

**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+.