**NAME**
>      MATRNS − Transpose a square REAL*8 matrix.

**SYNOPSIS**
>      **CALL  MATRNS(N,LDA,LDB, A, B)**

| | |
|---|---|
| N | is the INTEGER*4 order of the matrices in A and B |
| LDA | is the INTEGER*4 leading dimension of A |
| LDB | is the INTEGER*4 leading dimension of B |
| A(LDA,*) | is the REAL*8 matrix whose transpose is wanted |
| B(LDB,*) | is the REAL*8 transpose of A |

**DESCRIPTION**
>      This routine transposes A into B by exchanging off-diagonal elements across the diagonal.  If A and B are
>      the same matrix, it is transposed in place; if they are different, A is left unchanged.

**SEE ALSO**
>      MATTRN, which transposes by naive copying

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

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**EXAMPLE**

```
      REAL*8 A(3,3)/1.D0,2.D0,3.D0,4.D0,5.D0,6.D0,7.D0,8.D0,9.D0/
      REAL*8 B(3,3)
      WRITE(6,901) ((A(I,J),J=1,3),I=1,3)
  901 FORMAT("A"/3(1X,F4.1))
      CALL MATRNS(3,3,3, A, B)
      WRITE(6,902) ((B(I,J),J=1,3),I=1,3)
  902 FORMAT(/"B = A'"/3(1X,F4.1))
      STOP
      END
```

>      This example produced the following output:

```
unix[1] a.out
A
  1.0  4.0  7.0
  2.0  5.0  8.0
  3.0  6.0  9.0

B = A'
  1.0  2.0  3.0
  4.0  5.0  6.0
  7.0  8.0  9.0
unix[2]
```