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% John Doe
% 1234
% Section C2
% Math 250 MATLAB Lab Demo
rand('seed', 1234)
% Question 1(a)
A = [0 1 2; 3 4 5]
A =
    0    1    2
    3    4    5
a = [9 ; -1]
a =
     9
    -1
A
A =
    0    1    2
    3    4    5
a
a =
     9
    -1
whos
  Name      Size      Bytes Class  Attributes
  A         2x3         48 double
  a         2x1         16 double
% Question 1(b)
a12 = A(1,2)
a12 =
     1
% The entry in the first row and second column of A is indeed 1.
% Question 1(c)
A
A =
    0    1    2
    3    4    5
% The matrix A is not a diagonal matrix, because it is not a square matrix.
% Question 1(d)
D = rdiag(3)
D =
     9     0     0
     0     2     0
     0     0     3
% The matrix D is indeed a diagonal matrix, since it is a square matrix
% of size 3x3, and the entries D(1,2), D(1,3), D(2,3), D(2,1),
% D(3,1), and D(3,2) are all 0.
23*D
ans =
    207     0     0
     0    46     0
     0     0    69
% 23*D is a diagonal matrix.
0*D

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ans =
    0    0    0
    0    0    0
    0    0    0
% 0*D is a diagonal matrix.
-17*D
ans =
   -153     0     0
     0   -34     0
     0     0   -51
% -17*D is a diagonal matrix.
(1/10)*D
ans =
    0.9000     0     0
     0    0.2000     0
     0     0    0.3000
% (1/10)*D is a diagonal matrix.
% Question 1(e)
% If B is a diagonal matrix, then whenever i is different from j,
% B(i,j)=0. Let c be a scalar. To see that cB is a diagonal matrix,
% we must check that cB(i,j) = 0 whenever i is different from j. The
% (i,j) entry of cB is given by c*B(i,j). Hence if i is different from
% j, cB(i,j) = c*B(i,j) = c*0 = 0. Therefore c*B is also a diagonal
% matrix.

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