

SEM-6-PRACTICALS-DIGITAL IMAGE PROCESSING

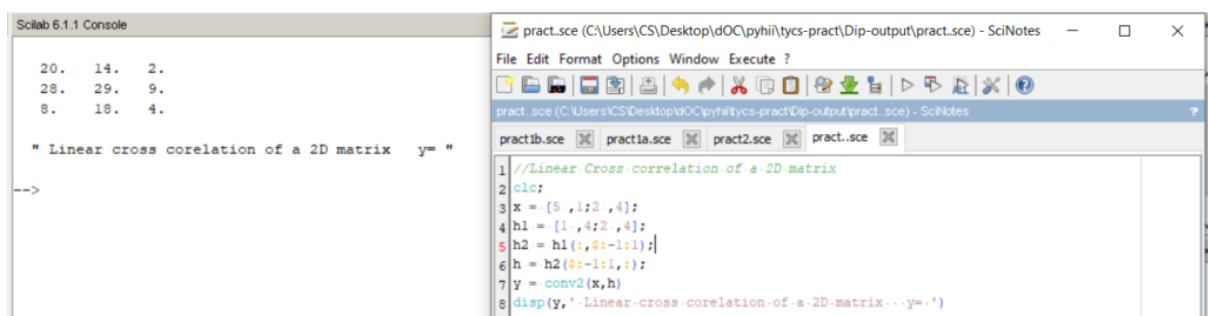
Linear Cross correlation of a 2D matrix, Circular correlation between two signals and Linear auto correlation of a 2D matrix, Linear Cross correlation of a 2D matrix

a. Linear Cross-correlation of a 2D matrix.

Code:-

```
//Linear Cross correlation of a 2D matrix
clc;
x = [5 ,1;2 ,4];
h1 = [1 ,4;2 ,4];
h2 = h1(:, $:-1:1);
h = h2($:-1:1, :);
y = conv2(x,h)
disp(y, ' Linear cross corelation of a 2D matrix   y= ')
```

Output:-



The screenshot shows the Scilab 6.1.1 environment. The console window on the left displays the output of the code, which is a 2x2 matrix:

```
20. 14. 2.
28. 29. 9.
8. 18. 4.
```

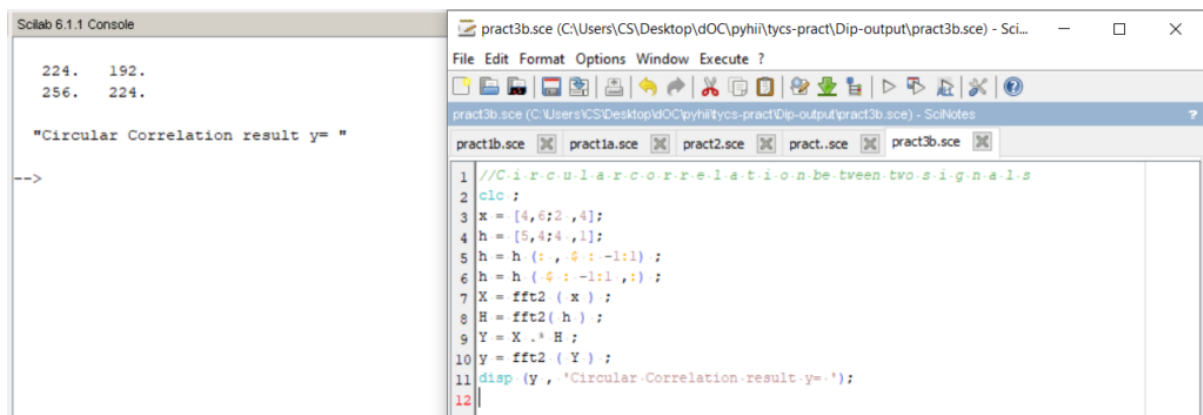
Below the matrix, the text " Linear cross corelation of a 2D matrix y= " is displayed. The editor window on the right shows the code being executed, which is identical to the code block provided above.

b. Circular correlation between two signals and Linear auto correlation of a 2D matrix.

Code:-

```
//Circular correlation between two signals
clc ;
x = [4,6;2 ,4];
h = [5,4;4 ,1];
h = h ( : , $ : -1:1 ) ;
h = h ( $ : -1:1 , : ) ;
X = fft2 ( x ) ;
H = fft2( h ) ;
Y = X .* H ;
y = fft2 ( Y ) ;
disp (y , 'Circular Correlation result y= ');
```

Output:-



c. Linear Cross correlation of a 2D matrix

Code:-

```
// linear auto correlation of a 2D matrix .
clc ;
x1 = [3 ,1;3 ,2];
x2 = x1 ( : , $ : -1:1 ) ;
```

```
x2 = x2 ( $ : -1:1 , :) ;  
x = conv2 ( x1 , x2 );  
disp (x , 'Linear auto Correlation result x= ' )
```

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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