```
In [ ]:  '''
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         Class: TE-EXTC A
         Division: A
         Year Of Study: TE
         Branch: EXTC
         Date: 24/08/2023
         Time: 14:00
         '''
```

```
In [1]:  #Importing inbuilt libraries
         import numpy as np
         import matplotlib.pyplot as plt
```

Circular Convolution Property

```
In [2]:  #Getting user-defined inputs and determining its length
         x = eval(input("Enter x(n) = "))
         L = len(x)
         print('Length is = ', L, '\n')
         h = eval(input("Enter h(n) = "))
         M = len(h)
         print('Length is = ', M, '\n')
         N = max(L,M)
```

```
Enter x(n) = [1,2,3,4]
Length is =  4

Enter h(n) = [4,1,2,3]
Length is =  4
```

```
In [3]:  #Circular Convolution for y(n)
         y = np.zeros(N)
         for n in range(N):
             for m in range(N):
                 y[n] += x[m] * h[(n - m) % N]
         print(y)
```

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[20. 26. 28. 26.]
```

```
In [4]:  #Finding DFT of x(n) & h(n)
         X = np.fft.fft(x)
         print(X)
         H = np.fft.fft(h)
         print(H)
```

```
[10.+0.j -2.+2.j -2.+0.j -2.-2.j]
[10.+0.j  2.+2.j  2.+0.j  2.-2.j]
```

```
In [5]:  #Verification
         Y = np.multiply(X,H)
         print(Y)
```

```
[100.+0.j  -8.+0.j  -4.+0.j  -8.+0.j]
```

In [6]:
```python
Y3 = np.zeros(N)
Yresult = np.fft.ifft(Y3)
print(Yresult)
```

```
[0.+0.j 0.+0.j 0.+0.j 0.+0.j]
```

In [7]:
```python
if y.all() == Yresult.all():
    print('Verified')
else:
    print('Not Verified')
```

```
Not Verified
```