

NAME

MPYACC – Accumulate scalar products at extra precision.

SYNOPSIS

CALL MPYACC(X,Y, XYSUM)

X is a REAL*8 scalar
 Y is a REAL*8 scalar
 XYSUM is the REAL*8 quantity to which X*Y is to be added

DESCRIPTION

First the routine splits X and Y into 2 parts having the rightmost 26 of their fraction bits zero. Then it computes the 4 exact 52-bit products of the parts, uses ADDACC to accumulate their sum, and returns the result in XYSUM.

WARNING

This routine assumes that the processor is little-endian.

SEE ALSO

ADDACC, which adds partial products to an accumulator

LINKAGE

gfortran source.f -L\${HOME}/lib -lmisc

AUTHOR

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EXAMPLE

```
REAL*8 X,Y,XYSUM(2)
XYSUM(1)=0.D0
XYSUM(2)=0.D0
X=3.141592D0
Y=3.141592D0
CALL MPYACC(X,Y, XYSUM )
WRITE(6,901) X*Y,XYSUM(1)+XYSUM(2)
901 FORMAT(1PD22.16,' or more precisely ',1PD22.16)
STOP
END
```

This example produced the following output:

```
unix[1] a.out
9.8696002944640018D+00 or more precisely 9.8696002944640000D+00
unix[2]
```

REFERENCES

Kupferschmid, Michael, Classical Fortran: Programming for Engineering and Scientific Applications, CRC Press (2009), additional section 18.4+.