

```

%refreshing
clear all;

%create sparse band diagonal matrices
% see http://www.mathworks.es/help/techdoc/ref/spdiags.html

% constant diagonal (constant value c1)
d=c1*ones(n,1);

%nearest neighbors (constant) extradiagonals (constant value c2)

%lower extradiagonal
ei=c2*[ones(n-1,1);0];

%upper extradiagonal
es=c2*[0;ones(n-1,1)];

%building the sparse matrix
mat=spdiags([ei d es],[-1,0,1],n,n);

%diagonalization: selecting the "neig" low-lying eigenvalues

neig=4;
[vec,eval,flag]=eigs(mat,neig,'sm');

%opening/closing external files for writing eigenvalues

% see
% http://amath.colorado.edu/computing/Matlab/OldTechDocs/ref/fprintf.html
% http://amath.colorado.edu/computing/Matlab/OldTechDocs/ref/fopen.html

out=fopen('out.tex','a')
fprintf(out,' eval= %8.2f %8.2f %8.2f %8.2f \n ', (diag(eval))' );
fclose(out);

```

