

* i power values

$$i^2 = -1$$

$$i^3 = -i$$

$$i^4 = 1$$

$$i^5 = i^4 \cdot i = i$$

$$i^6 = i^4 \cdot i^2 = -1$$

$$i^7 = i^4 \times i^3 = -i$$

DIT Algorithm

PHASE FACTORS:

$$W_N = e^{-\frac{2\pi i}{N}}$$

$$W_2 = -1$$

$$W_4^1 = -i$$

$$W_4^{-1} = i$$

$$W_8^1 = 1 - i/\sqrt{2}$$

$$W_8^2 = -i$$

$$W_8^3 = -1 - i/\sqrt{2}$$

$$W_8^{-1} = 1 + i/\sqrt{2}$$

$$W_8^{-2} = i$$

$$W_8^{-3} = -1 + i/\sqrt{2}$$

FFT \rightarrow Requires

$N \log_2 N$ no. of
operations

DFT $\rightarrow N^2$