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

Problem Statement: Prove Time Reverse Property

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

In [2]:
```
#Getting user-defined inputs and determining its length
x = eval(input("Enter x(n) = "))
L = len(x)
print('Length is = ', L, '\n')
x1 = eval(input("Enter x1(n) = "))
M = len(x1)
print('Length is = ', M, '\n')
N = max(L,M)
```

```
Enter x(n) = [1,3,5,7]
Length is =  4

Enter x1(n) = [1,7,5,3]
Length is =  4
```

In [5]:
```
#Finding DFT of user-defined inputs
X = np.fft.fft(x)
print(X)
```

```
[16.+0.j -4.+4.j -4.+0.j -4.-4.j]
```

In [6]:
```
X1 = np.fft.fft(x1)
print(X1)
```

```
[16.+0.j -4.-4.j -4.+0.j -4.+4.j]
```

In [7]:
```
# Time Reverse Property of DFT
Y = np.zeros (N, complex)
for k in range (N):
    Y[k] += X [(-k % N)]
print(Y)
```

```
[16.+0.j -4.-4.j -4.+0.j -4.+4.j]
```

In [8]:
```
if Y.all() == X1.all():
    print('Verified')
else:
    print('Not Verified')
```

```
Verified
```