NAME

TBLBIN − Find the table bin containing a given argument value.

SYNOPSIS

CALL TBLBIN(DATA,LDATA,NPTS,X, LAST)

DATA(LDATA,*)	is the REAL*8 table of (x,y,...) tuples
LDATA	is the INTEGER*4 leading dimension of DATA
NPTS	is the INTEGER*4 number of data tuples (rows in DATA)
X	is the REAL*8 value whose bin number is wanted
LAST	is the INTEGER*4 bin number where X was (on entry) or is (on return)

DESCRIPTION

This routine assumes the X values in the first column of DATA to be increasing. LAST is the row index in DATA of the bin boundary next below X, so the routine begins by adjusting LAST, if necessary, to be in the range 1...NPTS−1. Then it checks to see whether X is still in the table bin whose lower limit has index LAST. If LAST was unchanged between calls, this will be the bin where X was found on the previous call; before the first call, LAST should be set to 1 or the number of the bin in which X is suspected to be. If X is not in bin LAST, the routine checks whether X is outside the range of the table; If X < DATA(1,1) it returns LAST=0, or if X > DATA(NPTS,1) it returns LAST=NPTS. If X is not in bin LAST but is within the range of the table, the routine uses bisection to find the bin containing X and returns that bin number for LAST.

SEE ALSO

INTERP, which uses this routine

DIAGNOSTICS

If LAST=0 or LAST=NPTS on return, X was below or above the range of the table. If bisection fails to converge (which might happen if the X values in the first column of TABLE are not in increasing order) the routine writes a message and stops the program.

LINKAGE

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

AUTHOR

Michael Kupferschmid

EXAMPLE

```
      REAL*8 DATA(7,2)/-2.D0,-1.D0,0.D0,1.D0,2.D0,3.D0, 4.D0,
   ;                   -4.D0,-1.D0,0.D0,1.D0,4.D0,9.D0,16.D0/
      INTEGER*4 LAST/1/
      CALL TBLBIN(DATA,7,7,2.5D0, LAST)
      WRITE(6,901) LAST
  901 FORMAT('X=2.5 was found in bin ',I1)
      STOP
      END
```

This example produced the following output:
```
unix[1] a.out
X=2.5 was found in bin 5
unix[2]
```