A Bibliography of Publications on Floating-Point Arithmetic

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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`),
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- 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, 3112, 3316, 1916, 841, 1164, 1000, 1457, 843, 1343, 7276, 7277, 1557]

Books, software oriented or theory

[1273, 466, 469, 470, 119, 1420, 2394, 908, 1049, 352, 2953, 2435, 2970, 2271, 320, 527, 7130]

Books, machine specific

[2175, 3218, 3114, 2437, 1767, 1903, 2290, 1935, 2472]

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, 2268, 2392, 2545, 2772, 2786]

1.1 Precision and Rounding

[433, 558, 745, 847, 881, 896, 964, 1032, 1041, 1045, 1194, 1296, 1435, 1376, 1538, 1729, 2281, 2457, 2530, 2843, 3159, 3281]

1.2 Determination of parameters of floating point arithmetic

[686, 823, 1636, 2274, 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, 2340, 2574, 3054]

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, 2373, 2447, 2350, 2529, 2773, 2774, 2702, 2771, 3012]

1.5 Floating point packages

[1287, 1700, 1679, 1773, 1731, 1884, 1849, 1885, 1967, 2080, 2102, 2204, 2299, 2300, 2301, 2480, 2481, 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, 2246, 2275, 2308, 2251, 2277, 2252, 2184, 2213, 2321, 2263, 2214, 2288, 2462, 2408, 2409, 2433, 2323, 2444, 2406, 2403, 2315, 2425, 2464, 2364, 2324, 2445, 2329, 2565, 2500, 2520, 2560, 2515, 2492, 2563, 2546, 2537, 2660, 2769, 2732, 2958, 2871, 2941, 3098, 3048, 3189, 3348]

1.7 Test of floating point routines

[500, 1454, 1726, 1870, 1869, 2020, 2021, 1965, 2106, 2470, 2598, 2606, 2674, 2673, 2789, 2768, 2754, 3053]

2 Addition and Subtraction

[375, 1513]

2.1 Floating-point Summation

[325, 345, 362, 361, 570, 639, 677, 831, 1661, 2276, 2353]

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, 2388, 2778, 2723, 2968, 3017, 7298, 2950]

3 Elementary functions, general

[384, 398, 586, 650, 615, 1122, 1265, 1627, 1656, 1756, 1719, 1717, 1794, 1840, 7217, 1945, 2051, 2154, 2098, 2278, 7236, 2561, 2598, 2548, 3335, 2550, 2519, 2698, 2851, 2662, 2813, 2814, 2691, 3368, 3336]

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, 2382, 2311, 2542, 2568, 2717, 2811, 3011, 3006, 3129, 3069, 3115]

3.2 Elementary functions, function approximation

[240, 241, 481, 623, 768, 767, 983, 1021, 1162, 2000, 2052, 2611, 2686, 2784, 2785]

3.2.1 Polynomial evaluation

[259, 279, 304, 426, 1061, 1228, 2352]

3.3 Square root, general

[1082, 1187, 1481, 1598, 1651, 2566, 2678]

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, 2254, 2391, 2578, 2535, 2710, 3039]

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, 2334, 3019, 2948]

3.4 Sine and Cosine

[180, 1068, 1018, 1023, 1176, 1398, 1544, 1666, 1665, 1765, 1853, 1953, 2120, 2231, 2607, 2962, 2959, 2881, 2981, 3075]

3.5 Logarithm

[154, 271, 331, 690, 998, 1112, 1299, 1529, 2107, 2108, 2608, 2736]

3.6 Exponential function

[141, 409, 1183, 1361, 1518, 1748, 1847, 2471, 2609, 3003]

3.7 Arctangent

[143, 160, 207]

3.8 Other transcendental functions

[499, 613, 161, 1024, 365, 275, 360, 2100, 1157, 2861, 3055]

4 Binary-decimal conversion

[189, 173, 222, 475, 576, 684, 1165, 1291, 1292, 1405, 1654, 1709, 2002, 1975, 2510, 2602, 2526, 2857]

5 BCD arithmetic

[674, 726, 777, 778, 779, 780, 781, 782, 783, 1382, 1492, 1705, 1640, 2037, 2647, 2961]

6 Multiple precision arithmetic

[292, 330, 410, 428, 632, 616, 953, 1002, 1099, 1098, 1265, 1350, 1430, 1542, 2806, 2790, 3034, 3225]

7 Conferences on computer arithmetic

[7156, 7166, 7171, 7180, 7183, 7196, 7214, 7215, 7257, 7287, 7295, 7289, 7321]

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, 7196, 1714, 1724, 1727, 1741, 1747, 1855, 1861, 1895, 1923, 1979, 2022, 2033, 2061, 2103, 2116, 2124, 2169, 2276, 2277, 2330, 2487, 7269, 2532, 2536, 2549, 2556, 2565, 2606, 2618, 7295, 2741, 2742, 2766, 2770, 2787, 2806, 2859, 2860, 2973, 3053, 3268, 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, 2250, 2265, 2280, 2302, 2361, 2372, 2376, 2458, 2482, 2488, 2533, 2580, 2594, 2657, 2667, 2703, 2747, 2798, 2862, 2929, 2935, 2969, 2995, 3003, 3038, 3091, 3099, 3177, 3191, 3194, 3238, 3279, 3326, 7127, 7164, 7172, 7181, 7182, 7207, 7219, 7216, 7262]

Title word cross-reference

#26 [5493].

$((2^n)^m)$ [3798]. $(10^{31} - 1)/9$ [1976]. (2^m) [4351, 4372, 4556, 4565, 4470]. $(2^n + 1)$ [1081, 4789, 3911]. $(2^n - 1)$ [5008]. $(2^n - 1, 2^{n+p}, 2^n + 1)$ [6280]. $(2^n 2^q 1)$ [6085]. $(2^n \pm 1)$ [5520, 4138]. $(2m)$ [4435]. $(2n + 3)$ [6535]. $(2n - (2p \pm 1))$ [4851]. $(a \cdot x) \cdot x?$ [6809]. (d, r) [789]. (M, p, k) [5809]. $(\mathcal{R})$ [2909]. (p) [4351, 4435].

$(x+y)*(x-y)$ [6682]. -2 [743, 183, 206, 949, 801]. $-\infty < n < +\infty$ [141, 160]. 0 [5638]. $0 < N < 1$ [161]. $0 \div 0$ [699]. **$1** [3740]. 1 [4988, 4344, 5153, 5639, 3695, 2165]. 1,000,000 [618]. $1/\sqrt{x}$ [5780]. $1/t$ [2174]. 10 [530, 6016]. 116 [4020]. 128 [4857]. 15 [530]. 16 [2505, 4185, 4073]. 17×69 [3048]. 2 [1005, 4302, 2049, 5675, 3230, 3992, 618, 6049, 430, 4344, 5009, 3284, 3460, 1760, 3470, 3141, 3477, 5613, 3492, 530, 321, 3682, 3817, 4451, 3695, 5097, 3362, 4941]. 2,576,980,370,000 [5640]. $22n + 1$ [2146]. 256 [4438]. 27 [433]. $2^(n + 1) + 1\}$ [3969]. $2^{2n+1} - 1$ [6031]. $2^{2n+2} - 1$ [6031]. 2^{2q} [6021]. $2^8 - 1$ [2857]. 2^k [4483, 4996, 5500, 5037, 5045]. $2^k + 1$ [866]. 2^{k-1} [4483]. 2^m [4557]. 2^n [1568, 6031, 3969]. $2^n + 1$ [3969, 4988, 5720, 4461]. $2^{n+1} - 1$ [6525]. 2^{n+k} [6525]. $2^n - (2^{n-2} + 1)$ [5340]. $2^N - 1$ [2988, 4824, 6525, 4214, 3969]. $2^q - 3$ [7021]. $2^q \pm 1$ [6021]. $2^q \pm 3$ [6021]. $2^x p^y \pm 1$ [6247]. 2×2 [5917]. 3 [377, 4990, 4179, 430, 4035, 4203, 4040, 5029, 4874, 321, 6216, 4119, 6609, 4938, 4939]. $3 - j$ [298]. 32 [3985, 4438]. 3×3 [2494]. 4 [3969, 4316, 4660, 2522, 2523, 430, 3429, 5725, 5526, 4383, 4716, 2951, 4073, 4075, 2812, 3002, 1932, 3525, 3530]. **$49.95** [3707]. 5 [6021, 4801]. 54×54 [3484]. $6 - j$ [298]. 64×64 [2279]. 8 [433, 3442, 4073, 3492]. 84 [307]. **$85.00** [4143, 4144]. 88062 [530]. $8k$ [6846]. 8×8 [5097]. $9 - j$ [298]. $<$ [6224]. $>$ [6224]. $[0, 1]$ [5153]. ^{0} [4357]. ^{2} [5738]. ^{4} [2797]. ^{5} [3898]. ^{e} [1159]. $^{\text{th}}$ [1159]. ^{TM} [4627]. $A(N + C)$ [1910]. $a + b$ [3639]. $a+b+c$ [6306]. $AB+CAB+C$ [6956]. $ab+cd$ [6100]. $ab+cd+e$ [7105]. $a \cdot (x \cdot x)$ [6809]. $A \cdot T$ [4066]. $\arctan Z$ [143]. $a \times b + c \times d$ [6306]. β [6337, 7065]. $C + AB^2$ [4281]. $c/\sqrt{(a^2 + b^2)}$ [6288]. CLP(R) [2929]. $\cos^{-1}$ [3129]. $\cos N$ [180]. $\cos x$ [373]. $\cot^{-1} x$ [373]. d [4694, 5503, 3804]. Δ_2^0 [4942]. e [459]. e^n [141]. e^x [409]. ϵ [3473]. η_T [5667]. ηT [5245]. $\exp(x)$ [1361]. $\exp x$ [373]. $f(x) = 0$ [1222]. G_α [809]. GF(2)[x] [5863]. $GF(2^m)$ [4405, 4773, 4388, 6050, 4975, 5431, 4906, 5867]. GF($2n$) [4200]. $GF(p^m)$ [4652]. H [5170]. I^2L [3239]. ∞/∞ [5016]. K [5439, 4302, 5919, 2107, 6004, 6337, 5960]. $k < m$ [6337]. L [4344]. L^2 [5253]. L^∞ [5252, 6986]. l_2 [6060]. $\ln(x)$ [1529]. $\ln x$ [373]. $\log n$ [1228]. $\log Z$ [143]. LU [6798, 6557]. M [4838, 180, 4133, 2627, 2632, 2641, 2919, 5334, 581, 6337]. $M^E \bmod N$ [2777]. $\mathbf{F}_2[X]$ [7064]. $\mathbf{f}_{2^m}$ [4230]. $\mathbf{F}_{5^{5n}}$ [5684]. $\mathbf{F}_{7^{7n}}$ [5684]. $\mathbf{R}^n$ [6909]. $\mathbf{Z}^2$ [4061, 5036]. GF(2) [5308, 1692]. $\text{GF}(2^4)^2$ [6163]. $\text{GF}(2^{4n})$ [3922]. $\text{GF}(2^8)$ [6163]. $\text{GF}(2^{\text{k}})$ [4963, 3769, 4921]. $\text{GF}(2^{\text{m}})$ [5483, 4673, 4981, 3874, 4527, 5142, 3582, 4533, 3885, 5512, 2897, 2898, 3753, 4861, 5308, 5171, 4715, 4386, 5033, 2429, 5432, 4605, 4746, 4907, 5436, 3199, 4281, 4936, 4772, 2309]. $\text{GF}(2^{\text{n}})$ [4995]. GF(p) [2081]. $\text{GF}(\text{p}^{\text{m}})$ [3488]. $\text{GF}(\text{p}_{\text{k}})$ [4648]. $\text{GF}(\text{q}^{\text{n}})$ [4696]. MECIPTI [282]. μ [1426, 4867, 4909, 2310]. μP [1610, 2008]. N [3964, 808, 2334, 2335, 160, 161, 180, 4576, 5069, 4927, 5960, 5686, 4160, 6060, 1294, 3623]. $n^{\text{ième}}$ [1159]. $N_0' = -N_0^{-1} \bmod W$ [4258]. $N \geq 32$ [5852]. $n \log(n)$ [6473]. $n \times n$ [3140]. $O(1)$ [6373]. $O(n)$ [1195, 3432, 1547]. $O(n^2)$ [2778, 2779]. $O(n \log n)$ [6522, 6673]. Ω [4923]. Arccos$x$ [207]. Arcsin$x$ [207]. Arctan$x$ [207]. mod$p$ [1915]. P [6513, 4637, 2059, 1130, 894, 1044, 1635, 7065, 4274, 4623, 3350]. p^k [6690]. π [1630, 2234, 2235, 4602, 268, 5640, 1693, 459]. $p \times p$ [4581, 4725]. q [5782]. $q*m - n$ [1628]. QR [6125]. R [3603, 3062, 1605, 1613, 6416, 5852]. $r = m^k$ [1438]. r^a [4946]. $r^b - 1$ [4946]. $r^c + 1$ [4946]. $\{r^n - 2, r^n - 1, r^n\}$ [5299].

$r \geq 8$ [5852]. s [4878]. sin(**BIG**) [5234]. $\sin^{-1}$ [3129]. $\sin N$ [180]. $\sin x$ [373]. $\sqrt{(a^2 + b^2)}$ [6288]. $\sqrt{(x)}$ [1481]. $\sqrt{(x/d)}$ [3846]. $\sqrt{2}$ [6990]. $\sqrt{x}$ [1307, 451]. $\sqrt{x^2 + y^2}$ [5675]. T [6573]. $\tan^{-1} x$ [373]. $\theta(\log N)$ [2355]. $\times$ [4066, 3916, 4132]. w [4733]. X [1542, 2894]. $x^2 + ny^2$ [3707]. x^n [5984, 3308]. y [4414]. Z [5331].

-2 [1004]. **-adic** [1130, 1044, 1635, 2059, 894]. **-Approximations** [6986, 5252, 5253]. **-ary** [2919, 4133]. **-b** [3484]. **-Bit** [3985, 6846, 307, 5960, 5069]. **-body** [4576, 4927]. **-circulant** [6416]. **-Coordinate** [4414]. **-count** [6573]. **-D** [5675, 4179, 4203, 3284, 6216, 4119, 5097, 3362, 2165]. **-Depth** [3432]. **-Digit** [433]. **-Dimensional** [5503, 2049, 4694]. **-Fold** [5439]. **-Friendly** [5809]. **-function** [5170]. **-gram** [5686]. **-Matrix** [4838]. **-Moduli** [6021, 3969, 4660, 4801]. **-Norms** [6060]. **-Order** [3603]. **-Partition** [6004]. **-Real** [4942]. **-select** [4160]. **-sets** [3062]. **-spaces** [4878]. **-th** [5919, 3804, 5782, 2335]. **-transform** [5331]. **-Vectors** [6060].

.NET [6426, 5072].

/m [4867]. **/spl** [4867].

0.18-CMOS [5776]. **0.4.1rc** [6427]. **0.80pJ** [6561]. **0.80pJ/flop** [6561]. **'00** [7397, 7402, 2541]. **'01** [7411]. **'03** [7440]. **'04** [7449, 7457]. **'07** [7492, 7498, 7500, 7505]. **'08** [7509, 3033, 5379].

1 [217, 3548, 6647, 3413, 2877, 228, 63, 65, 67, 563, 3276, 6680, 4066, 4408, 1163, 5776, 7070, 1933, 3866]. **1-GHz** [6647, 4408, 5776]. **1-Output** [5345]. **1.0** [3867]. **1.24Tflop** [6561]. **1.24Tflop/sW** [6561]. **1.5** [5655]. **10** [5738]. **10-kA** [5738]. **10-kA/cm** [5738]. **10/20** [958]. **100** [2890, 2891]. **100-MFLOPS** [2890, 2891]. **1014** [6753]. **1057** [1981]. **10858** [1746]. **10967** [4362, 5159]. **10967-1** [3276]. **10967-2** [4362]. **10967-3** [5159]. **10th** [7207, 7541, 7289, 7418, 7431, 27, 7188, 2764]. **'11** [7536, 1110, 1391, 1507, 1408, 1312]. **11-bit** [4909]. **11/780** [2036, 1569, 1570, 1803, 1019]. **116** [270]. **1164/WTL** [2033]. **11i** [4924]. **11th** [7409, 7302, 7320, 7321, 3184]. **120B** [1120]. **128-bit** [6328, 4117]. **12th** [7452, 7518, 7163, 7344, 3455, 7504]. **13** [4321, 2090]. **132-Bit** [342]. **13th** [7437, 7179, 7363, 7333, 7491, 3845, 3773, 7561]. **14-Port** [3916]. **14th** [7324, 7408, 7439, 7490, 7402, 7388]. **15** [2767]. **15-b** [4453]. **15-bit** [4122]. **15C** [1629]. **15th** [7227, 7498, 7163, 7506, 7410, 7456]. **16-19** [7127]. **16-b** [6462]. **16-Bit** [4532, 6688, 6703, 7080, 6846, 3024, 1260, 1601, 4993, 3077, 1759, 6327, 1476]. **16-bit-** [1610]. **16-bit-Multiplikation** [1476]. **16-by-8-bit** [1645]. **16-Digit** [5365]. **160-ns** [2836]. **160-Word** [3916]. **1620** [255]. **164** [1815]. **167** [3492, 3530]. **16BST** [1817, 1733, 1734, 1736, 1740, 1750, 1763, 1772, 1689]. **16F/400** [917]. **16th** [7481, 7472, 4649, 7436, 7478]. **17** [287, 838]. **17-Bit** [648, 647]. **1788** [6549]. **1788-2015** [6074]. **17th** [7543, 7483, 7399, 7473, 7476]. **'18** [7554, 562]. **18-21** [7489]. **18.Mai** [1484]. **18th** [7508, 7497, 7503, 5473].

18th-Century [5473]. **1945** [61]. **1947** [7119]. **196** [5682, 5693]. **1962** [7127]. **1965** [7131, 7133]. **1967** [7138, 7140]. **1968** [7143]. **1969** [7141, 7142, 587]. **1971** [7153]. **1972** [7151, 4047]. **1973** [4124, 4125]. **1975** [7160]. **1976** [7161, 7163]. **1977** [7164, 7189, 1652]. **1979** [7169, 7172]. **1980** [7173, 7179, 1525, 7184, 7181]. **1981** [7186, 7191]. **1983** [7207]. **1984** [7216]. **1985** [7233]. **1987** [2087]. **1988** [7236, 7247]. **1989** [7260, 2580]. **1989-01** [2386]. **1989/Taipei** [7260]. **1991** [2636, 7282, 2764]. **1992** [2856, 7345]. **1993** [7313, 7356, 3184]. **1994** [7334]. **1994-12** [3276]. **1995** [7335, 7347, 3455]. **1998** [7373, 7375, 3893]. **1998-12** [3892]. **1999** [7385, 7386, 7391, 7393]. **19th** [7516, 7486]. **1st** [7370].

2 [2176, 6474, 2518, 1734, 64, 66, 68, 4362, 4036, 4574, 6434, 3919, 4892, 528, 2014, 7071, 3514, 4117, 4765, 2822, 3014]. **2-D** [3514]. **2-Digit** [4173]. **2-dimensional** [2989]. **2.0** [3619]. **2.44** [4035, 4203]. **20** [2666, 2400]. **20-MFLOPS** [2401, 2400]. **200-ns** [1485]. **'2000** [7396, 7395, 7396, 7402]. **2001** [7407, 7408, 7410, 4826, 7412, 7418, 7419]. **2002** [7421, 7422, 7424, 7425, 7426, 7433]. **2003** [7436, 7437, 7440, 7441]. **2004** [7448, 7449, 7451, 7457, 7458, 4884]. **2005** [7465, 7466, 7468, 7471, 7477]. **2006** [7480, 7481, 7484, 7488]. **2006Petrozavodsk** [7538]. **2007** [7492, 7494, 7495, 7497, 7500, 7502, 7512, 7507]. **2008** [7508, 7509, 5485, 7511, 6534, 5924, 5925, 6699, 5537, 5759, 5559]. **2009** [7514, 7518, 7521, 7522, 5518]. **2010** [7531, 7532, 7534]. **2011** [7537]. **2013** [7542]. **2015** [7545, 7546]. **2016** [7550]. **2017** [7551]. **2018** [6447]. **2019** [6500, 7556, 7557]. **2020** [6629, 6627, 6628, 6630, 6631, 6633, 6654, 7558, 6679]. **2020s** [6738]. **2021** [6738, 6739, 6740, 6741, 6749, 7562, 6795, 6813]. **2022** [6851, 6852, 6853, 7564, 6880, 6881]. **2023** [7566]. **20th** [7520, 7560, 7539, 7501]. **21-23** [7518]. **2100** [2559]. **21064** [3342]. **210uW** [6397]. **210uW/MHz** [6397]. **21164** [3387]. **21st** [7526, 7454, 7398, 7542, 7515]. **22** [337]. **22-nm** [6647]. **22nd** [7546]. **22nm** [6561]. **23-28** [7485]. **23nd** [7550]. **23rd** [7272, 7529, 7532]. **24** [1127]. **24-26** [7438]. **24-bit** [2365]. **24.und** [7189]. **24732** [5161]. **248GOPS** [6826]. **248GOPS/W** [6826]. **24b** [2462]. **24th** [7551, 7371, 7374, 7428, 7534, 7189]. **25-28** [7397]. **256** [6285]. **25th** [7268, 7384, 7189, 7499, 7555]. **26-28** [7449]. **26th** [7534, 7557]. **27th** [7558, 7531]. **281** [3056]. **286** [3638]. **28nm** [6826]. **28th** [7562, 7379]. **29.95** [3707]. **29th** [7387, 7564]. **2B** [645]. **2DFFT** [1883]. **2nd** [7530, 4578, 7152]. **2Sum** [6139, 6246].

3 [3094, 5159, 6410, 2770, 6114]. **3-ps** [5776]. **30-bit** [2422]. **30-MFLOP** [2246]. **30-ns** [3470]. **300** [4203, 1229]. **300-MHz** [4203]. **300MHz** [4035]. **30th** [7566]. **312** [432]. **3171** [2500]. **31st** [7241]. **32** [5115, 2061]. **32-** [6917]. **32-Bit** [3715, 2313, 2183, 2326, 5477, 4804, 3413, 1403, 5005, 1623, 2735, 2407, 2408, 2409, 2410, 2558, 1996, 2432, 3310, 2570, 3188, 3951, 2485, 3203]. **320** [3097]. **320-MFLOPS** [3098, 3097]. **320C25** [3288]. **32b** [2246]. **33** [2213]. **33rd** [7352, 7403, 7296]. **34** [512]. **34-MFLOP** [2485]. **360** [417, 418, 504, 383, 391, 392, 681, 439, 480, 1441, 6443, 537]. **3600** [302]. **36th**

[7316]. **370** [1945, 2036, 2479]. **37th** [7502]. **390** [4077, 3812, 3813, 4103, 4104]. **39th** [7492, 7509]. **3CT** [3382]. **3DNow** [3919, 4036]. **3DTV** [5765]. **3m** [6352]. **3rd** [7368, 7156, 7474]. **3X** [5437].

4 [3392, 4790]. **4-2** [1167]. **4-Input** [5345]. **4-Input/1-Output** [5345]. **4.4ns** [3484]. **40** [2409]. **40-MFLOPS** [2407, 2409]. **40-ns** [648]. **400** [917]. **4000** [497]. **400MHz** [3916]. **400th** [7345]. **4096-Core** [6840, 6726]. **40ns** [647]. **41** [443]. **432** [1856]. **44th** [7488]. **45th** [3760]. **48th** [7471]. **4d** [4671]. **4m** [6352]. **4th** [7166, 7397, 7291, 7419, 7565].

5 [3540, 6937]. **50** [2324]. **50-Megacycle** [149]. **50-MHz** [2324]. **501** [3777, 3629]. **50th** [7328]. **512** [6360, 6998]. **512-bit** [6866]. **528** [1118, 4018]. **53*53** [3262]. **53nd** [7527]. **54** [338]. **54-b** [2836]. **55-b** [3470]. **5th** [7435, 7517, 7183, 7486, 7342].

6.7-MFLOPS [2443, 2445]. **60** [605, 578, 410]. **600** [3984]. **600-MHz** [3984]. **6000** [3382, 2536, 636, 2561, 2565, 1242, 3364, 717]. **6000/7000** [1036, 1242]. **600MHz** [4077]. **601** [3342]. **603e** [3612]. **60M** [2635]. **60M-flops** [2635]. **64** [4778, 3991, 4165, 4026, 4191, 4192, 6520, 4237, 4113]. **64-active-instruction** [3526]. **64-b** [3638, 2958, 3526]. **64-Bit** [2433, 3916, 7060, 2321, 2324, 5386, 5128, 4987, 3070, 3430, 5153, 2712, 3444, 2400, 2401, 2546, 2405, 2925, 6917, 2769, 2260, 3324, 4925, 2033]. **64-bit-Universal-Floating-Point-ISA-Compute-Engine** [6520]. **6400** [1694]. **64b** [2323]. **65** [624]. **65-nm** [7060]. **65/6600** [624]. **650** [2089]. **651** [2048]. **65nm** [6397]. **6600** [731, 554, 624, 591, 1345]. **6600/7600** [731]. **665** [2201]. **68000** [1884]. **68000-Einplatinenrechner** [2080]. **693** [2806]. **6th** [7482, 4834, 7447, 7196, 7386, 7501, 7364, 7477, 7451].

7-9 [7520]. **70** [5678]. **7000** [1242]. **7094** [397, 472]. **7094-II** [472]. **714** [3053]. **715** [3055, 3666]. **719** [3034]. **722** [3054]. **7289** [6990]. **73** [1029]. **754** [3839, 5568, 2858, 4304, 3395, 6036, 3975, 4510, 5485, 6500, 6879, 3867, 4326, 6772, 4823, 6778, 6779, 1409, 6531, 6792, 6171, 1861, 6534, 2093, 3450, 3615, 5932, 5322, 4232, 5044, 5180, 6914, 6570, 7054, 7055, 2272, 6447, 6334, 7065, 1679, 4752, 3937, 5633, 2016, 1458, 6719, 7113, 3351, 5559, 5787, 7088]. **754-1985** [1860, 1861]. **754-2008** [5422, 5485, 6534, 5559]. **754-2019** [6533, 6500]. **754-Posit** [6914]. **754r** [5413, 5118, 5131, 5263, 5486, 5164, 5217, 5163, 5176, 5365]. **7600** [731]. **77** [1190, 4018, 1331]. **780** [2036, 1569, 1570, 1803]. **786** [3940]. **'79** [7169, 7172]. **7th** [7173, 7175, 7480, 7214, 7244, 7485].

8 [1295]. **8-Bit** [3806, 6838, 6969, 1967, 7019, 7043, 6923, 6458]. **8-to-64** [6561]. **80** [1483]. **80*87** [3015]. **80-bit** [1928]. **80-FLOPS** [2958]. **8000** [3444]. **80287** [1903]. **8080/8085** [1583, 1133, 1219]. **8080A** [1487]. **8085A** [2387]. **8086/80286** [1935]. **8087** [1629, 1315, 1903]. **8087/80287** [1935, 1903]. **8087/80287/80387** [2290]. **8088/8087** [1733]. **80960** [2242].

80960KB [2243]. **80b** [2444]. **80h** [1295]. **80's** [7178]. **814** [4441]. **8231A** [4142]. **826** [6397]. **'83** [7199]. **83S87** [2513]. **'84** [7208]. **842** [4998]. **'85** [7213, 480]. **854** [3402, 3403, 2087, 3474]. **854-1987** [2039, 2087]. **'86** [7220, 7221]. **86**^{TM} [3915]. **871** [5442]. **'88** [7242, 7243, 7246, 2306]. **881** [5501]. **'89** [7254, 7261]. **89/TI** [4454, 4455]. **8s** [765]. **8th** [7266, 7466, 7375, 7228, 5622].

9 [516, 695]. **9-11** [7494]. **9.4** [6826]. **'90** [7264, 7273, 7288, 4297, 3386, 4958, 4959, 2676, 3482, 4441, 3831]. **908** [5651]. **90nm** [4790]. **'91** [7285, 7288, 416, 395]. **'92** [7294, 7297, 7300, 7308, 4454, 4455]. **'93** [7311]. **'94** [7323, 7324, 7333]. **'95** [7340, 3844, 4437, 4749]. **954** [6052]. **'96** [7354, 7358]. **96-bit** [2256]. **97** [3708]. **'98** [7371, 7379, 3961, 7369]. **980A** [1015]. **'99** [7384, 7385, 7386]. **9th** [7257, 7532, 7489, 7191, 2357].

= [2800, 2801, 3344, 7153].

A-Priori [2100]. **A.K** [4666]. **a.k.a** [5532]. **A/D** [3883, 905, 3344, 4122, 4453, 801]. **A/D-konverter** [3344]. **A1** [1098, 1192]. **Aarhus** [7196, 7196]. **Abacus** [202, 1026, 5536]. **Abbreviating** [7]. **abc}** [4808]. **ABE** [546]. **ABI** [6847]. **abnormal** [6025]. **Abotec** [3178]. **Absolute** [3389, 3390, 2760, 2250, 432]. **Abstract** [5576, 4538, 5609, 525, 5328, 5847, 6347, 4835, 2909, 2111, 5848, 4887, 4899, 2983]. **abstraction** [5472, 5826, 1329]. **abstraction-based** [5472]. **Abstracts** [7312, 7403]. **Abu** [407]. **Acadiana** [7375]. **ACBAM** [6935]. **ACBAM-Accuracy-Configurable** [6935]. **Accelerate** [6581, 6279, 4576]. **Accelerated** [6777, 5011, 5484, 5690, 6429, 6957, 7079]. **Accelerating** [5462, 6030, 4796, 3862, 5700, 6889, 6776, 6162, 7015, 7037, 4231, 6696, 6318, 4723, 6323, 5768]. **Acceleration** [6669, 6798, 6187, 6791, 6419]. **Accelerator** [6032, 6750, 6480, 5682, 5694, 6997, 5719, 7018, 6296, 6904, 6314, 2251, 6434, 7053, 6006, 6932, 4907, 7078, 6950, 6607, 6374, 2264, 7068]. **Accelerators** [6893, 7006, 6543, 7024, 6803, 7045, 6438, 7086, 4768, 6961, 5275, 3498]. **Acceptance** [3482]. **Access** [2142, 5106, 3395, 4579, 4633, 6957]. **Accessibility** [7464]. **Accessible** [6888]. **Account** [3]. **Accumulate** [6495, 4982, 6396, 6794, 6415, 6705, 6940, 5954, 3820, 6620, 6729, 4502, 6560, 3667]. **Accumulated** [1367, 574, 976]. **Accumulation** [6250, 2055, 1958, 179, 5921, 6178, 5304, 6080, 5543, 4424, 77, 453, 1071, 3702, 5807, 3728, 3753, 5745, 573, 5540, 2763, 95, 5445]. **accumulations** [4231]. **Accumulator** [3856, 4761, 6223, 379, 2693, 1031, 3310, 5777, 5862, 4763]. **Accumulators** [6488, 6316, 370, 1072]. **accuracies** [2600]. **Accuracy** [4641, 217, 6227, 6974, 6861, 1714, 5467, 860, 1014, 4794, 5386, 6761, 6762, 2674, 5892, 6042, 3236, 5899, 6150, 5271, 5139, 6157, 1840, 227, 228, 7099, 433, 389, 1289, 1851, 3605, 4547, 4359, 2378, 6406, 1745, 1980, 2540, 1620, 7020, 1983, 5916, 6292, 1627, 2398, 7025, 3115, 752, 5174, 6694, 831, 5179, 3788, 6935, 5774, 3161, 6212, 165, 6940, 1684, 2020, 2021, 6719, 410, 3522, 6836, 6952, 493, 6730, 6731, 5377, 6963, 5874, 5662, 5806, 1812, 4655, 5890, 6259, 6769, 6047, 6896, 3752, 3091, 1744, 6682, 2544, 2097, 1993, 5173, 5836, 5175, 6428, 3781, 1755, 5337, 6107, 7061]. **accuracy**

[1678, 107, 2458, 1688, 1921, 1784, 6345, 2297, 3191, 6457, 3836, 544, 5111, 2051, 1210, 3643, 650, 1352, 2568]. **accuracy-adjustable** [7061]. **accuracy-guaranteed** [5337]. **Accurate** [5570, 5115, 1804, 2646, 2649, 2865, 7097, 1384, 4336, 4522, 4523, 4524, 4676, 4818, 4819, 3733, 4340, 5978, 6152, 6264, 4003, 5276, 2691, 6052, 4691, 4831, 4833, 5282, 2698, 5401, 5508, 5514, 4356, 6532, 6073, 5915, 5593, 5737, 5919, 5920, 3281, 5921, 6178, 230, 2548, 2237, 6905, 6553, 3295, 904, 570, 3465, 639, 5757, 6569, 7217, 4890, 4891, 5062, 6007, 2974, 1535, 5070, 5438, 5439, 5440, 5546, 5623, 5946, 5947, 3675, 3809, 3811, 4918, 5086, 4112, 2606, 6015, 6833, 3017, 597, 5961, 4482, 1794, 5796, 3046, 5249, 3237, 3416, 4677, 4170, 2362, 5507, 6271, 4197, 5914, 1867, 5917, 2731, 3119, 757]. **accurate** [758, 2949, 4730, 2957, 4732, 6105, 4246, 2145, 4445, 5212, 3004, 2838, 5455, 5231, 1094]. **Accurately** [3556, 6493, 2510, 5735, 5030, 2602, 4917, 6494, 6254, 4805, 4806, 5606, 5630]. **ACE** [945, 5103]. **achieved** [3021]. **Achieving** [6024, 5386, 5680, 6267, 1840, 4736, 5855]. **ACL2** [7421, 4263]. **ACL2-2002** [7421]. **ACM** [7236, 7323, 7448, 7449, 7464, 7465, 7479, 7492, 7508, 7509, 7484, 7411, 7427, 2090, 7433, 7450, 2344, 7341, 7288]. **ACM/IEEE** [7479]. **ACM/SIGDA** [7448, 7465]. **ACM/SIGPLAN** [7450]. **Acoustics** [7220, 7286, 7440, 7457]. **Acousto** [1906]. **Acousto-Optic** [1906]. **acquisition** [2499, 2666]. **ACRITH** [1980, 1812, 2540, 1983, 1869, 2102]. **ACRITH-XSC** [2540]. **across** [5322]. **ACSSC** [7512]. **ACT8837** [2336]. **ACTION** [6907]. **Activation** [6653]. **Activations** [6299]. **active** [5765, 3526]. **Activity** [5872]. **Actual** [5315, 6484]. **acyclic** [3206]. **Ada** [7323, 7266, 7302, 1872, 7323, 2319, 2642, 2643, 2867, 2868, 3226, 2503, 2659, 3419, 2350, 2073, 6054, 2524, 7302, 1525, 1749, 2103, 1756, 3635, 2765, 2137, 2809, 1701, 2837, 1483]. **Ada-Europe** [7302]. **Ada83** [3037]. **adaptable** [4328]. **Adaptation** [2870, 4398, 6821]. **adapted** [5988]. **Adapting** [2929, 4018]. **Adaptive** [5818, 6538, 4218, 3110, 1633, 2919, 6693, 6801, 6194, 2446, 1769, 3680, 3681, 3814, 1462, 1549, 6950, 2173, 1947, 1582, 1720, 4803, 4974, 6402, 5154, 2390, 3775, 3907, 1755, 2426, 6095, 2960, 3145, 5773, 3692, 5641]. **ADC** [4352, 2451, 4132, 4945]. **ADCOM** [7498]. **Add** [6477, 5470, 3048, 4658, 4972, 6250, 4319, 5482, 6996, 6153, 5150, 2537, 6676, 5300, 3445, 6412, 3894, 4380, 5318, 5319, 5320, 3121, 5754, 5544, 5620, 5429, 5430, 5069, 6936, 4753, 7081, 6216, 6356, 6619, 6503, 4483, 2328, 4798, 3052, 3580, 5003, 4024, 5010, 6167, 4552, 5014, 4566, 4868, 4065, 5995, 5047, 4732, 3149, 5629, 4760, 4932, 1704, 4635, 4775]. **add/sub** [3580]. **Addendum** [1230, 762]. **Adder** [6031, 3715, 3967, 4303, 4804, 5481, 4978, 1102, 5265, 2886, 335, 6892, 1124, 5731, 6410, 5738, 753, 3783, 6574, 5939, 6005, 3792, 3656, 6575, 5340, 5341, 4423, 4263, 4913, 5633, 6944, 533, 589, 936, 5361, 5559, 6835, 6455, 6355, 5368, 5562, 133, 5230, 5375, 802, 2183, 4973, 2675, 5974, 3060, 2883, 3253, 5714, 4546, 2901, 3106, 3107, 3108, 3109, 1428, 2748, 5934, 2111, 4876, 5759, 2954, 4244, 2792, 6937, 1167, 5777, 5862, 4615, 5443, 4925, 2479, 5788]. **Adder-Based** [6031, 3106, 3107, 3108, 3109]. **Adder/Subtractor** [5731, 6410, 6835, 4876, 5759]. **Adders** [6024, 4300, 607, 5679, 3049, 4157, 5479, 866, 6773, 6774, 6392, 5708, 2075, 2077, 5591, 5403, 5520, 4214, 5021, 4051, 4375, 6079, 6421, 6189, 6804, 5181, 7044, 7109, 6701, 2001, 6708, 2783, 3804, 4268,

4439, 5365, 4461, 1180, 1191, 1494, 2332, 2661, 3859, 3992, 2726, 1899, 5763, 4734, 4082, 7059, 3329, 5217, 7113, 2475, 4458, 4766]. **adders/subtractors** [7113]. **Addictive** [1871]. **Adding** [1382, 3392, 2325, 3867]. **Addition** [1360, 6464, 2038, 1086, 803, 1371, 6981, 463, 550, 4314, 4972, 3723, 4156, 4319, 1823, 4979, 1107, 671, 6386, 1393, 5585, 5279, 3073, 1513, 506, 4996, 6159, 1125, 1612, 3434, 5592, 6535, 5303, 743, 4860, 1873, 4376, 4054, 5922, 6085, 4717, 4870, 5035, 1143, 4877, 362, 3140, 1438, 5941, 1443, 5340, 4087, 921, 922, 3159, 2276, 1675, 2138, 454, 3809, 5075, 6943, 786, 213, 932, 3819, 4112, 3185, 5553, 5221, 6456, 5563, 414, 1705, 376, 5107, 4138, 3222, 4153, 4311, 4798, 3858, 4663, 3567, 4163, 4670, 6389, 2521, 4684, 1512, 1968, 508, 6664, 2896, 3256, 4200]. **addition** [2916, 4866, 2738, 3631, 4231, 1647, 1648, 3643, 2761, 3921, 2261, 3797, 4084, 4252, 2584, 2975, 652, 710, 4914, 926, 3690, 375, 845, 1927, 3191, 3695, 492, 3833, 2628]. **Addition-based** [4996]. **Addition-Related** [5941]. **Addition/Subtraction** [4156, 5922, 4717, 6943, 3858, 4663]. **additional** [3366]. **Additions** [7063, 3610, 3457, 1936]. **Additive** [4518, 5037, 5757, 484, 3592, 1663]. **Additively** [6572]. **Address** [2672]. **Addressable** [5057, 1560]. **adds** [1372, 6092]. **Adelaide** [7388]. **adequate** [2186]. **Adiabatic** [4761]. **adic** [1130, 1044, 1635, 2059, 894]. **Adjustable** [2103, 5550, 7061]. **adjustment** [3732]. **Ado** [2091]. **ADPCM** [3172, 3173]. **ADSP** [2559, 2943]. **ADSP-2100** [2559, 2943]. **Advance** [6797, 4796]. **Advanced** [3844, 4343, 5294, 3444, 7498, 4563, 7232, 7355, 7389, 7400, 7429, 7443, 7460, 3472, 3482, 5544, 7303, 7292, 1540, 2287, 933, 5223, 4468, 1812, 6866, 7482, 2031, 7416, 7475]. **Advances** [7121, 7132, 1220]. **Advancing** [2329]. **Advection** [6862]. **Adversarial** [6790]. **Aerospace** [7434]. **AES** [6744, 6163, 6446]. **af** [1367]. **Affair** [3408]. **affiliated** [7421]. **Affine** [6476, 4584, 6617, 4815, 5255, 4689, 5724, 5330, 5200]. **Affirmative** [3]. **AFIPS** [7125, 7212]. **after** [2014, 3689]. **Afternotes** [3689]. **Again** [6386, 1908]. **Against** [6354, 4403, 4588, 4590, 4733, 4634]. **Age** [5006]. **aggregation** [5339, 5423]. **aggressive** [4065]. **ago** [6111]. **Ahead** [5216, 802, 605]. **Ahmad** [407]. **ähnliche** [1699]. **AI** [6896, 6899, 6433, 7073, 7075, 7084, 6838, 5889]. **AI-based** [7084]. **AI/ML** [6899]. **Aid** [14, 681, 5058, 1561]. **Aided** [7515, 7341, 7411, 7458, 7290, 7358]. **Aiken** [4124]. **air** [4550]. **Aircraft** [51]. **Airy** [5889]. **Aizu** [7393]. **Aizu-Wakamatsu** [7393]. **al** [407, 407, 407]. **al-Fusul** [407]. **al-Hasan** [407]. **al-Hindi** [407]. **al-Uqlidisi** [407]. **ALA'01** [4826]. **Alabama** [7300]. **Alamos** [2751]. **Alan** [7467, 703]. **Albena** [7287]. **Albuquerque** [7285]. **Alegre** [7494]. **Alessandro** [7392]. **Algebra** [3547, 4501, 1580, 7213, 7325, 4336, 6388, 4826, 7025, 6806, 3482, 7073, 5966, 6249, 2066, 3878, 4699, 6683, 6684, 5840, 832, 2955]. **Algebraic** [7496, 7169, 5130, 429, 2367, 4184, 7369, 388, 5298, 5736, 3763, 3626, 7354, 4382, 2143, 7445, 1070, 3821, 5211, 7405, 5097, 7308, 7535, 7130, 7136, 4288, 45, 5251, 1826, 514, 515, 4222, 4381, 3301, 2117, 7172, 5854, 2969, 1678, 5200, 4767, 457]. **Algebraic-integer** [2367]. **Algebraicznych** [457]. **ALGOL** [578, 734, 757, 578, 491, 539, 272, 410]. **algorism** [4672, 1026]. **Algorithm** [1708, 5236, 1709, 1260, 3960, 4954, 6472, 3036, 3219, 3713, 3850, 1806, 3039, 725, 6861, 5245, 1372, 807, 1492, 2048, 5471, 6368, 6640, 6482, 6753, 1098, 1814,

3399, 4971, 3558, 1497, 5683, 3723, 814, 5687, 1820, 2200, 5262, 3983, 2340, 2059, 1017, 1825, 2870, 5136, 2348, 1831, 3069, 4003, 5701, 6394, 1115, 1835, 428, 4014, 4833, 6160, 5509, 3432, 4848, 3602, 3755, 4030, 4548, 4032, 4201, 4202, 6530, 2382, 2717, 1617, 5012, 5723, 5725, 740, 3448, 972, 5522, 2090, 5739, 1630, 1873, 5308, 3289, 2736, 828, 6904, 5926, 6083, 3458, 313, 5313, 5314, 4061, 2422, 5037, 1048, 5605]. **Algorithm** [2105, 569, 2107, 262, 640, 4726, 2113, 6915, 762, 2948, 1649, 1890, 2115, 2255, 5334, 2567, 6196, 6437, 1654, 1897, 4412, 2775, 2961, 4414, 1532, 1661, 2778, 2779, 3661, 6006, 4898, 5428, 5767, 1157, 2590, 6112, 4904, 923, 2139, 924, 7067, 775, 4611, 1243, 2015, 5634, 6014, 372, 3816, 4114, 3185, 4119, 4449, 5089, 1693, 6217, 456, 4457, 2823, 3519, 2155, 489, 5558, 5782, 5866, 5956, 595, 3699, 1478, 244, 3207, 3532, 5108, 4280, 2631, 1710, 603, 2173, 2040, 4783, 6473, 3550, 3851, 5241, 6367, 3400, 1582, 1720, 4803, 2662, 2663, 3404, 5129, 3230, 2670, 2508, 3981, 3568, 3413]. **algorithm** [5692, 3727, 3416, 3239, 4333, 4334, 3871, 3872, 6264, 3579, 3071, 465, 4683, 4685, 4994, 4009, 3580, 1204, 5287, 4837, 2215, 5824, 5707, 6271, 1971, 3885, 4195, 3258, 3437, 3438, 4200, 2900, 514, 515, 2716, 4033, 3890, 5917, 4709, 5019, 2399, 748, 5741, 2733, 2734, 5167, 2551, 2737, 6692, 5837, 4567, 3460, 4570, 4571, 3628, 3779, 5040, 2938, 2247, 5843, 573, 4880, 761, 577, 1762, 2949, 4883, 5049, 1891, 983, 5419, 6000, 3306, 6330, 2777, 5852, 3146, 5542, 2780, 2968, 1907, 2969, 2449, 4741, 5427, 2131, 2584, 4602, 4747, 4908, 997, 1064, 3337, 3177, 3685, 3514, 1922, 3515, 2603, 293, 1927]. **algorithm** [2812, 3002, 5090, 4764, 5449, 5450, 4277, 3191, 6457, 659, 2484, 3200, 3362, 4771, 5455, 5105, 6020, 3372, 7115, 4943, 6657, 3034, 3551, 2048, 6753, 1192, 2201, 3053, 3054, 3055, 3056, 384, 6052, 1118, 1205, 4998, 5501, 432, 4018, 512, 6401, 564, 2089, 3666, 5442, 270, 2806, 3940, 4441, 5651, 6800]. **algorithm-based** [2247, 3514, 3200, 3362, 3372]. **Algorithmen** [2394, 2231, 2568, 1699, 2301]. **Algorithmes** [4675, 5323, 4342, 2757]. **Algorithmic** [5819, 7485, 3898, 252, 3657, 2797]. **Algorithmics** [7052, 4480, 5085]. **Algorithmique** [5085, 4480]. **Algorithms** [850, 2037, 6626, 4143, 4144, 722, 1805, 3849, 855, 665, 1011, 6860, 7466, 3224, 5382, 5671, 6246, 1265, 1375, 5388, 5390, 1584, 275, 3056, 6255, 3864, 4669, 1105, 5812, 2875, 4520, 4521, 4675, 3244, 4522, 3729, 6049, 1022, 1023, 1024, 1112, 6890, 5399, 3073, 4008, 4174, 6509, 5142, 2071, 2360, 6778, 6779, 5500, 3075, 467, 3739, 736, 823, 877, 6665, 1517, 6059, 5507, 883, 4191, 5152, 2535, 7510, 4199, 4358, 3605, 4547, 3606, 3889, 1519, 1412, 1521, 3274, 4206, 4706, 4707, 3099, 3100, 5730, 2542, 3101, 6177, 6685, 2394, 2231, 4215, 827, 521, 1420, 3900, 7533, 522, 6690, 3112]. **Algorithms** [4558, 3290, 4377, 630, 5835, 5315, 2931, 1528, 4062, 3121, 2934, 3296, 7355, 7475, 1049, 6808, 3637, 1639, 1887, 686, 1640, 690, 1641, 4879, 7233, 7247, 4399, 5046, 4583, 3300, 447, 356, 476, 360, 3644, 5050, 4405, 2568, 3791, 7048, 4409, 1322, 3794, 3316, 1440, 3798, 1443, 4250, 1444, 1770, 6007, 2790, 3803, 7304, 6009, 6822, 5946, 5947, 7292, 6939, 4609, 774, 2457, 3503, 5346, 925, 7070, 7071, 711, 3683, 373, 4113, 1341, 2604, 2813, 2814, 5780, 5865, 3006, 939, 2825, 3829, 1699, 2301, 5561, 3360, 1473, 3368, 7114, 5107, 5376, 551, 3210, 1083, 3549, 5462, 5966, 4497, 4965]. **algorithms** [4309, 5125, 6139, 6244, 6755, 6864, 7255, 2665, 2199, 221, 3860,

1960, 419, 3990, 1827, 1199, 2682, 3061, 3417, 4818, 2205, 1836, 3247, 4682, 6894, 3426, 225, 5144, 5147, 6062, 6398, 7282, 4024, 4702, 5717, 1299, 3270, 5302, 1982, 741, 2919, 4379, 2412, 3117, 4572, 1754, 2423, 3781, 830, 1755, 1882, 1637, 5607, 7389, 7400, 7416, 7429, 7443, 7460, 4067, 2562, 4728, 3132, 2757, 5048, 5183, 2434, 2566, 5185, 5420, 6439, 4078, 5853, 4080, 1442, 1663, 5618, 6203, 2267, 4899, 2453, 4602, 2592, 4090, 3930, 4610, 3167, 3168, 3505, 5348, 2463, 1784, 2023, 5212, 4762, 3001, 1073, 2824, 3192, 492]. **algorithms** [1703, 4936, 5374, 3019, 4944, 2346, 2046, 7233, 7247, 357, 2006, 1061, 1537, 4666]. **Algorithmus** [2046, 384, 2006, 1537]. **Alignment** [5941, 3853, 3917]. **alignments** [1920]. **all-one** [4975]. **Allerton** [7139]. **Alley** [3602]. **allgemeine** [1094, 1210]. **allgemeiner** [1352]. **Allocatable** [3471, 3482]. **Allocation** [6603, 4539, 5741, 4585, 4587, 4458, 3352]. **Alloy** [5846, 5997]. **Almost** [7123, 2280, 5040]. **Alpha** [2986, 3387, 2878, 3508, 3342]. **alphabetical** [101]. **Alps** [6801]. **also** [2962]. **Alternanten** [767]. **Alternate** [4417]. **alternating** [3634]. **Alternative** [1279, 6668, 6546, 6916, 6373, 961, 574, 6334, 4633]. **Alternatives** [4300, 1142, 6430, 3130, 4596, 4712]. **Alto** [7372, 7358]. **ALU** [4294, 5461, 5660, 6397, 2095, 1902, 1659, 5778, 2033, 1798, 2845]. **ALUs** [2166]. **always** [6128]. **am** [1652, 7189, 2610]. **Am25S05** [620]. **Am29000** [2264]. **Am29027** [2264]. **Am29050** [2571]. **Am29C327** [2315]. **Am9511A** [1380]. **Am9511A/Am9512** [1380]. **Am9512** [1270, 1380]. **ambiguity** [4947]. **AMD** [6848, 6512, 4036, 3919, 4078, 3929, 3930, 4092, 4263]. **AMD-K7**^{TM} [4078, 3930]. **AMD5** [3915]. **ameliorating** [1037]. **amélioration** [4309]. **America** [23]. **American** [2039, 7192, 7127, 2856, 31]. **Amherst** [7555]. **Amidst** [6785]. **Among** [1221, 4073]. **amount** [4022]. **Amounts** [3735, 3877, 4004]. **amplifier** [2220]. **Amplifiers** [184]. **Amplifying** [1718]. **Amsterdam** [7495, 7560]. **AN-Codes** [4344]. **AN/UYK** [838]. **AN/UYK-17** [838]. **Anaheim** [7224, 7252, 7280]. **Analog** [462, 111, 4186, 3594, 139, 140, 230, 113, 232, 443, 369, 4093, 132, 150, 4137, 2889, 4846, 4034, 689, 4909, 1687, 3691, 2310]. **Analog-To-Digital** [4137, 4186, 4846, 3691]. **Analogrechenschaltungen** [547]. **analogue** [547, 1063, 3206]. **analogue-to-digital** [3206]. **Analyse** [5688, 40, 7153]. **Analyses** [4349, 3897, 1466, 2815]. **Analysis** [602, 2169, 7174, 152, 4292, 1803, 5119, 7338, 6639, 6476, 4306, 6477, 6245, 3397, 6642, 171, 5683, 5476, 1584, 2332, 2665, 5687, 1588, 2671, 1385, 1017, 6765, 7312, 6147, 3866, 6656, 6994, 6505, 2352, 6392, 6999, 7098, 818, 4838, 7206, 112, 5709, 4842, 5711, 5825, 2895, 3084, 6526, 6527, 126, 4548, 2220, 7559, 4036, 6678, 396, 3275, 7229, 2910, 6174, 2390, 397, 627, 2725, 2913, 742, 1138, 1045, 399, 6300, 6694, 3777, 831, 5752, 6189, 6556, 6804, 2747, 1147, 6321, 4400, 355, 913, 5050, 6098, 5335, 2766, 1898, 763, 836, 4888, 2963, 1056, 1661, 4083, 987, 1155, 1906]. **Analysis** [4901, 5769, 1536, 2796, 705, 6823, 7066, 5859, 5345, 5774, 2458, 4269, 784, 38, 42, 3679, 931, 2991, 3511, 1070, 1341, 2813, 2814, 7128, 5213, 6719, 6347, 7113, 2823, 3830, 6610, 1474, 7191, 216, 5227, 7491, 7153, 2846, 2847, 7116, 411, 2631, 2170, 5458, 1947, 2040, 3549, 495, 1488, 1089, 1189, 1368, 1807, 2180, 2498, 2181, 4301, 5806, 3718, 1582, 1720, 2663, 3404, 6375, 3051, 40, 422, 1827, 2063, 3062, 6264, 2205,

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5913, 4550, 1038, 1522, 1868, 2390, 1984, 3282, 3283, 473, 744, 3284, 2402, 2240, 895, 2552, 3293, 899, 975, 524, 571, 683, 4236, 5327, 1436, 5331, 4410, 984, 2960, 3145, 580, 6201, 4088, 1536, 1909, 2009, 2452, 2587, 2796, 2977, 839, 2979, 1917, 5952, 1067, 5079, 2289, 4272, 1787, 3828, 1796, 1938, 2625, 2490, 2847, 3240]. **FINAC** [136]. **Final** [3140, 3567]. **Financial** [5802, 7027, 4259]. **Find** [6362, 1092, 2894, 5806, 5541]. **Finding** [6968, 3539, 4657, 4320, 560, 2389, 6906, 7029, 4578, 6340, 6450, 6342, 531, 785, 5960, 415, 862, 954, 4571, 2749, 4447, 1834]. **Fine** [6422, 7051, 3251]. **Fine-Grain** [7051, 3251]. **Fine-grained** [6422]. **Finely** [6513]. **Finely-Pipelined** [6513]. **Fingers** [14, 170]. **Finite** [5120, 5465, 5666, 5475, 3560, 3561, 4525, 5709, 4351, 5511, 4194, 3452, 1634, 1875, 5025, 5601, 4391, 7037, 691, 1314, 1643, 1888, 3137, 448, 4885, 1655, 3650, 5421, 4411, 1447, 1237, 6011, 4435, 1915, 4469, 4629, 6956, 2845, 5962, 4653, 5247, 1815, 2512, 5490, 3874, 465, 4533, 1209, 2897, 2898, 3083, 2222, 1411, 5157, 1038, 4711, 3901, 5167, 635, 759, 2429, 5183, 835, 3658, 2449, 2597, 3510, 2815, 2484, 3199, 2486, 5102, 3954, 3955, 4628, 4630, 4937, 1753]. **finite-element** [2815]. **Finite-Field** [5465, 5421, 5490]. **Finite-Precision** [4469, 759, 5102]. **Finite-state** [5666]. **FIR** [1810, 4155, 5695, 4817, 2348, 3587, 3440, 2924, 4236, 1149, 4410, 2019, 4120, 3951, 4626, 4466, 3240]. **Fire** [51]. **Firmware** [3789, 1836, 1632, 917]. **Firmware-Oriented** [3789]. **First** [7201, 195, 5270, 7327, 7362, 3888, 7162, 7329, 7385, 566, 7033, 1145, 7553, 3479, 237, 1908, 2590, 73, 19, 22, 56, 3196, 956, 7422, 249, 6896, 7282, 3749, 3758, 7512, 1051, 368, 1158, 4426, 7358, 3187, 2153, 3828, 3010, 7538, 587]. **first-** [3828]. **first-in** [3187]. **first-order** [3010]. **first-out** [3187]. **Fischler** [2476]. **Fisherman** [7442]. **Fists** [170]. **Fitting** [372]. **Five** [5051, 1713, 3431]. **five-moduli** [1713]. **fix** [6362, 6518]. **fixe** [2757]. **Fixed** [2631, 4484, 5655, 3536, 5872, 2040, 1370, 6640, 2664, 1820, 3051, 6379, 3982, 4807, 959, 2073, 6784, 3882, 389, 6278, 4193, 3889, 6286, 740, 5732, 5733, 3288, 1138, 3904, 6299, 6424, 4058, 4390, 5993, 910, 1147, 6434, 5774, 7075, 189, 6603, 490, 5556, 6723, 6952, 5647, 7090, 5895, 6044, 6770, 5377, 1262, 1809, 4799, 2663, 5888, 735, 4836, 967, 2707, 5913, 6675, 3266, 3267, 2718, 3270, 5302, 3608, 2390, 1985, 520, 4223, 6186, 683, 980, 2757, 6699, 3139, 3790, 2441, 5420, 2960, 5337, 2269, 3330, 4908, 6209, 5952, 4614, 4916, 3341, 4763, 4120, 147, 1796, 540, 541, 2302, 2623]. **fixed** [6043]. **Fixed-** [2664, 5732, 5733, 5647, 2757]. **Fixed-Integer** [740]. **Fixed-Point** [4484, 5872, 6379, 3882, 6278, 3889, 6286, 3288, 3904, 6424, 4390, 6434, 5774, 7075, 6603, 490, 6723, 6044, 2631, 2040, 3051, 2073, 6299, 7090, 5895, 5377, 1809, 5888, 735, 4836, 967, 2707, 5913, 6675, 3266, 3267, 1985, 4223, 6186, 683, 6699, 3139, 2441, 5420, 2960, 3330, 4908, 5952, 4614, 4916, 3341, 4763, 4120, 2623, 6043]. **Fixed-Point-Arithmetic** [6640]. **Fixed-Posit** [6784]. **fixed-precision** [2302]. **Fixed-Rate** [5993]. **Fixed-Size** [1820, 4058]. **Fixed-Slash** [1138, 910, 1147]. **Fixed-Width** [5556, 3790]. **Fixed-Word-Length** [389]. **fixing** [6222]. **flag** [5447]. **flagged** [4973]. **flags** [5208]. **Flap** [5550]. **flash** [5193]. **Flaw** [3410, 3495, 3383, 3340]. **FLECKmarks** [3572]. **flerformat** [1739]. **Flex** [2061]. **Flex/32** [2061]. **FlexBlock** [7053]. **flexibility** [3197]. **Flexible** [5501, 6513, 6782, 6783, 5822, 6286, 4560, 1885,

7053, 697, 4754, 2833, 6729, 4526]. **flexiblen** [1885]. **Flexpoint** [6442]. **Fließkomma** [2299, 2300, 2301, 2480, 2481, 1475]. **Fließkomma-Arithmetik** [2299, 2300, 2301, 2480, 2481, 1475]. **Fließkommapakets** [2300]. **Flight** [3777, 3629]. **flip** [5933]. **Float** [2112, 2450, 5792, 6357, 5148, 5010, 6018, 6518, 3327]. **Float-Fix** [6518]. **float-float** [5148]. **float-point** [6018]. **float-Precision** [3327]. **float-to-string** [6357]. **float.h** [2788, 2582]. **Float16** [6970]. **Float8** [6970]. **FLOATing** [5617, 2039, 4490, 6971, 3956, 2630, 5793, 6965, 2036, 6462, 4638, 4949, 5237, 5794, 6022, 6127, 6626, 5568, 4485, 4639, 3841, 6967, 2170, 2171, 4487, 4950, 217, 416, 3960, 5655, 6226, 6464, 6968, 6227, 1484, 2853, 2854, 2855, 3025, 3026, 3027, 3028, 3029, 3212, 3213, 3214, 3216, 3539, 4644, 5116, 5118, 6027, 6361, 6363, 6632, 6969, 5657, 5658, 5800, 5801, 1947, 169, 1803, 5877, 6745, 4298, 2317, 4960, 1367, 1808, 3388, 5967, 1012, 3389, 3390, 3967, 4148, 4149, 4150, 1949, 4498, 2323, 4305, 1950, 4785, 6748, 1576, 2500, 2185, 3717, 6478, 5669, 860, 1014, 1094]. **Floating** [2047, 2327, 2650, 2865, 4505, 4506, 5248, 5468, 5671, 5882, 6033, 6034, 6035, 6368, 6751, 6980, 3396, 3397, 6981, 1578, 1579, 3398, 2050, 1718, 6036, 2502, 2051, 727, 2329, 5253, 5885, 6140, 105, 1266, 1267, 1376, 6485, 4314, 4798, 4972, 6372, 6643, 6989, 3556, 6488, 2504, 5474, 247, 6374, 864, 5682, 171, 3228, 3403, 1497, 1498, 5388, 5128, 6647, 2660, 1583, 5576, 2664, 3562, 4319, 5477, 5811, 6868, 1270, 2667, 2668, 2669, 5970, 6038, 6253, 3052, 3982, 1724, 2510, 730, 1196, 1385, 1501, 1502, 1725, 1824, 2202, 2340, 3054, 3985, 6144, 3987, 1197, 1198, 1274, 1387, 1726, 5891, 3864]. **Floating** [3991, 5131, 5263, 5485, 5486, 2870, 4322, 4807, 3411, 3412, 3571, 2061, 2062, 3414, 3727, 6151, 6147, 3572, 3866, 3868, 4327, 6767, 2345, 2514, 2515, 6656, 3997, 3998, 4329, 2204, 4816, 616, 2347, 2880, 3243, 4336, 4522, 4524, 4676, 4819, 5897, 5898, 6045, 6772, 6150, 1964, 5269, 4680, 6886, 5271, 5139, 6505, 3733, 4340, 6888, 6775, 1965, 2065, 501, 6153, 3876, 1732, 1832, 2884, 2886, 1967, 5398, 504, 1394, 1833, 6393, 6662, 4528, 5279, 5497, 3422, 3737, 4008, 4174, 3249, 5498, 1837, 4689, 6156, 2211, 1278, 6778, 6779, 962, 1511, 3423, 1203, 6510, 1513, 4690, 6157, 5587, 4180, 7003]. **Floating** [821, 2213, 6511, 6663, 7005, 4997, 5818, 1279, 2214, 2890, 6268, 4530, 2698, 5703, 2525, 3252, 3740, 227, 228, 1607, 1970, 5503, 823, 877, 4020, 5821, 880, 1284, 6784, 1740, 2369, 2701, 2702, 4698, 965, 5400, 5910, 6269, 6666, 966, 1032, 1402, 1609, 6667, 4349, 4538, 5508, 306, 1610, 307, 677, 2217, 2218, 2373, 1848, 1849, 4186, 7010, 5712, 5713, 2708, 6164, 6273, 6274, 6275, 6786, 7100, 4847, 3746, 969, 391, 392, 3433, 3751, 4027, 4189, 4190, 5151, 5291, 3886, 6520, 3256, 2535, 1035, 1036, 3600, 3086, 6788, 5591, 1615, 1975, 1296, 435, 6674]. **Floating** [4358, 970, 6528, 3441, 5517, 2537, 5719, 1298, 2539, 2713, 2903, 6168, 6676, 6284, 1300, 1409, 5300, 5827, 3889, 1131, 6171, 1618, 5156, 3892, 6533, 1860, 1861, 1862, 2086, 2087, 6534, 7019, 4208, 5161, 5728, 6679, 3097, 3098, 4203, 3274, 342, 1864, 4207, 5158, 5592, 6075, 2908, 5915, 3099, 3100, 5731, 6287, 5522, 5734, 5736, 5916, 5918, 6288, 6414, 4040, 4365, 3894, 5523, 1303, 1626, 1221, 2392, 6177, 6292, 6685, 255, 6294, 1627, 5921, 6178, 626, 344, 1223, 1307, 1416, 1986, 2232, 2914, 3761, 3895, 3896, 4212, 4366, 4555, 4855, 4856, 5017, 5407, 4369, 3763, 742, 745, 3284, 7023, 5304, 3285, 1870]. **Floating**

[5740, 2546, 6543, 1750, 890, 1041, 258, 2547, 3288, 5526, 827, 4220, 3456, 2408, 2921, 2922, 1138, 5309, 5310, 5832, 4378, 3770, 750, 751, 893, 1987, 4561, 895, 1045, 752, 6080, 5834, 5924, 3292, 6550, 6551, 6905, 6906, 6299, 6300, 4566, 4868, 6691, 6084, 6181, 6303, 6305, 5174, 1636, 6087, 5032, 2103, 349, 2418, 2741, 2743, 2930, 6183, 4569, 4870, 5035, 6184, 6308, 6553, 5749, 5750, 6803, 1528, 440, 5318, 5319, 7032, 7034, 6188, 1141, 6429, 2105, 5178, 5993, 6430, 831, 904, 1430, 570, 5751, 6189, 3296, 2935, 2936, 2246, 2425, 6316, 6559, 2747, 1889, 4884, 2556, 94, 6561, 1759, 639]. **Floating** [686, 2558, 5935, 3640, 979, 6433, 1640, 2754, 7040, 1642, 6191, 3128, 5844, 6807, 4580, 525, 576, 910, 1147, 3785, 5758, 402, 2563, 1148, 4400, 6915, 6322, 1998, 6323, 3472, 3137, 5611, 4401, 7044, 7109, 982, 2254, 5537, 5328, 3788, 449, 5998, 5999, 6326, 6327, 6328, 6570, 6571, 362, 2433, 5539, 1531, 1763, 6194, 641, 1895, 2116, 2257, 2437, 2438, 3142, 5053, 5615, 6196, 6436, 1437, 3916, 1151, 2117, 2766, 7054, 4408, 2444, 2445, 6438, 6574, 6703, 5938, 915, 5060, 5939, 6005, 3792, 5187, 5336, 7053, 3482, 2775, 4079, 3652, 3654, 3656, 3795, 3796, 4078, 5063, 2570]. **Floating** [2963, 2571, 5941, 4415, 2778, 2779, 5422, 7056, 2003, 644, 1058, 1324, 2574, 2263, 4254, 6202, 645, 6709, 1156, 1234, 1326, 5943, 6006, 5619, 2127, 7060, 701, 4257, 4423, 6007, 2267, 2786, 2787, 3153, 2007, 6579, 5544, 837, 2790, 2974, 1772, 6111, 2583, 3156, 4901, 5620, 5429, 5430, 2008, 6443, 6444, 2273, 991, 2977, 2274, 1238, 3670, 921, 922, 6205, 2275, 993, 3159, 2276, 4606, 5621, 2277, 6207, 2798, 5070, 5438, 5439, 5623, 5948, 4263, 6712, 6449, 1540, 6340, 1679, 453, 1680, 6341, 3932, 3933, 5072, 1543, 4095, 2595, 1454, 1775, 4912, 5074, 5346, 2283, 4103, 4269, 4439, 4753, 5075, 5775]. **Floating** [7070, 4613, 5077, 2984, 1685, 7075, 1776, 5633, 5861, 2596, 3681, 4916, 2462, 269, 212, 2147, 2985, 2017, 5778, 1546, 2464, 787, 1686, 2806, 2991, 3179, 3180, 3181, 3343, 3686, 3687, 2288, 5953, 6215, 6944, 7081, 3344, 6116, 6117, 6591, 2020, 2021, 1689, 1690, 2996, 5954, 2602, 4917, 5205, 5206, 5207, 5208, 5443, 5444, 5445, 5446, 5447, 2810, 2997, 843, 1338, 1458, 1459, 1785, 5550, 3942, 3943, 5088, 1340, 2292, 4114, 2025, 5864, 4272, 6216, 3945, 1786, 5552, 2471, 2608, 2609, 3003, 5091, 5092, 1465, 5553, 6719, 1789, 5215, 5359, 3518, 4924, 6119, 6604, 4122, 592, 3348, 4456]. **Floating** [6347, 7084, 6015, 7085, 6454, 1072, 5360, 2027, 3828, 848, 5361, 5554, 2823, 3191, 3519, 2825, 6721, 3351, 6348, 2827, 2828, 1349, 5095, 1075, 5555, 5866, 3696, 1350, 3831, 3194, 6221, 6455, 6456, 2300, 3949, 215, 6356, 1469, 1701, 2618, 1702, 5101, 5224, 5368, 5369, 5562, 5563, 5644, 5647, 6458, 1556, 1354, 1471, 1472, 1473, 1474, 3953, 2033, 5787, 7088, 2034, 3012, 3013, 5958, 216, 3202, 2303, 6223, 2837, 4282, 6124, 134, 1797, 5227, 5959, 2626, 799, 1357, 3020, 1706, 3530, 5375, 5790, 4137, 948, 1941, 6726, 6840, 6841, 5961, 6619, 5108, 5566, 5651, 5109, 5376, 5233, 6621, 5582, 5697]. **Floating** [5894, 4625, 6351, 4280, 1937, 2172, 3376, 5377, 662, 2852, 1943, 1944, 6460, 3958, 1564, 5654, 6225, 3024, 3706, 3843, 5457, 5458, 6025, 6128, 6026, 720, 296, 1485, 2493, 2635, 3030, 3215, 3381, 3382, 3383, 3384, 4489, 6362, 6469, 6470, 6970, 2494, 1085, 1010, 5659, 1800, 2313, 1801, 1802, 1362, 2315, 1569, 1570, 2041, 2316, 4783, 6132, 4146, 1487, 2497, 2862, 3038, 5572, 5880, 2043, 1368, 1807, 2180, 2498, 2181, 5881, 4301, 2045, 2320, 6975, 2644, 3222, 3040, 2321, 4304, 5243,

5244, 1091, 2182, 1370, 2324, 5806, 4788, 2499, 1190, 5124, 3853, 2325]. **floating** [6242, 2326, 2186, 2647, 2648, 3046, 1813, 4309, 4504, 4654, 4791, 4792, 4793, 5125, 5247, 5968, 6244, 3718, 1716, 299, 2187, 666, 5250, 5574, 4312, 3854, 1015, 4796, 5385, 5575, 6983, 6984, 7096, 2188, 1016, 1193, 6371, 5810, 6644, 3227, 4973, 3557, 1815, 2190, 2657, 7097, 6373, 1954, 6489, 1377, 6490, 3402, 6251, 1378, 4803, 4974, 2662, 3229, 379, 1585, 6375, 3857, 4977, 1818, 2056, 2666, 3724, 3859, 5888, 1380, 1722, 2200, 2336, 4510, 5482, 3980, 3981, 5971, 4805, 4806, 3984, 1589, 5484, 5690, 6145, 4163, 2675, 1104, 1961, 3990, 4672, 4517, 421, 5487, 3413, 5692, 2343]. **floating** [2871, 2872, 2873, 3867, 3996, 3238, 6261, 2680, 6262, 5394, 5395, 959, 1276, 2682, 6385, 5974, 5698, 3060, 2879, 3242, 3417, 4523, 4677, 4818, 6149, 6047, 3999, 3062, 249, 4822, 5138, 5268, 4337, 961, 4526, 5583, 6659, 5140, 2517, 5273, 2518, 4987, 2349, 4170, 2883, 5274, 2205, 502, 1733, 1734, 2885, 5980, 4002, 1202, 5276, 5141, 5495, 734, 1116, 4993, 4175, 4176, 6894, 4687, 4688, 5586, 1512, 1968, 2361, 1736, 1969, 819, 508, 3738, 1204, 5283, 1029, 6267, 2891, 2365, 4836, 6664, 4694, 5820, 4695, 282, 3077, 3253, 4697, 4839, 3078, 2527, 621, 879, 1030, 1208, 1283]. **floating** [1739, 3429, 2893, 3079, 1031, 2703, 1843, 5505, 1844, 2531, 1845, 5707, 2371, 4842, 4843, 1846, 5401, 5984, 6061, 6515, 1287, 2372, 252, 178, 3883, 2376, 1850, 4352, 4846, 3884, 2533, 4023, 6671, 6672, 3081, 4024, 5005, 3594, 5826, 7012, 4025, 4541, 4701, 6519, 2895, 2896, 3596, 6402, 3084, 3435, 3597, 1291, 1407, 1213, 1974, 3599, 2219, 3436, 1408, 1297, 3261, 3091, 4031, 2220, 4549, 2901, 2536, 3092, 2712, 5296, 5297, 1744, 2904, 6407, 6532, 6677, 5721, 2084, 5722, 516, 826, 1215, 2384, 5724, 681, 2386, 1218, 1863, 1746, 3276, 3609, 5159, 5160, 5162, 5518, 2223, 2224, 4035, 4552, 3608]. **floating** [1133, 1219, 1866, 2387, 4708, 5914, 2907, 4554, 5732, 5733, 1624, 3279, 5986, 6175, 6289, 6290, 6413, 201, 2088, 3612, 5987, 6417, 2227, 2912, 3103, 3280, 5988, 2229, 2396, 2397, 2230, 3104, 2092, 2093, 3450, 3615, 3616, 4211, 4213, 5738, 4710, 2916, 3282, 3452, 3618, 3283, 6078, 628, 473, 744, 2400, 2401, 2402, 2403, 746, 747, 1224, 2236, 2097, 1632, 311, 520, 4862, 4863, 2735, 1225, 1226, 2407, 2409, 2410, 1751, 1874, 1527, 1752, 5600, 6798, 3624, 3902, 4379, 3116, 3291, 4866, 5602, 2925, 3457, 5311, 829, 897, 973, 1993, 4223, 5925, 6082, 4867, 2552, 3293]. **floating** [899, 975, 2927, 7029, 2242, 2243, 5927, 6422, 6302, 3905, 3906, 5836, 5175, 7106, 6186, 755, 2742, 2929, 3118, 4568, 5839, 6088, 5991, 5931, 4871, 3778, 4393, 4574, 351, 4576, 3909, 4872, 524, 571, 5606, 1757, 5322, 3631, 5607, 5933, 1638, 5324, 5325, 4231, 5995, 4874, 6560, 2248, 1050, 1995, 1313, 2942, 3638, 573, 640, 757, 758, 401, 688, 689, 574, 5996, 2250, 4876, 1996, 1997, 980, 909, 3127, 1434, 2562, 4581, 4725, 6095, 3130, 2252, 2114, 2757, 5047, 2253, 5327, 3136, 6698, 7043, 1646, 1647, 1648, 695, 2564, 5759, 5847, 3474, 5329, 4883, 5049, 5331, 5332, 5333, 5417, 5538, 6917]. **floating** [2565, 1999, 3915, 5052, 5419, 319, 1894, 2256, 2436, 2439, 2763, 3648, 6001, 2955, 2956, 917, 7050, 2442, 2443, 984, 4244, 3310, 4732, 2260, 3145, 6199, 3311, 3312, 3921, 2447, 3797, 4892, 6928, 3317, 580, 4893, 5337, 5853, 6201, 480, 4246, 3147, 3148, 5338, 5542, 6107, 5854, 985, 4249, 4084, 4252, 5765, 765, 986, 3800, 4085, 7059, 4738, 3324, 6109, 4896, 1327, 2004, 5766, 2264, 208, 700, 989, 2265, 2969, 2266, 3802, 7061, 2268, 2580,

3326, 526, 7062, 3493, 2269, 7118, 2584, 2792, 2976, 4902, 2272, 3329, 4088, 5769, 2452, 2587, 2796, 2588, 2589, 1773, 2135, 1332, 5067, 6821]. **floating** [992, 528, 1240, 1241, 1333, 706, 1062, 2978, 1063, 3330, 1677, 483, 4908, 3497, 773, 5945, 5625, 5626, 5856, 6210, 5772, 3929, 3930, 4092, 1336, 4909, 4608, 1913, 3160, 107, 5773, 5629, 6450, 997, 2979, 2458, 3931, 5630, 3673, 3333, 776, 2013, 2280, 2594, 2141, 7069, 4910, 6013, 709, 710, 3171, 3812, 4104, 4752, 5547, 2460, 3934, 4440, 4914, 4915, 5776, 3936, 3678, 2800, 2801, 2982, 2983, 2802, 3340, 3176, 2285, 3680, 3814, 4614, 926, 3177, 3506, 2016, 3507, 1065, 3938, 5201, 4111, 4441, 6715, 3815, 2467, 1688, 1921, 2995, 4616, 2289, 1169, 2468, 2469, 4442]. **floating** [4443, 4618, 5082, 5083, 5084, 5209, 5210, 5351, 5352, 5353, 5354, 1784, 1460, 292, 1461, 2024, 4760, 3690, 4117, 375, 323, 4762, 845, 2818, 2819, 3187, 3188, 5090, 1928, 3691, 147, 1464, 1787, 1930, 2295, 1934, 1788, 3004, 5214, 6345, 3005, 1696, 846, 3347, 4453, 4925, 1071, 3349, 1346, 4123, 4278, 7113, 1791, 3693, 1792, 1697, 1936, 4126, 4279, 2029, 941, 6349, 4928, 4929, 715, 794, 3694, 1793, 2616, 2477, 2479, 4459, 4460, 2031, 5222, 1351, 2830, 2160, 492, 3197, 2482, 849, 3951, 2485, 3008, 4769, 4934, 5223, 5370, 5786, 6222, 2486, 1795, 1703, 1355, 1796, 540, 541, 542]. **floating** [2162, 2302, 5102, 795, 2487, 2488, 1255, 294, 1704, 2163, 3203, 3366, 1938, 1559, 2305, 2489, 1356, 2622, 4130, 1798, 1560, 4937, 5229, 5565, 5788, 947, 2625, 4132, 4283, 4938, 4939, 5789, 598, 797, 2842, 6957, 194, 2844, 2308, 2490, 2846, 2847, 3206, 3838, 7115, 5231, 4944, 4945, 5110, 5112, 4635, 4775, 4776, 2310, 6732, 6962, 5134, 2346, 2683, 1252, 6480, 1731, 3893, 4869, 1884, 3645, 3189, 2299, 2300, 2301, 2480, 2481, 1475, 5581, 995]. **floating-** [5377, 5888]. **Floating-Decimal** [134]. **Floating-Point** [2039, 6971, 3956, 2630, 4638, 4949, 5237, 5794, 5568, 4639, 6967, 4950, 3960, 6464, 6968, 6227, 4644, 5118, 6361, 6363, 6632, 6969, 5657, 5658, 5800, 5801, 5877, 6745, 4960, 3389, 3967, 4148, 4149, 4150, 1949, 4498, 2323, 4785, 6748, 2500, 3717, 5669, 860, 1014, 1094, 2047, 2650, 2865, 5248, 5468, 5671, 5882, 6033, 6034, 6035, 6368, 6751, 3397, 3398, 2050, 6036, 2502, 2051, 727, 2329, 5885, 6140, 1266, 1267, 1376, 4314, 6372, 6643, 6989, 3556, 6488, 5474, 247, 864, 5682, 3228, 3403, 5128, 6647, 2660, 1583, 5576, 2664, 3562, 4319, 5477, 5811, 6868, 1270, 6253, 730, 1385]. **Floating-Point** [1502, 1725, 2340, 3054, 3985, 6144, 3987, 1198, 1274, 1726, 5891, 3864, 3991, 5131, 5263, 5485, 5486, 2870, 4322, 3411, 3412, 3571, 2061, 6151, 6147, 4327, 6767, 2514, 2515, 6656, 4329, 4816, 616, 5897, 5898, 6045, 6772, 6886, 5271, 5139, 6505, 4340, 6888, 1965, 2065, 6153, 3876, 1732, 2884, 2886, 5398, 504, 6662, 4528, 5279, 5497, 3422, 4008, 4174, 1837, 6156, 2211, 1278, 6778, 6779, 1511, 6157, 4180, 7003, 2213, 6511, 4997, 5818, 1279, 2214, 2890, 6268, 4530, 5703, 3740, 1970, 5503, 877, 4020, 880, 1284, 6784, 2701, 2702, 4698, 5400, 5910, 6269, 6666, 1402, 1609]. **Floating-Point** [6667, 4349, 4538, 5508, 306, 2217, 2218, 2373, 1849, 4186, 7010, 5713, 6786, 4847, 969, 391, 392, 5291, 3886, 2535, 6788, 5591, 1975, 970, 6528, 2539, 2713, 2903, 6168, 6284, 1300, 5300, 5827, 3889, 1131, 6171, 1618, 6533, 1860, 1861, 1862, 2086, 2087, 6534, 5161, 5728, 6679, 3097, 3098, 4203, 342, 5592, 6075, 5915, 5522, 5734, 5736, 5916, 5918, 6288, 6414, 4365, 3894, 5523, 1221, 6177, 6292, 6685, 1627, 5921, 6178, 344, 1223, 1307, 1416, 1986, 2914, 3761, 3895, 3896, 4212, 4366, 4555, 4855, 4856, 5017, 5407,

4369, 3763, 742, 745, 7023, 5304, 1870, 2546, 6543, 890, 1041, 3288, 5526, 827]. **Floating-Point** [2408, 2922, 5309, 5310, 5832, 3770, 750, 751, 893, 1045, 5924, 3292, 6550, 6551, 6905, 6906, 6300, 6181, 6305, 6087, 5032, 2743, 6183, 4870, 5035, 6184, 6308, 6553, 5749, 5750, 1528, 440, 5318, 5319, 7032, 7034, 2105, 5178, 5993, 831, 904, 1430, 570, 5751, 6189, 3296, 2935, 2936, 2246, 2425, 6316, 2747, 4884, 2556, 6561, 639, 686, 2558, 5935, 6433, 1640, 2754, 7040, 5844, 6807, 4580, 525, 576, 1148, 3472, 5611, 4401, 7044, 7109, 982, 5537, 5328, 2433, 5539, 1763, 6194, 641, 1895, 2116, 2257, 2437, 2438, 3142, 5053, 5615, 6196, 6436, 1151, 2766, 2444, 2445, 6438]. **Floating-Point** [6574, 6703, 915, 5060, 5187, 5336, 2775, 4079, 3654, 3656, 3795, 2963, 5941, 2778, 2779, 5422, 7056, 2003, 644, 1324, 2574, 2263, 6709, 6006, 7060, 701, 4257, 6007, 2786, 2787, 3153, 6579, 5544, 4901, 5620, 5429, 5430, 6444, 2273, 2274, 1238, 3670, 921, 922, 6205, 2275, 993, 3159, 2276, 4606, 2277, 2798, 5070, 5438, 5439, 5623, 5948, 6712, 6449, 1680, 6341, 3933, 1543, 4095, 1454, 1775, 4912, 5074, 5346, 4439, 4753, 5075, 5775, 7070, 5077, 2984, 7075, 5633, 5861, 3681, 2462, 212, 2985, 2806, 2991, 3179, 3180, 3343, 3686, 3687, 2288, 5953, 6215, 6944, 7081, 6116, 6117, 6591, 2020, 2996]. **Floating-Point** [2602, 4917, 1458, 1459, 1785, 5550, 5088, 1340, 5864, 1786, 5552, 2471, 2608, 2609, 3003, 1465, 5553, 6719, 1789, 3518, 4924, 6119, 6604, 4122, 592, 3348, 6347, 6015, 7085, 5360, 2027, 848, 5554, 2823, 3519, 2825, 6721, 3351, 6348, 5866, 3831, 3194, 6221, 6456, 2300, 215, 1469, 1701, 2618, 5101, 5224, 5368, 5369, 5562, 5563, 5647, 1354, 2033, 3013, 216, 3202, 2303, 6223, 5227, 2626, 799, 3020, 1706, 5375, 4137, 6840, 6841, 6619, 5108, 5566, 5651, 5109, 5376, 5233, 6621, 5697, 5894, 4625, 6351, 4490, 6965, 4485, 2170, 2171, 416, 3216, 1947, 4298, 6478, 2327, 6980, 6981, 1578, 1579, 1718]. **Floating-point** [5253, 6485, 4798, 4972, 2504, 6374, 2667, 2668, 2669, 5970, 6038, 1501, 1824, 2202, 2062, 3727, 5269, 4680, 1394, 4689, 2525, 2369, 307, 3746, 5151, 1296, 5517, 1298, 3892, 7019, 4208, 4207, 4040, 3284, 258, 2921, 4561, 895, 6080, 6299, 4566, 4868, 6691, 2418, 6803, 6429, 1759, 3640, 979, 3128, 6915, 6322, 2254, 3916, 2117, 2571, 5619, 2007, 2008, 6207, 3932, 4269, 4916, 2147, 2464, 2292, 2025, 4272, 6216, 7084, 3828, 5361, 3191, 2827, 2828, 1075, 3696, 1350, 6455, 1471, 1472, 1473, 1474, 5959, 6726, 5582, 1937, 2172, 3376, 2852, 3958, 1564, 6225, 5458, 6128, 720, 1485, 2635, 3030]. **floating-point** [3381, 3382, 3383, 4489, 6362, 6469, 2494, 1085, 5659, 1800, 2313, 1801, 1802, 6132, 4146, 2862, 3038, 5572, 5880, 5881, 2320, 6975, 2644, 2321, 4304, 5243, 5244, 2182, 2324, 5806, 4788, 5124, 2326, 2186, 2647, 3046, 1813, 4309, 4791, 4792, 5125, 5968, 6244, 3718, 2187, 5250, 5574, 4312, 1015, 4796, 5385, 5575, 6983, 6984, 2188, 1016, 1193, 6371, 5810, 6644, 3227, 4973, 2190, 7097, 6489, 1377, 3402, 4974, 1585, 6375, 4977, 2056, 2666, 3859, 4510, 3981, 3984, 1589, 5484, 5690, 6145, 1961, 3990, 4672, 5487, 2343, 2871, 2872, 2873, 3996, 6262, 5394, 5395, 2682, 6385, 5698]. **floating-point** [3060, 4523, 3999, 3062, 249, 4822, 5138, 5268, 4337, 961, 4526, 5140, 4987, 2349, 4170, 2883, 5274, 502, 1733, 1734, 5980, 5276, 734, 1116, 4176, 6894, 1968, 1736, 1969, 819, 508, 5283, 1029, 6267, 2891, 2365, 4836, 6664, 4694, 4697, 4839, 3078, 621, 879, 1030, 1208, 1283, 1739, 3429, 2893, 3079, 1843, 5505, 1844, 2531, 1845, 5707, 4842, 4843, 5984, 6061, 6515, 1287, 252, 178, 1850, 4352,

4846, 6671, 6672, 5005, 3594, 5826, 4025, 4541, 4701, 2895, 2896, 3435, 3597, 1407, 1213, 1974, 3436, 3261, 4549, 2536, 5296, 5297, 1744, 6407, 6532, 6677, 5721, 2084, 5722, 1215, 5724]. **floating-point** [2386, 1218, 1863, 1746, 3609, 5160, 5162, 5518, 2223, 2224, 4035, 1133, 1219, 1866, 4708, 5914, 2907, 5732, 5733, 1624, 5986, 6175, 6289, 6290, 6413, 5987, 2229, 2396, 2397, 3104, 2092, 2093, 3450, 3615, 3616, 4211, 4213, 5738, 4710, 2916, 3282, 3452, 3283, 628, 473, 744, 2400, 2401, 2402, 2403, 4862, 2735, 2407, 2409, 2410, 1527, 1752, 5600, 6798, 3624, 3902, 4866, 5602, 3457, 829, 897, 973, 4223, 5925, 6082, 4867, 2552, 3293, 7029, 2242, 2243, 5927, 6422, 6302, 3905, 3906, 5836, 6186, 755, 2742, 2929, 3118, 4568, 6088, 5991, 5931, 4871, 4393, 4574, 4576, 3909, 4872, 524, 571, 5606]. **floating-point** [1757, 5322, 5607, 5933, 1638, 4231, 5995, 4874, 6560, 1050, 1995, 573, 640, 757, 758, 401, 688, 574, 5996, 4876, 1996, 1997, 1434, 6095, 2252, 2114, 2757, 5047, 5327, 1647, 1648, 695, 2564, 5759, 5847, 3474, 5329, 4883, 5049, 5331, 5332, 5333, 5417, 5538, 6917, 2565, 1999, 3915, 5052, 5419, 1894, 2256, 2436, 2439, 2763, 3648, 6001, 2955, 2956, 7050, 2442, 2443, 984, 4244, 4732, 2260, 3145, 6199, 3312, 3921, 6928, 4893, 5337, 5853, 6201, 480, 4246, 3147, 5338, 5542, 5854, 985, 5765, 986, 3800, 4085, 7059, 4738, 4896, 5766, 2264, 700, 989, 2265, 2969, 3802, 7061, 2268, 2580]. **floating-point** [3326, 2584, 2792, 2976, 4902, 4088, 1332, 5067, 6821, 1240, 1241, 1333, 706, 1062, 2978, 3330, 1677, 4908, 3497, 773, 5945, 5625, 5626, 5856, 6210, 5772, 3929, 1336, 4909, 4608, 1913, 5773, 5629, 997, 2979, 2458, 3931, 5630, 776, 2013, 2280, 4910, 6013, 709, 710, 3171, 3812, 4104, 4752, 5547, 3934, 4440, 4914, 4915, 3936, 3678, 2800, 2801, 2982, 2983, 3176, 2285, 3680, 3814, 4614, 2016, 3938, 4111, 4441, 6715, 3815, 2995, 2289, 1169, 2468, 2469, 4442, 4443, 4618, 5353, 5354, 1784, 1460, 292, 1461, 2024, 4760, 4117, 375, 4762, 845, 2818, 2819, 3187, 5090, 147, 1464, 1787, 1930]. **floating-point** [1934, 3004, 6345, 1696, 3347, 4453, 4925, 3349, 1346, 4278, 1791, 1697, 1936, 4126, 4279, 2029, 941, 6349, 4928, 4929, 715, 794, 2477, 2479, 4459, 4460, 5222, 1351, 2160, 2482, 849, 3951, 4769, 4934, 5223, 5370, 5786, 6222, 1795, 1703, 2302, 5102, 795, 2487, 1255, 294, 3203, 1938, 2305, 1356, 1798, 1560, 4937, 5229, 5565, 5788, 947, 2625, 4132, 4283, 4938, 4939, 5789, 2842, 6957, 2844, 2308, 2490, 2847, 3206, 3838, 7115, 5231, 4944, 4945, 5110, 5112, 4776, 2310, 6732, 6962, 5134, 2683, 5581, 6480, 1731, 3893, 4869, 1884, 3189, 2299, 2300, 2301, 2480, 2481, 1475, 995]. **floating-point-number** [5776]. **Floating-point-Pegasus** [349]. **Floating-point-processing** [1610]. **Floating-Point-Roundoff** [453]. **Floating-Point-Routinen** [1731]. **Floating-Slash** [1138, 910, 1147, 2460]. **FLOATP_toolbox** [6698]. **Floats** [2178, 5469, 5735, 6546, 3946, 6334, 6344, 2791]. **FloatX** [6511]. **FLoC** [5622]. **Flocq** [5671, 6752]. **flop** [4241, 502, 6561]. **FloPoCo** [6701, 5581, 6502]. **FLOPS** [6387, 5613, 2958, 2635]. **FLOPS-** [5613]. **Florian** [7058]. **Florida** [7381, 7479, 7508, 7293, 7243, 7425, 7246, 7488, 7505, 7190]. **flotante** [4591]. **flots** [2757]. **flottant** [2801, 5112]. **Flottante** [2558, 2003, 701, 4309, 4792, 4342, 2213, 4869, 5323, 2757, 989]. **Flow** [6825, 5637, 3706, 3843, 2333, 2507, 5904, 1347, 1251]. **FlowFPX** [6967]. **FLPPEG** [349]. **Fluid** [6341, 7096]. **Flux** [3453]. **Fly** [5887, 6148, 3739, 5880, 2069, 2356, 2887, 5010, 4718]. **Flying** [4023]. **Flyttalls** [3344]. **FMA**

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7005, 1204, 5283, 1029, 2073, 6267, 2891, 2365, 4836, 2525, 6664, 4694, 5820, 4695, 282, 3077, 3253, 4697, 4839, 5821, 3078, 2527, 621, 879, 1030, 1208, 1283, 1739, 3429, 2369, 2893, 3079, 1031, 2703, 1843, 5505, 967, 1844, 2531, 1845, 5707, 2371, 4842, 4843, 1846, 5401, 5984, 6061, 6515, 1287, 1610, 2372, 252, 178, 307, 2707, 3883, 2376, 1850, 4352, 4846, 3884, 2533, 4023, 6671, 6672, 3081, 4024, 3746, 5005, 3594, 5826, 7012, 4025, 4541, 4701, 6519, 3751, 5151, 2895, 2896, 3256, 3596, 4193, 6402, 1036, 3084, 3435, 3597, 1291, 1407, 5010, 1213]. **point** [1974, 3599, 2219, 3436, 1408, 1296, 3261, 3091, 5913, 4031, 2220, 3441, 5517, 4549, 2901, 2536, 3092, 1298, 2712, 5296, 5297, 1744, 6675, 2904, 6407, 6532, 6677, 5721, 3266, 3267, 2084, 5722, 516, 2718, 826, 1215, 2384, 5724, 681, 2386, 3892, 1218, 1863, 7019, 1746, 3276, 3609, 4208, 5159, 5160, 5162, 5518, 2223, 2224, 4035, 4552, 5302, 3608, 1133, 4207, 1219, 1866, 2387, 4708, 5914, 2907, 4554, 5732, 5733, 1624, 3279, 5986, 6175, 6289, 6290, 6413, 2390, 201, 2088, 4040, 3612, 5987, 6417, 2227, 2912, 3103, 3280, 5988, 2229, 2396, 2397, 2230, 3104, 1985, 626, 2092, 2093, 3450, 3615, 3616, 4211]. **point** [4213, 5738, 4710, 2916, 3282, 3452, 3618, 3283, 6078, 628, 473, 744, 2400, 2401, 3284, 3285, 2402, 2403, 746, 747, 1224, 258, 5022, 2547, 2236, 2097, 1632, 311, 520, 4862, 4863, 2735, 1225, 1226, 2407, 2409, 2410, 2921, 1751, 1874, 1527, 1752, 5600, 6798, 3624, 3902, 4379, 3116, 3291, 1987, 4866, 5602, 4561, 895, 2925, 3457, 5311, 829, 897, 973, 1993, 6080, 4223, 5925, 6082, 4867, 2552, 3293, 899, 975, 2927, 7029, 2242, 2243, 6299, 5927, 6422, 4566, 4868, 6302, 6691, 3905, 3906, 5836, 5175, 7106, 6186, 349, 755, 2418, 2742, 2929, 3118, 4568, 5839, 6088, 5991, 5931, 6803, 4871]. **point** [3778, 4393, 4574, 351, 6429, 4576, 3909, 4872, 524, 571, 683, 5606, 1757, 5322, 3631, 5607, 5933, 1638, 5324, 5325, 4231, 5995, 4874, 6560, 2248, 1889, 1050, 1995, 1313, 1759, 2942, 3638, 573, 640, 757, 758, 401, 3640, 688, 689, 979, 574, 5996, 2250, 4876, 1996, 1997, 980, 909, 3127, 6191, 3128, 1434, 2562, 4581, 4725, 5758, 6095, 3130, 2252, 2114, 6915, 6322, 2757, 5047, 2253, 5327, 3136, 6698, 7043, 1646, 6699, 3139, 1647, 1648, 695, 2564, 2254, 5759, 5847, 3474, 5329, 4883, 5049, 5331, 5332, 5333, 5417, 5538, 6917, 2565, 1999, 3915, 5052, 5419, 319, 1894, 2256, 2436]. **point** [2439, 2441, 2763, 3648, 6001, 1437, 3916, 2117, 2955, 2956, 917, 5617, 7050, 5420, 2442, 2443, 984, 4244, 3310, 4732, 2960, 2260, 3145, 6199, 3311, 3312, 3921, 4078, 2447, 3797, 4892, 6928, 2571, 3317, 580, 4893, 5337, 5853, 6201, 480, 4246, 3147, 3148, 5338, 5542, 6107, 5854, 985, 4249, 4084, 4252, 5765, 765, 986, 3800, 4085, 7059, 4738, 3324, 6109, 4896, 645, 1327, 2004, 5766, 5619, 2264, 208, 700, 989, 2265, 2969, 2266, 3802, 7061, 2267, 2268, 2580, 3326, 2007, 526, 7062, 3493, 2269, 837, 7118, 2584, 2792, 2976, 4902, 2008, 2272, 3329, 4088, 5769, 2452, 2587, 2796, 2977]. **point** [2588, 2589, 1773, 2135, 1332, 5067, 6821, 992, 528, 1240, 1241, 1333, 706, 1062, 2978, 1063, 3330, 1677, 483, 4908, 3497, 773, 5945, 6207, 5625, 5626, 5856, 6210, 5772, 3929, 3930, 4092, 1336, 4909, 4608, 1913, 3160, 107, 5773, 5629, 6450, 997, 2979, 2458, 3931, 3932, 5630, 3673, 3333, 776, 2013, 2280, 2594, 2141, 7069, 4910, 6013, 780, 709, 710, 3171, 3812, 4104, 4752, 5547, 3934, 4269, 4440, 4914, 4915, 5776, 3936, 3678, 2800, 2801, 2982, 2983, 2802, 1685, 3340, 3176, 5952, 2285, 3680, 3814, 4614, 4916, 926, 3341, 3177, 3506, 2016, 3507, 2147, 1065, 3938, 5201]. **point**

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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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- 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:

- 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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values, which is ISO 80000-1:2009. It provides guidelines on rounding numerical values in general and not specific to the finance domain, but it's widely used in financial systems. * The Federal Reserve Board (FRB): The FRB, the central banking system of the United States, has guidelines on rounding financial numbers for bank reporting and financial statement preparation. * The European Central Bank (ECB): The ECB, the central banking system of the European Union, has similar guidelines on rounding financial numbers as the FRB.

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IEEE:1992:PIS

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- constraint propagation,
- solution sets of linear systems,
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- 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:

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

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