# Computer Assignment - 04

IEC 240, DSAA
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## I. Convolution

Write matlab codes for the convolution algorithm for causal signals using the following methods

- Definition

$$y[n] = x[n] * h[n] = \sum_{k=0}^{n} h(k)x(n-k) \tag{1}$$

- The tabular method

## II. Application

Demonstrate and compare the application of the above codes for the following examples and verify the results theoretically.

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$$x[n] = \sin\left[\frac{7}{22}\pi n\right] \qquad n = 0, \cdots, 6 \tag{2}$$
$$h[n] = [0, 2, -1, 3]$$

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$$h[n] = \exp[-j2\pi\frac{nk}{N}] \qquad n = 0, \cdots, 7 \tag{3}$$
$$x[n] = [-1, 1, -1, 1, -1, 1, -1, 1]$$

## III. Instructions and grading scheme

Merge all the sections into a single pdf file and upload. For the given vectors, assume that the sequence begins at $n = 0$

- Section 1: Matlab code (Grade: $1 + 3 = 4$ points)
- Section 2: Results (Grade: $2 + 2 = 4$ points)
- Section 3: Discussion (Grade: $1 + 1 = 2$ points)