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Batch: IT-D

Scilab No. : 1

Title: **Introduction to SCILAB**

Problem 1: Write a program to define to matrices and calculate their sum and product

```
clc;
printf("Amal Thundiyil - 2020400066 SE IT - D");
A = [12 22 32 68; 42 52 62 77;  11 21 31  84; 24 55 66 10];
B = [14 25 36 15; 27 38 19 59; 16 35 44 87; 17 65 43 24];
disp(A);
disp(B);

C = A + B;
D = A*B;
printf("The sum of two matrix is");
disp(C);
printf("The product of two matrix is");
disp(D);
```

Output:
```
Amal Thundiyil - 2020400066 SE IT - D
   12.    22.    32.    68.
   42.    52.    62.    77.
   11.    21.    31.    84.
   24.    55.    66.    10.

   14.    25.    36.    15.
   27.    38.    19.    59.
   16.    35.    44.    87.
   17.    65.    43.    24.
The sum of two matrix is
   26.    47.    68.     83.
   69.    90.    81.    136.
   27.    56.    75.    171.
   41.   120.   109.     34.
The product of two matix is
   2430.    6676.    5182.    5894.
   4293.   10201.    8539.   10940.
   2645.    7618.    5771.    6117.
   3047.    5650.    5243.    9587.
```

Problem 2: Write a program to define a matrix and find the trace, transpose and determinant of the matrix

Code:

```
clc
printf("Amal Thundiyil - 2020400066 SE IT - D\n")
A = [1 3 5; 2 4 1; 1 2 3]
printf("the matrix A is")
disp(A)
printf("the determinant of A is")
disp(det(A))
printf("the trace of A ")
disp(trace(A))
```

Output:

```
Amal Thundiyil - 2020400066 SE IT - D
the matrix A is
   1.   3.   5.
   2.   4.   1.
   1.   2.   3.
the determinant of A is
  -5.
the trace of A
   8.
```

Problem 3 : Write a problem to extract upper and lower triangular matrix from the given matrix

Code:

```
printf("Amal Thundiyil - 2020400066 SE IT - D")
A = [1 3 5; 2 4 1; 1 2 3];
printf("The matrix A is");
disp(A);
L = tril(A);
printf("The lower triangular matrix of A is");
disp(L);
U = triu(A);
printf("The upper triangular matrix of A is");
disp(U)
```

Output:

```
Amal Thundiyil - 2020400066 SE IT - DThe matrix A is
   1.   3.   5.
   2.   4.   1.
   1.   2.   3.
The lower triangular matrix of A is
   1.   0.   0.
   2.   4.   0.
   1.   2.   3.
The upper triangular matrix of A is
   1.   3.   5.
   0.   4.   1.
   0.   0.   3.
```

Problem 4: Write a program to define two random matrices, find their sum and product also to extract their lower and upper triangular matrix.

Code:

```
clc
printf("Amal Thundiyil - 2020400066 SE IT - D\n")
A = rand(4,4)
B = rand(4,4)
printf("The first random matrix is")
disp(A)
printf("The second random matrix is")
disp(B)
printf("The product of two matrices is")
disp(A*B)
printf("The sum of two matrices is")
disp(A+B)
```

Output:

```
Scilab 6.1.0 Console
Amal Thundiyil - 2020400066 SE IT - D
The first random matrix is
   0.2693125   0.0437334   0.2806498   0.1121355
   0.6325745   0.4818509   0.1280058   0.6856896
   0.4051954   0.2639556   0.7783129   0.1531217
   0.9184708   0.4148104   0.211903    0.6970851
The second random matrix is
   0.8415518   0.113836    0.685398    0.3873779
   0.4062025   0.1998338   0.8906225   0.9222899
   0.4094825   0.5618661   0.5042213   0.9488184
   0.8784126   0.5896177   0.3493615   0.3435337
The product of two matrices is
   0.4578274   0.2632015   0.4042216   0.4494686
   1.3828078   0.6445167   1.1668093   1.0464634
   0.9014219   0.6264639   0.9587416   1.1914873
   1.6405367   0.717523    1.3493382   1.1789004
The sum of two matrices is
   1.1108643   0.1575694   0.9660478   0.4995133
   1.038777    0.6816847   1.0186283   1.6079795
   0.8146779   0.8258217   1.2825341   1.1019401
   1.7968834   1.0044281   0.5612646   1.0406188
```