3388, 3389, 3965, 4146, 4147, 4148, 1949, 4496, 2322, 4303, 1950, 6733, 1576, 2499, 3716, 5663, 860, 1014, 1094, 2047, 2649, 2864, 4503, 4504, 5244, 5665, 5873]. **Point** [6020, 6021, 6022, 6354, 6626, 6736, 3395, 3396, 3397, 2050, 6023, 2501, 2051, 727, 2328, 5875, 6127, 1266, 1267, 1376, 4312, 6358, 6629, 6966, 3555, 6474, 5468, 247, 864, 5676, 171, 3227, 3402, 1497, 1498, 5384, 5124, 6633, 2659, 1583, 5570, 2663, 3561, 4317, 5471, 5802, 6852, 1270, 6240, 6365, 3980, 1724, 2509, 730, 1196, 1385, 1502, 1725, 2339, 3053, 3983, 6131, 3985, 1197, 1198, 1274, 1387, 1726, 5881, 3862, 3989, 5127, 5259, 5479, 5480, 2869, 4320, 3410, 3411, 3570, 2061, 3413, 6138, 6134, 3571, 3864, 3866, 4325, 6752, 2344, 2513, 2514, 6642, 3995, 3996, 4327, 2204, 4812, 616]. **Point** [2346, 2879, 3242, 4334, 4520, 4522, 4673, 4815, 5887, 5888, 6032, 6757, 6137, 1964, 6869, 5267, 1731, 5135, 6491, 5392, 3732, 4338, 6760, 1965, 2065, 501, 6140, 3874, 1732, 2883, 2885, 1967, 5394, 504, 1833, 6379, 6874, 6648, 4526, 5275, 5491, 3421, 3736, 4006, 4172, 3248, 5492, 1837, 6143, 2211, 1278, 6763, 6764, 962, 1511, 3422, 1203, 6496, 1513, 6144, 5581, 4178, 6975, 2213, 6497, 4993, 5809, 1279, 2214, 2889, 4528, 2697, 5696, 4343, 3251, 3739, 227, 228, 1607, 1970, 5497, 823, 877, 4018, 880, 1284, 6768, 1740, 2700, 2701, 4695, 965, 5396, 5900, 6255, 6652, 966]. **Point** [1032, 3880, 1402, 1609, 6653, 4347, 4536, 5502, 306, 677, 2217, 2218, 2372, 1848, 1849, 4184, 6978, 5705, 5706, 2707, 6151, 6259, 6260, 6261, 6264, 6770, 4843, 341, 969, 391, 392, 3432, 4025, 4187, 4188, 5287, 3884, 6506, 2534, 1035, 3599, 3085, 6772, 5585, 1615, 1975, 435, 6659, 4356, 970, 6514, 2536, 5712, 2538, 2712, 2902, 6155, 6661, 6270, 1300, 1409, 5296, 5818, 3887, 1131, 6158, 1618, 5152, 6519, 1860, 1861, 1862, 2086, 2087, 6520, 5157, 5721, 6664, 3096, 3097, 4201, 3273, 342, 1864, 5154, 6272, 5586, 6062, 2907, 5904, 3098, 3099, 5724, 6273, 5516, 5727, 5729, 5905]. **Point** [5907, 6274, 6400, 4363, 3892, 5517, 1303, 1626, 1221, 2391, 6164, 6278, 6670, 255, 6280, 1627, 5910, 6165, 344, 1223, 1307, 1416, 1986, 2913, 3759, 3893, 3894, 4210, 4364, 4552, 4851, 4852, 5013, 5403, 4367, 3761, 742, 745, 5300, 1870, 5733, 2545, 6529, 1750, 890, 1041, 5302, 3287, 5520, 4371, 827, 4218, 3455, 2407, 2921, 5305, 5306, 5823, 4376, 3768,

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3228, 379, 1585, 2662, 6361, 3855, 4973, 1818, 2056, 2665, 3723, 3857, 5878, 1380, 1722, 2200, 2666, 2667, 2668, 5959, 6025, 2335, 3050, 4508, 5476, 3978, 3051, 3979, 5960, 4801, 4802, 3982, 1501, 1589, 1824, 2202, 5478, 5684, 6132, 4161, 2674, 1104, 1961, 3988, 4669, 4515, 421, 2062, 5481, 3412, 5686, 3726]. **point** [2342, 2870, 2871, 2872, 3865, 3994, 3237, 6248, 2679, 6249, 5390, 5391, 959, 1276, 2681, 6371, 5963, 5691, 3059, 2878, 3241, 3416, 4521, 4674, 4814, 6136, 6034, 3997, 3061, 249, 4818, 5134, 5264, 5265, 4335, 4677, 961, 4524, 5577, 6645, 5136, 2516, 5269, 2517, 4983, 2348, 4168, 2882, 5270, 2205, 502, 1733, 1734, 1832, 2884, 4000, 1202, 1394, 5272, 5137, 5489, 734, 1116, 4989, 4173, 4174, 6876, 4684, 4685, 5580, 4686, 1512, 1968, 2360, 1736, 4687, 1969, 735, 819, 508, 821, 3737, 6649, 6976, 1204, 5279, 1029, 2073, 6254, 2890, 2364, 4832, 2524, 6650, 4691, 5811, 4692, 282]. **point** [3076, 3252, 4694, 4835, 5812, 3077, 2526, 621, 879, 1030, 1208, 1283, 1739, 3428, 2368, 2892, 3078, 1031, 2702, 1843, 5499, 967, 1844, 2530, 1845, 5700, 2370, 4838, 4839, 1846, 5397, 5972, 6048, 6501, 1287, 1610, 2371, 252, 178, 307, 2706, 3881, 2375, 1850, 4350, 4842, 3882, 2532, 4021, 6657, 6658, 3080, 4022, 3745, 5001, 3593, 5817, 6980, 4023, 4539, 4698, 6505, 3750, 5147, 2894, 2895, 3255, 3595, 4191, 6388, 1036, 3083, 3434, 3596, 1291, 1407, 5006, 1213, 1974, 3598, 2219, 3435, 1408, 1296, 3260, 3090, 4029, 2220, 3440, 5511, 4547, 2900, 2535, 3091, 1298, 2711, 5292]. **point** [5293, 1744, 6660, 2903, 6393, 6518, 6662, 5714, 3265, 3266, 2084, 5715, 516, 2717, 826, 1215, 2383, 5717, 681, 2385, 3890, 1218, 1863, 6985, 1746, 3275, 3608, 4206, 5155, 5156, 5158, 5512, 2223, 2224, 4033, 4550, 5298, 3607, 1133, 4205, 1219, 1866, 2386, 4705, 5903, 2906, 5725, 5726, 1624, 3278, 5974, 6162, 6275, 6276, 6399, 2389, 201, 2088, 4038, 3611, 6403, 2227, 2911, 3102, 3279, 5975, 2229, 2395, 2396, 2230, 3103, 1985, 626, 2092, 2093, 3449, 3614, 3615, 4209, 4211, 5731, 4707, 2915, 3281, 3451, 3617, 3282, 6065, 628, 473, 744, 2399, 2400, 3283, 3284, 2401, 2402, 746, 747, 1224]. **point** [258, 5018, 2546, 2235, 2097, 1632, 311, 520, 4858, 4859, 2734, 1225, 1226, 2406, 2408, 2409, 2920, 1751, 1874, 1527, 1752, 5594, 6782, 3623, 3900, 4377, 3115, 3290, 1987, 4862, 5596, 4558, 895, 2924, 3456, 5307, 829, 897, 973, 1993, 6067, 4221, 5914, 6069, 4863, 2551, 3292, 899, 975, 2926, 6991, 2241, 2242, 6285, 5916, 6408, 4563, 4864, 6288, 6676, 3903, 3904, 5827, 5171, 7050, 6173, 349, 755, 2417, 2741, 2928, 3117, 4565, 5830, 6075, 5978, 5920, 6787, 4867, 3776, 4391, 4571, 351, 6415, 4573, 3907, 4868, 524, 571, 683, 5600, 1757, 5318, 3630, 5601, 5922, 1638, 5320, 5321, 4229, 5982, 4870]. **point** [6546, 2247, 1889, 1050, 1995, 1313, 1759, 2941, 3637, 573, 640, 757, 758, 401, 3639, 688, 689, 979, 574, 5983, 2249, 4872, 1996, 1997, 980, 909, 3126, 6178, 3127, 1434, 2561, 4578, 4722, 5749, 6082, 3129, 2251, 2114, 6897, 6308, 2756, 5043, 2252, 5323, 3135, 6683, 7003, 1646, 6684, 3138, 1647, 1648, 695, 2563, 2253, 5750, 5838, 3473, 5325, 4879, 5045, 5327, 5328, 5329, 5413, 5532, 6899, 2564, 1999, 3913, 5048, 5415, 319, 1894, 2255, 2435, 2438, 2440, 2762, 3647, 5988, 1437, 3914, 2117, 2954, 2955, 917, 5611, 7010, 5416, 2441, 2442, 984, 4242, 3309, 4729, 2959]. **point** [2259, 3144, 6186, 3310, 3311, 3919, 4076, 2446, 3795, 4888, 6910, 2570, 3316, 580, 4889, 5333, 5844, 6188, 480, 4244, 3146, 3147, 5334, 5536, 6094, 5845, 985, 4247, 4082, 4250, 5756, 765, 986, 3798, 4083, 4735, 3323, 6096, 4892, 645,

1327, 2004, 5757, 5613, 2263, 208, 700, 989, 2264, 2968, 2265, 3800, 7020, 2266, 2267, 2579, 3325, 2007, 526, 7021, 3492, 2268, 837, 7058, 2583, 2791, 2975, 4898, 2008, 2271, 3328, 4086, 5760, 2451, 2586, 2795, 2976, 2587, 2588, 1773, 2135, 1332, 921, 922, 5063, 6805, 992, 528, 1240, 1241, 1333, 706, 1062, 2977, 1063, 3329, 1677, 483, 4904, 3496]. **point** [773, 5934, 6194, 5619, 5620, 5847, 6197, 5763, 3927, 3928, 4090, 1336, 4905, 4605, 1913, 3159, 107, 5764, 5623, 6436, 997, 2978, 2457, 3929, 3930, 5624, 3672, 3332, 776, 2013, 2279, 2593, 2141, 7025, 4906, 6000, 780, 709, 710, 3170, 3810, 4102, 4749, 5541, 3932, 4267, 4438, 4910, 4911, 5767, 3934, 3677, 2799, 2800, 2981, 2982, 2801, 1685, 3339, 3175, 5941, 2284, 3679, 3812, 4611, 4912, 926, 3340, 3176, 3505, 2016, 3506, 2147, 1065, 3936, 5197, 1546, 2463, 787, 4109, 4439, 6700, 3813, 2466, 1688, 1921, 2994, 4613, 1690, 2288, 1169, 2467, 2468, 4440, 4441, 4615]. **point** [5078, 5079, 5080, 5201, 5202, 5203, 5204, 5205, 5206, 5347, 5348, 5349, 5350, 5439, 5440, 5441, 5442, 5443, 2809, 2996, 1784, 1460, 2291, 292, 1461, 2024, 2025, 4757, 3689, 4115, 375, 323, 4270, 4759, 845, 2817, 2818, 3186, 3187, 6203, 5086, 1928, 3690, 4760, 4118, 147, 1464, 1787, 1930, 2294, 1934, 1788, 3003, 5210, 6331, 3004, 1696, 846, 3346, 4451, 4921, 1071, 3348, 1346, 4121, 4276, 1791, 3692, 1792, 3826, 5357, 1697, 1936, 3190, 4124, 4277, 2029, 941, 6335, 2826, 2827, 4924, 4925, 715, 794, 3693, 1075, 5549, 1793, 2615, 2476, 2478, 3695, 4457, 4458, 1350, 2031, 6441, 5218]. **point** [1351, 2829, 2160, 492, 2481, 849, 1702, 3949, 2484, 3007, 4766, 4930, 5219, 5366, 5777, 6005, 6209, 2485, 1795, 1471, 1472, 1473, 1474, 1703, 1355, 1796, 540, 541, 542, 3951, 2162, 2301, 5098, 795, 2034, 2486, 2487, 1255, 294, 1704, 2163, 3202, 3365, 1938, 1559, 2304, 2836, 2488, 1356, 2621, 2622, 4128, 5222, 1798, 1560, 4933, 5225, 5559, 5779, 5948, 947, 2624, 4130, 4281, 4934, 4935, 7040, 5780, 598, 797, 1357, 2841, 6939, 194, 2843, 2307, 6711, 2489, 2845, 2846, 3205, 3836, 7056, 5227, 4940, 4941, 5106, 5108, 4632, 4772, 4773, 2309, 6717, 6944, 5130, 5576, 5885, 6030, 2345, 2682, 1252]. **point** [1937, 5575, 6466, 1731, 3891, 4865, 1884, 3188, 2298, 2299, 2300, 2479, 2480, 1475, 995]. **Point-Targeted** [6874]. **Point/Integer** [2344]. **point/logarithmic** [2294]. **Pointers** [3481]. **Points** [2051, 5800, 5729, 3662, 3956, 6964, 3644]. **Poisoning** [6831]. **Poland** [7352, 7501]. **Polar** [6603]. **Polish** [457]. **Polyhedra** [4001]. **Polyhedron** [3600, 4027]. **Polymath** [1321]. **Polymorphic** [901]. **Polynomapproximation** [768]. **Polynome** [1061]. **Polynomial** [4634, 4958, 6462, 6735, 3044, 5380, 6356, 5469, 4154, 5257, 5258, 4334, 6490, 279, 6037, 5138, 818, 426, 883, 3602, 5727, 3285, 5304, 1139, 6886, 1877, 5310, 5599, 4237, 4877, 6898, 476, 5752, 836, 916, 1443, 5187, 768, 4742, 1914, 2146, 372, 271, 4112, 7039, 2628, 4774, 415, 4495, 4648, 3040, 3041, 5242, 4654, 5248, 5383, 6028, 2207, 5137, 5489, 6765, 4828, 3585, 619, 5501, 561, 5719, 5587, 5730, 5908, 5410, 6890, 2110, 447, 3138, 983, 1233, 3487, 5338, 2005, 481, 4902, 2457, 1453, 5196, 2596, 2804, 2986, 2988, 4118, 4621, 4625, 3368, 3369, 3020, 1252]. **Polynomial** [4589]. **Polynomials** [5953, 6458, 4790, 420, 4318, 3999, 5967, 5274, 304, 6150, 1228, 3134, 766, 1456, 241, 2161, 4652, 4971, 5391, 4817, 6377, 6139, 1510, 1126, 1738, 4840, 5397, 1037, 6393, 6518, 6662, 259, 284, 4568, 1429, 6316, 6425, 2784, 5762, 6328, 192, 193, 4475, 6030, 768, 1061]. **Polyphase** [2340, 4798].

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1. Table 5 (page 124):

insert `k <-- 0` after assertion, and also delete `k <-- 0` from Table 6.

2. Table 9 (page 125):
   for `-1:USER!("");`
   substitute `-1:USER!("0");`
   and delete the comment.
3. Table 10 (page 125):
   for `fill(-k, "0")`
   substitute `fill(-k-1, "0")`

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- constraint propagation,
- solution sets of linear systems,
- hardware and software systems for interval computations, and
- fuzzy logic.

Actual applications described in the book include:

- economic input-output models,
- quality control in manufacturing design,
- a computer-assisted proof in quantum mechanics,
- medical expert systems,
- and others.

A realistic view of interval computations is taken: the articles indicate when and how overestimation and other challenges can be overcome. An introductory chapter explains the content of the papers in terminology accessible to mathematically literate graduate students. The style of

the individual, refereed contributions has been made uniform and understandable, and there is an extensive book-wide index. Audience: Valuable to students and researchers interested in automatic result verification. Detailed information, including contents, contributors, and an order form can be found:

- on Kluwer homepage `http://www.wkap.nl`, or
- on the Interval Computations homepage `http://cs.utep.edu/interval-comp/main.html`, in the "Books" section.

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Industry immediately started to investigate the failure." From the report: "The internal SRI software exception was caused during execution of a data conversion from 64-bit floating point to 16-bit signed integer value. The floating point number which was converted had a value greater than what could be represented by a 16-bit signed integer. This resulted in an Operand Error. The data conversion instructions (in Ada code) were not protected from causing an Operand Error, although other conversions of comparable variables in the same place in the code were protected.".

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The main aim is to produce a usably efficient implementation, which can be easily interfaced with existing C++ code. This contrasts with previous implementations in functional languages (Haskell, Miranda etc.), which, although theoretically important, seem to be rather too slow for real use.

This code is designed as an add-on to Victor Shoup's arbitrary-precision arithmetic package NTL, and implements a new type XR, to complement NTL's ZZ and RR integer and real types.

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- branch and bound algorithms for global optimization,
- constraint propagation,
- solution sets of linear systems,
- hardware and software systems for interval computations, and
- fuzzy logic.

Actual applications described in the book include:

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- quality control in manufacturing design,
- a computer-assisted proof in quantum mechanics,
- medical expert systems,
- and others.

A realistic view of interval computations is taken: the articles indicate when and how overestimation and other challenges can be overcome. An introductory chapter explains the content of the papers in terminology accessible to mathematically literate graduate students. The style of the individual, refereed contributions has been made uniform and understandable, and there is an extensive book-wide index. Audience: Valuable to students and researchers interested in automatic result verification. Detailed information, including contents, contributors, and an order form can be found:

- on Kluwer homepage `http://www.wkap.nl`, or
- on the Interval Computations homepage `http://cs.utep.edu/interval-comp/main.html`, in the "Books" section.

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