

Quiz IV Soln.

Bit Reversal

$$R_0 = 0x3B$$

(1)

$$\&0x55$$

$$\begin{array}{cc} 0011 & 1011 \end{array}$$

$$\&0xAA$$



$$\begin{array}{r} R_1 = 0011 \ 1011 \\ \&0101 \ 0101 \\ \hline 0001 \ 0001 \end{array}$$

$$\begin{array}{r} R_2 = 0011 \ 1011 \\ \&1010 \ 1010 \\ \hline 0010 \ 1010 \end{array}$$

$$R_1 = 0x11$$

LSL ~~twice~~ once

$$R_1 = 0x22$$

$$R_2 = 0x2A$$

LSR ~~twice~~ once

$$R_2 = 0001 \ 0101$$

$$R_2 = 0x15$$

OR

$$\begin{array}{r} R_0 = 0010 \ 0010 \\ \text{OR } 0001 \ 0101 \\ \hline \end{array}$$

$$R_0 = 0011 \ 0111$$

$$R_0 = 0x3 \ 7$$

(2)

$$R_0 = 0x37$$

$$\& 0x33$$

$$0011 \ 0111$$

$$\& 0xCC$$

$$\begin{array}{r} R_1 = 0011 \ 0111 \\ \& 0011 \ 0011 \\ \hline 0011 \ 0011 \end{array}$$

$$\begin{array}{r} R_2 = 0011 \ 0111 \\ \& 1100 \ 1100 \\ \hline 0000 \ 0100 \end{array}$$

$$R_1 = 0x33$$

$$R_2 = 0x04$$

LSL x2

LSR x2

$$R_1 = 0xCC$$

$$R_2 = 0x01$$

OR

$$\begin{array}{r} R_0 = 1100 \ 1100 \\ \text{OR } 0000 \ 0001 \\ \hline 1100 \ 1101 \end{array}$$

$$\& 0x0F$$

$$R_0 = 0xCD$$

$$\& 0xF0$$

$$\begin{array}{r} R_1 = 1100 \ 1101 \\ \& 0000 \ 1111 \\ \hline 0000 \ 1101 \end{array}$$

$$\begin{array}{r} R_2 = 1100 \ 1101 \\ \& 1111 \ 0000 \\ \hline 1100 \ 0000 \end{array}$$

LSL x4

LSR x4

$$R_1 = 1101 \ 0000$$

$$R_2 = 0000 \ 1100$$

OR

$$\begin{array}{r} R_0 = 1101 \ 1100 \\ \hline \boxed{R_0 = 0xDC} \end{array}$$

Reversed bits
of 0x3B