REMARK ON ALGORITHM 524

MP, A Fortran Multiple-Precision Arithmetic Package [A1]
[R.P. Brent, *ACM Trans. Math. Software 4*, 1 (March 1978), 71–81]

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A new version of the Fortran multiple-precision arithmetic package MP, which is described in [1] and given as ACM Algorithm 524, is now available from the ACM Algorithms Distribution Service. The new version may be used with the Augment preprocessor [4], and the necessary interface routines and description deck, described in [2], are supplied. The MP Users' Guide (also supplied with the package) has been revised to describe the Augment interface routines and the use of MP via Augment.

The new version incorporates faster algorithms for the exponential integral and Euler's constant [3]. Consequently, the TEST2 program described in [1] now runs about 10 percent faster.

In versions of MP dated June 7, 1978, and earlier (including Algorithm 524), there may be an error in the least significant digit when multiple-precision numbers with the same sign and exponent are added using subroutine MPADD. To correct this, change .LT. to .LE. in line MP007390 of MPADD3.

ACKNOWLEDGMENT

I am indebted to John P. Jeter of the University of South West Louisiana for finding both the error in MPADD3 and the required correction.

REFERENCES

1. BRENT, R.P. A Fortran multiple-precision arithmetic package. *ACM Trans. Math. Software 4*, 1 (March 1978), 57–70.
2. BRENT, R.P., HOOPER, J A., AND YOHE, J.M. An Augment interface for Brent's multiple-precision arithmetic package. Mathematics Res. Ctr., U. of Wisconsin, Madison, Wis., Aug. 1978.
3. BRENT, R.P., AND McMILLAN, E.M. Some new algorithms for high-precision computation of Euler's constant. To appear in *Mathematics of Computation*
4. CRARY, F.D. A versatile precompiler for nonstandard arithmetics. *ACM Trans Math. Software 5*, 2(June 1979), 204–217.

ALGORITHM

[Only summary information of the revised version of the algorithm is printed here. This listing is available from the ACM Algorithms Distribution Service (see inside back cover for order form) and will be supplied to those requesting Algorithm 524.]

NAME(n):	indicates a Fortran module from the MP package with n records
NAME^E(n):	indicates "NAME" is included as an example
NAME^T(n):	indicates "NAME" is part of the test package
NAME^U(n):	indicates a listing of the user guide
NAME^A(n):	indicates an Augment description deck and Jacobi program using it
Contents:	EXAMPLE^T(111), MPABS(8), MPADD(8), MPADDI(16), MPADDQ(12), MPADD2(60), MPADD3(90), MPART1(48),

MPASIN(38), MPATAN(62), MPBASA(9), MPBASB(13),
MPBERN(115), MPBESJ(114), MPBES2(68), MPCAM(44),
MPCDM(67), MPCHK(51), MPCIM(26), MPCLR(13),
MPCMD(40), MPCMDE(23), MPCMEF(71), MPCMF(32),
MPCMI(43), MPCMIM(23), MPCMPA(16), MPCMPI(16),
MPCMPR(16), MPCMR(35), MPCMRE(22), MPCOMP(35),
MPCOS(29), MPCOSH(26), MPCQM(20), MPCRM(63),
MPDAW(64), MPDGA(10), MPDGB(21), MPDIGA(9),
MPDIGB(14), MPDIV(48), MPDIVI(113), MPDUMP(26),
MPEI(156), MPEPS(29), MPEQ(7), MPERF(57), MPERFC(50),
MPERF2(53), MPERF3(55), MPERR(19), MPEUL(76),
MPEXP(103), MPEXPA(11), MPEXPB(24), MPEXP1(63),
MPEXT(24), MPGAM(81), MPGAMQ(125), MPGCD(26),
MPGCDA(78), MPGCDB(38), MPGE(7), MPGT(7),
MPHANK(83), MPIN(118), MPINE(45), MPINF(27),
MPINIT(39), MPIO(19), MPKSTR(15), MPLE(7), MPLI(36),
MPLN(56), MPLNGM(87), MPLNGS(77), MPLNI(105),
MPLNS(67), MPLT(7), MPL235(53), MPMAX(12),
MPMAXR(16), MPMEXA(9), MPMEXB(18), MPMIN(12),
MPMINR(16), MPMLP(10), MPMUL(75), MPMULI(10),
MPMULQ(26), MPMUL2(88), MPNE(7), MPNEG(8),
MPNZR(81), MPOUT(15), MPOUTE(32), MPOUTF(25),
MPOUT2(139), MPOVFL(21), MPPACK(27), MPPI(26),
MPPIGL(45), MPPOLY(28), MPPWR(43), MPPWR2(31),
MPQPWR(73), MPREC(81), MPROOT(102), MPSET(77),
MPSIGA(7), MPSIGB(24), MPSIN(67), MPSINH(38),
MPSIN1(58), MPSQRT(24), MPSTR(21), MPSUB(9),
MPTAN(63), MPTANH(39), MPUNFL(15), MPUNPK(29),
MPUPK(45), MPZETA(115), MP40D^T(17), MP40E^T(14),
MP40F^T(18), MP40G^T(15), TEST^T(181), TESTV^T(191),
TEST2^T(620), TIMEMP^T(28), GUIDE^U(1719), AUGDECK^A(159)