SEM-6-PRACTICALS-DIGITAL IMAGE PROCESSING

Compute discrete cosine transform, Program to perform KL transform for the given 2D matrix.

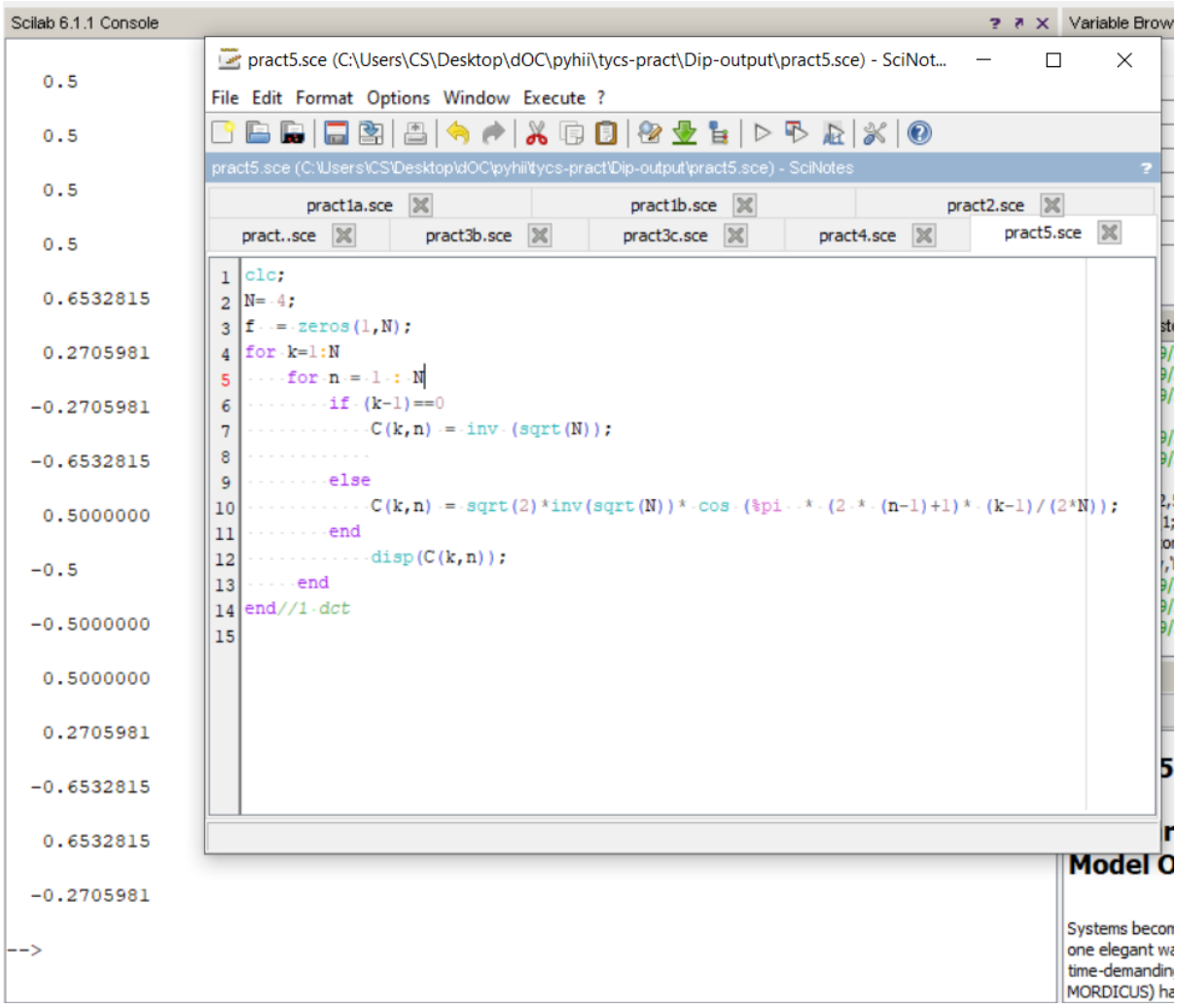
A. Compute discrete cosine transform.

Code:

```
clc;
N= 4;
f  = zeros(1,N);
for k=1:N
    for n = 1 : N
        if (k-1)==0
            C(k,n) = inv (sqrt(N));

        else
            C(k,n) = sqrt(2)*inv(sqrt(N))* cos (%pi  * (2 * (n-1)+1)* (
        end
            disp(C(k,n));
     end
end//1 dct
```

Output:-



B. Program to perform KL transform for the given 2D matrix.

Code:

```
    //5b : KL TRANSFORM
clc;
X= [4 3 5 6; 4 2 7 7; 5 5 6 7];
[m,n] = size(X);
A = [0];
E = [0];
for i = 1:n
    A = A+X(:,i);
    E = E+X(:,i)*X(:,i) ';
end
mx = A/n; //mean mat r ix
E = E/n;
```

```
C = E - mx*mx '; // c o v a r i a n c e mat r ix C =
[V,D] = spec(C);
d = diag(D);
disp(d);
[d, i]= gsort(d);
    for j = 1: length (d)
        T(:,j) = V(:,i(j));
    end
T= T'
disp(d, "Eigen value");
disp(T, 'The eigen value matrix T ' )
disp (T, 'The KL transform basis is ')
for i = 1: n
    Y (: , i)= T * X(:, i);
end
disp(Y,'KL transform of input matrix');
disp(X,'Given sample');
```

Output:-

C. Contrast Manipulation image.

For image processing, we need an image processing library to follow the below procedure install the image processing library and restart the Scilab.

Code:-

```
//Constrast manupulation
clc;
close;
a=imread("C:\\Users\\Cs\\Desktop\\prettyflowers18.jpg")
a=rgb2gray(a)
b=double(a)*0.5
b=uint8(b)
c=double(a)*2
c=uint8(c)
figure(1)
imshow(uint8(a))
title("Original image")
figure(2)
imshow(uint8(b))
title("Decressing constract")
figure(3)
imshow(uint8(c))
title("Increasing Constract")
```

Output:-

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-> To err is human, but to really foul things up you need a computer.

-> "Imagination is more important than knowledge."

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