

$$f = (0, 1, 2, 3, 4, 5, 6, 7)^T, \quad n=8 \quad (\text{jeste stepen dvojke } \checkmark)$$

Najpre f delimo na pola, ... sve dok ne dođemo do vektora dužine 1

$$f \rightarrow \begin{cases} f^e = (f_0, f_2, f_4, f_6) & \text{parni indeksi} \\ f^o = (f_1, f_3, f_5, f_7) & \text{neparni indeksi} \end{cases} \xrightarrow{\text{DFT}} \begin{cases} c^e \\ c^o \end{cases} \left. \begin{array}{l} \text{od } f^e \text{ i } f^o \text{ primenom FFT nastaje } c^e \text{ i } c^o \\ \text{tj. DFT vektora } f^e \text{ i } f^o \end{array} \right\}$$

→ dodate nove oznake sa leve strane

$$f^e \rightarrow \begin{cases} f^{ee} = (f_0, f_4) \\ f^{oe} = (f_2, f_6) \end{cases} \xrightarrow{\text{DFT}} \begin{cases} c^{ee} \\ c^{oe} \end{cases}$$

$$f^o \rightarrow \begin{cases} f^{eo} = (f_1, f_5) \\ f^{oo} = (f_3, f_7) \end{cases} \xrightarrow{\text{DFT}} \begin{cases} c^{eo} \\ c^{oo} \end{cases}$$

$$f^{ee} \rightarrow \begin{cases} f^{eee} = (f_0) = c^{eee} \\ f^{oee} = (f_4) = c^{oee} \end{cases}$$

$$f^{oe} \rightarrow \begin{cases} f^{oeo} = (f_2) = c^{oeo} \\ f^{ooo} = (f_6) = c^{ooo} \end{cases}$$

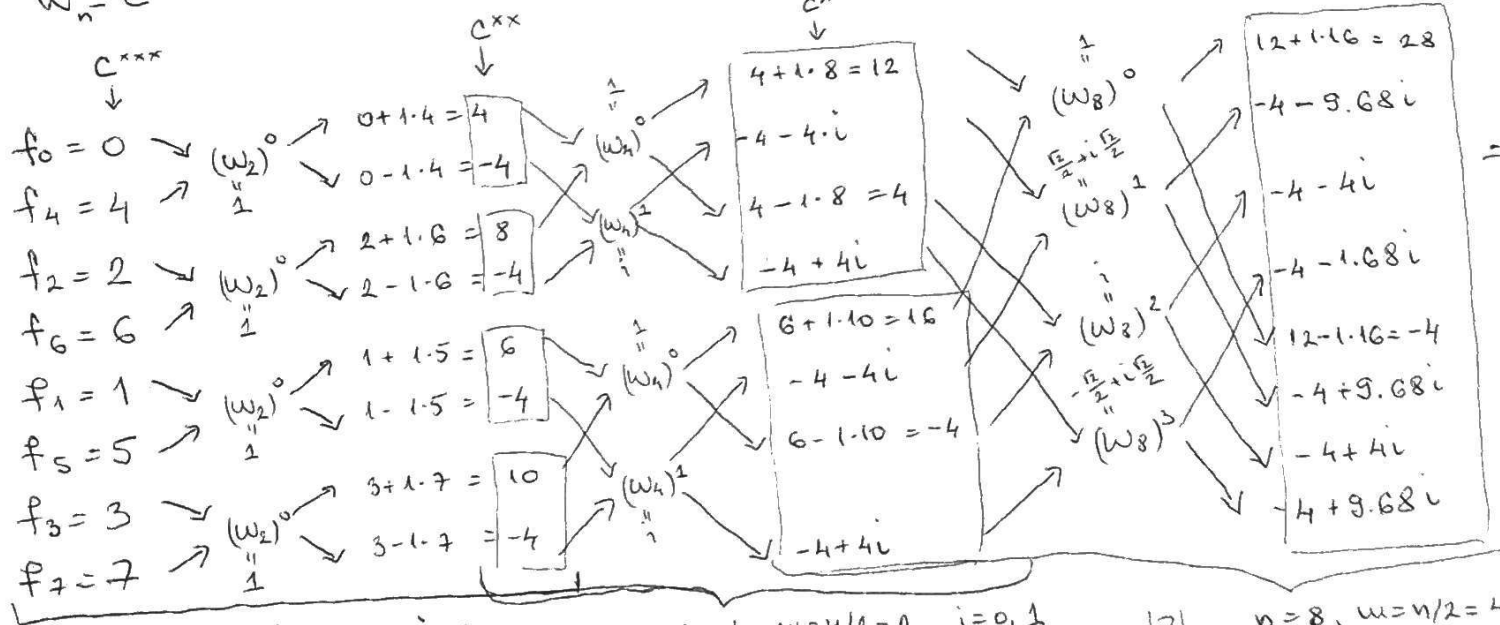
$$f^{eo} \rightarrow \begin{cases} f^{eoo} = (f_1) = c^{eoo} \\ f^{ooo} = (f_5) = c^{ooo} \end{cases}$$

$$f^{oo} \rightarrow \begin{cases} f^{ooo} = (f_3) = c^{ooo} \\ f^{ooo} = (f_7) = c^{ooo} \end{cases}$$

$$w_n = e^{i \frac{2\pi}{8}} = e^{i \frac{\pi}{4}} = \cos \frac{\pi}{4} + i \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2} + i \frac{\sqrt{2}}{2}$$

$$w_n^k = e^{\frac{2\pi i k}{n}}$$

$$\begin{cases} c_j = c_j^e + w_n^j \cdot c_j^o \\ c_{j+m} = c_j^e - w_n^j \cdot c_j^o \end{cases} \quad j=0, \dots, m-1$$



$= C \rightarrow$ Da bi se dobila DFT od f , još je potrebno sve elemente u ovom c podeliti sa n sa 8

$$n=2, \quad w = n/2 = 1, \quad j=0$$

$$\begin{cases} c_0^x = c_0^{exx} + w_2^0 \cdot c_0^{oxx} \\ c_{0+1} = c_0^{exx} - w_2^0 \cdot c_0^{oxx} \end{cases} \quad w_n^0 = 1$$

$$n=4, \quad m = n/2 = 2, \quad j=0, 1$$

$$\begin{cases} c_0^x = c_0^{ex} + w_4^0 \cdot c_0^{ox} \\ c_1^x = c_1^{ex} + w_4^1 \cdot c_1^{ox} \\ c_2^x = c_0^{ex} - w_4^0 \cdot c_0^{ox} \\ c_3^x = c_1^{ex} - w_4^1 \cdot c_1^{ox} \end{cases} \quad \begin{matrix} w_n^0 = 1 \\ w_n^1 = i \end{matrix}$$

$$n=8, \quad m = n/2 = 4, \quad j=0, 1, 2, 3$$

$$\begin{cases} c_0 = c_0^e + w_8^0 \cdot c_0^o \\ c_1 = c_1^e + w_8^1 \cdot c_1^o \\ c_2 = c_2^e + w_8^2 \cdot c_2^o \\ c_3 = c_3^e + w_8^3 \cdot c_3^o \\ c_4 = c_0^e - w_8^0 \cdot c_0^o \\ c_5 = c_1^e - w_8^1 \cdot c_1^o \\ c_6 = c_2^e - w_8^2 \cdot c_2^o \\ c_7 = c_3^e - w_8^3 \cdot c_3^o \end{cases} \quad \begin{matrix} w_n^0 = 1 \\ w_n^1 = \frac{\sqrt{2}}{2} + i \frac{\sqrt{2}}{2} \\ w_n^2 = i \\ w_n^3 = -\frac{\sqrt{2}}{2} + i \frac{\sqrt{2}}{2} \end{matrix}$$