NAME

gen57pt - generates 5-point and 7-point matrices

CALLING SEQUENCE

[Mat,rhs]=gen57pt(nx,ny,nz,al,mod)

PARAMETERS

nx : number of grid points in x direction

ny : number of grid points in y direction

nz : number of grid points in z direction

al : array of size 6, carries the coefficient alpha of the boundary conditions

mod : what to generate,

<0 : generate the graph only,

0 : generate the matrix,

>0 : generate the matrix and the right-hand side.

Mat : resulting sparse matrix

rhs : the right-hand side

DESCRIPTION

Gives 5-pt and 7-pt matrices on rectangular regions discretizing elliptic operators of the form:

L u == delx(**A** delx u) + dely (**B** dely u) + delz (**C** delz u) +
delx (**D** u) + dely (**E** u) + delz(**F** u) + **G** u = **H** u

with Boundary conditions:

alpha del u / del n + **beta** u = **gamma**

on a rectangular 1-D, 2-D or 3-D grid using centered difference scheme or upwind scheme.

The functions **A**, **B**, ..., **G**, **H** are known through the external subroutines **afun, bfun, ..., gfun, hfun** in the file 'functns.f' (SCILINDIR/routines/scilin/). The **alpha** is a constant on each side of the rectanglar domain. The **beta** and the **gamma** are defined by the external functions **betfun** and **gamfun** (see 'functns.f' for examples).

EXAMPLE

nx=10;ny=10;nz=10; al=zeros(1,6); mod=1; [A,rhs]=gen57pt(nx,ny,nz,al,mod)

AUTHOR

Sparskit procedure interfaced by Aladin Group