

FIGURE 6.9. Decomposition of two four-point DFTs into four two-point DFTs using DIT.

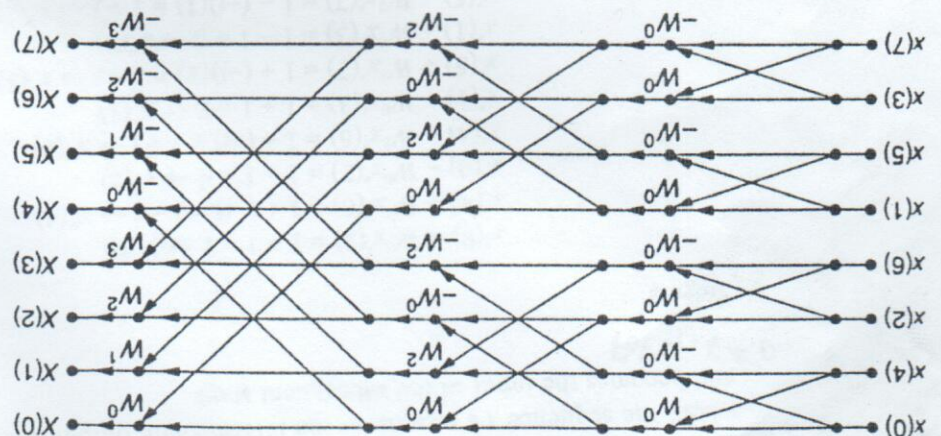


FIGURE 6.10. Eight-point FFT flow graph using decimation-in-time.

in-frequency process. With the input sequence $x(n)$ scrambled, the resulting output sequence $X(k)$ becomes properly ordered. Identical results are obtained with an FFT using either the decimation-in-frequency (DIF) or the decimation-in-time (DIT) process. An alternative DIT flow graph to the one shown in Figure 6.10, with ordered input and scrambled output, can also be obtained.

The following exercise shows that the same results are obtained for an eight-point FFT with the DIT process as in Exercise 6.1 with the DIF process.

Exercise 6.3: Eight-Point FFT Using Decimation-in-Time

Given the input sequence $x(n)$ representing a rectangular waveform as in Exercise 6.1, the output sequence $X(k)$, using the DIT flow graph in Figure 6.10, is the same