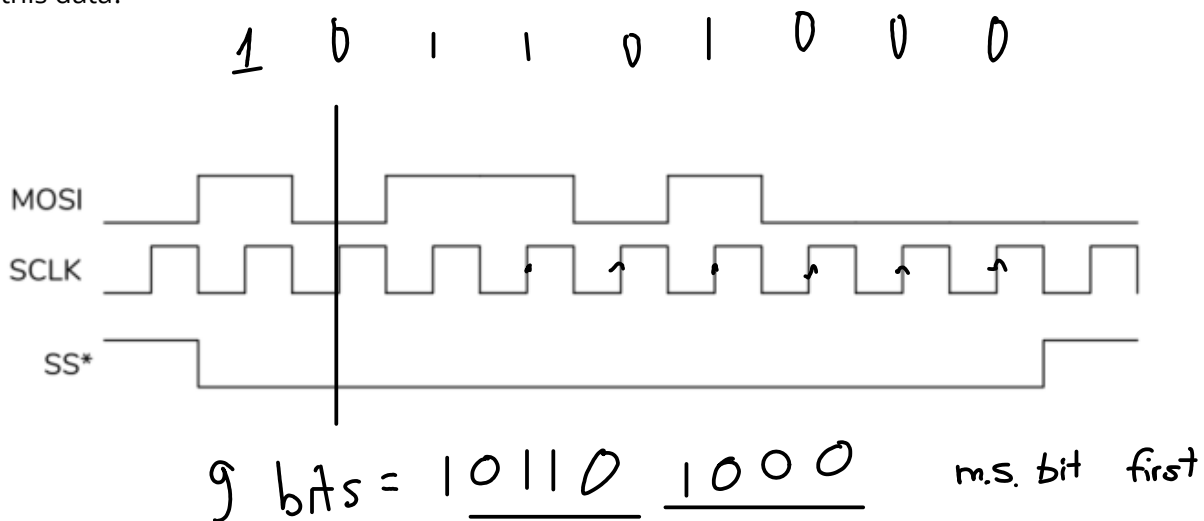


Interfaces

Exercise 1: The diagram below shows a transfer over an SPI bus. How many bits of data are transferred and what is the decimal value of this data?



hex value 0X168

decimal value

$$\begin{array}{r}
 256 \\
 + 96 \\
 8 \\
 \hline
 360
 \end{array}$$

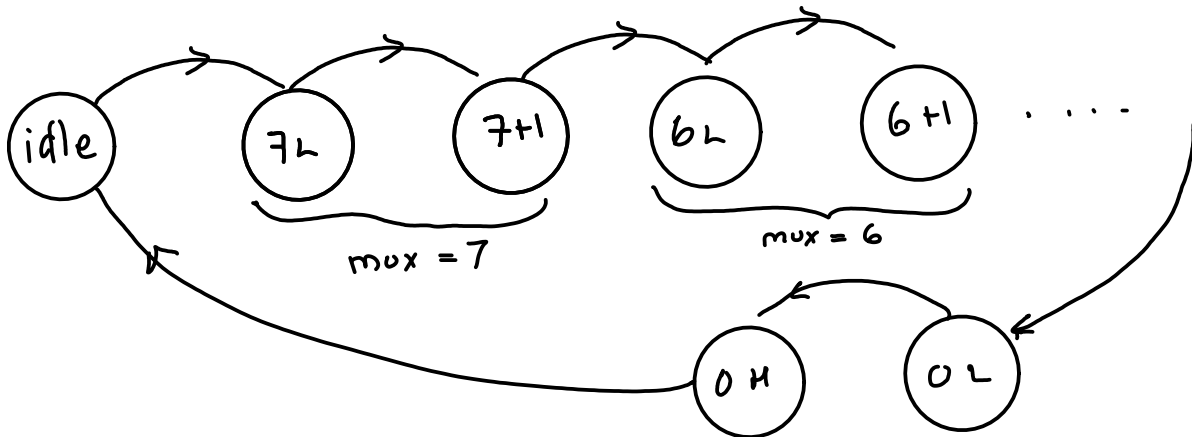
if bits transferred l.s. bit first:

$$\begin{array}{c}
 0001 \quad 0110 \quad 1 \\
 \hline
 = 0x2D = 45
 \end{array}$$

Exercise 2: Draw the state transition diagram for the controller, labelling the states with the bit number being transmitted/received. Include an idle state. In which states are \widehat{SCLK} and \overline{SS} asserted?

L "active" high

7 L = bit 7 (M.S.B.)
L : SCLK low



SCLK high in 7H, 6H, ... 0H
 \overline{SS} Low in 7H, 7L, ... 0L, 0H
 mux is 7 ... 0
 shift is active on transitions from SCLK low to High