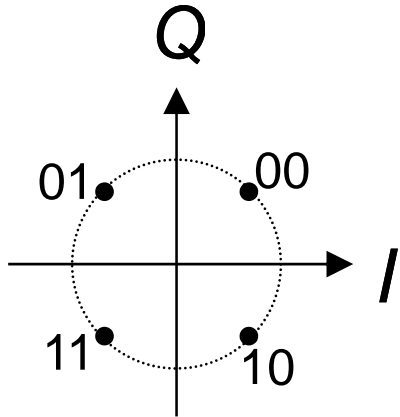
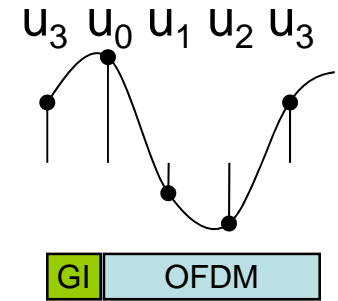
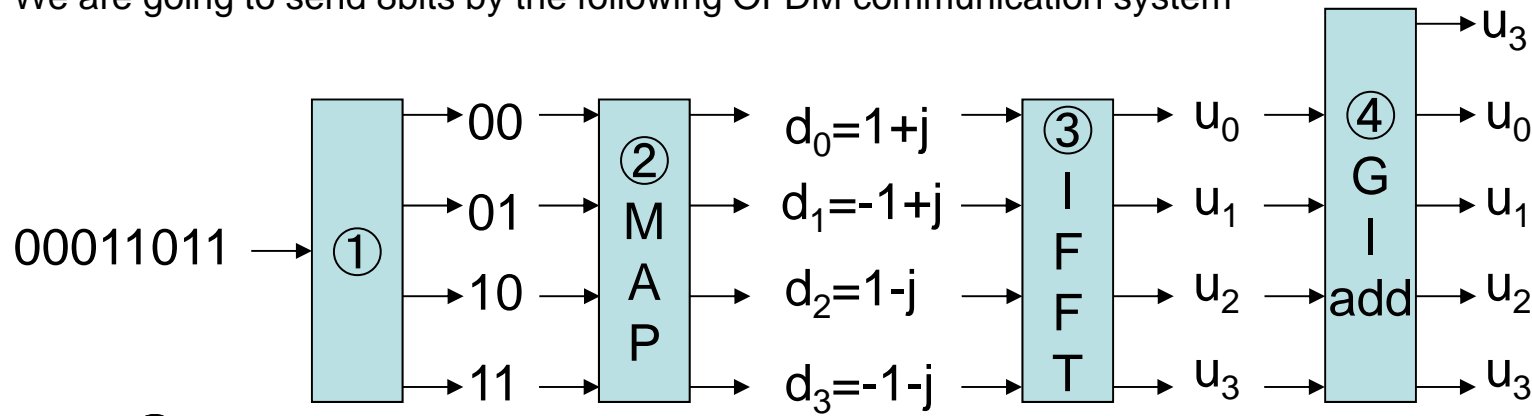


We are going to send 8bits by the following OFDM communication system



$$u_k = \frac{1}{4} \sum_{n=0}^3 d_n \cdot \left(e^{j \frac{2\pi}{4} nk} \right) = \text{IFFT} (d_n) \quad (k = 0, 1, 2, \dots, 3)$$

$$u_0 = \frac{1}{4} (d_0 + d_1 + d_2 + d_3)$$

$$u_1 = \frac{1}{4} (d_0 + d_1 \cdot (j) + d_2 \cdot (-1) + d_3 \cdot (-j))$$

$$u_2 = \frac{1}{4} (d_0 + d_1 \cdot (-1) + d_2 + d_3 \cdot (-1))$$

$$u_3 = \frac{1}{4} (d_0 + d_1 \cdot (-j) + d_2 \cdot (-1) + d_3 \cdot (j))$$

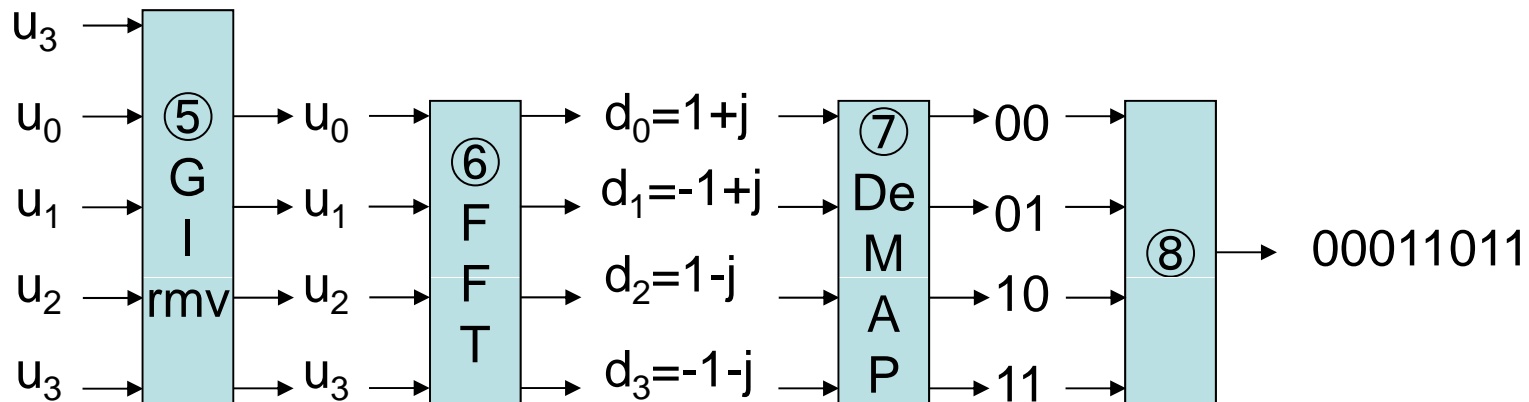
$$d_n = \sum_{k=0}^3 u_k \cdot \left(e^{-j \frac{2\pi}{4} nk} \right) = \text{FFT} (u_k) \quad (n = 0, 1, 2, \dots, 3)$$

$$d_0 = u_0 + u_1 + u_2 + u_3$$

$$d_1 = u_0 + u_1 \cdot (-j) + u_2 \cdot (-1) + u_3 \cdot (+j)$$

$$d_2 = u_0 + u_1 \cdot (-1) + u_2 + u_3 \cdot (-1)$$

$$d_3 = u_0 + u_1 \cdot (j) + u_2 \cdot (-1) + u_3 \cdot (-j)$$



LAB2(HW2)

1. Please draw OFDM symbol complex wave form including GI when you send "10010011".
2. Please draw OFDM symbol complex wave form including GI when you send "00000000".
3. Compare those 2 waveform. Then Did you find any problem? If yes, please state the problem.

