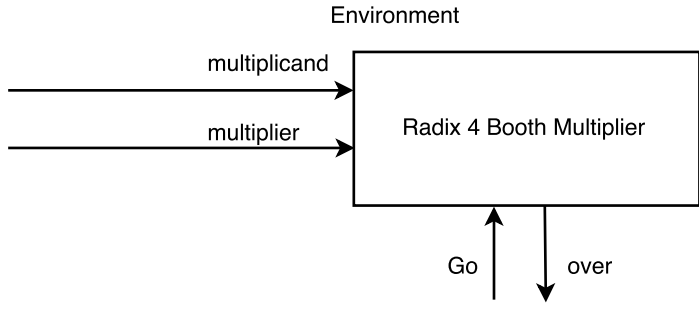


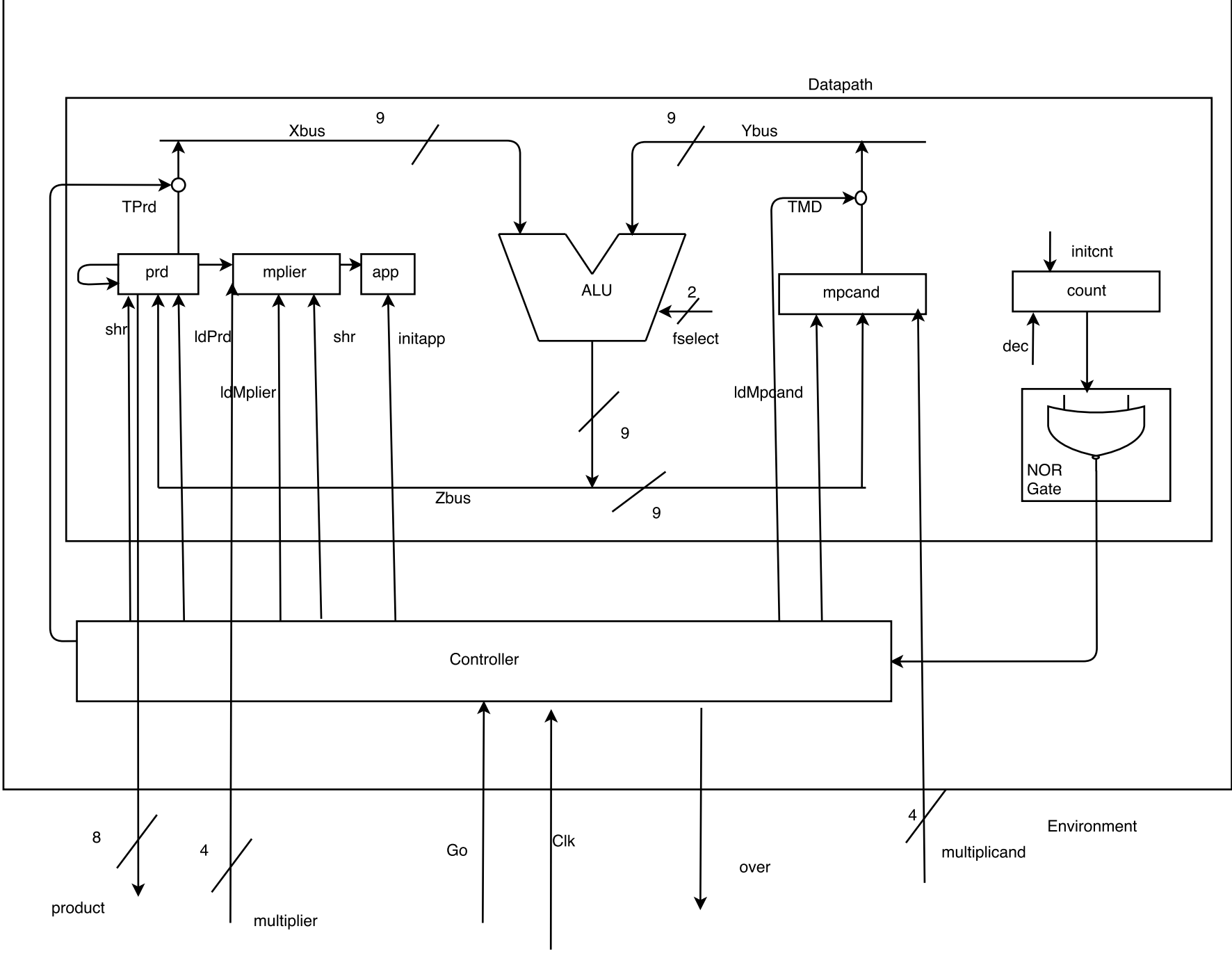
Controller Schematic diagram



Datapath diagram

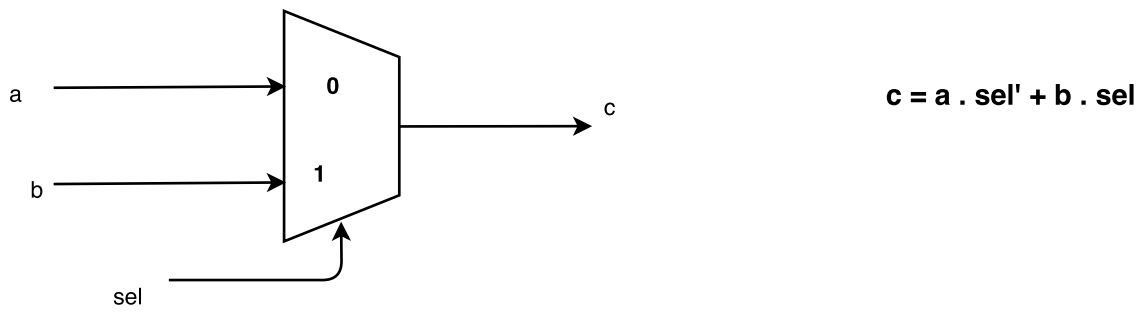
Operations of ALU :
add1 : $Z \Leftarrow X + Y$
add2 : $Z \Leftarrow X + 2Y$
sub1 : $Z \Leftarrow X - Y$
sub2 : $Z \Leftarrow X - 2Y$

app : appended bit

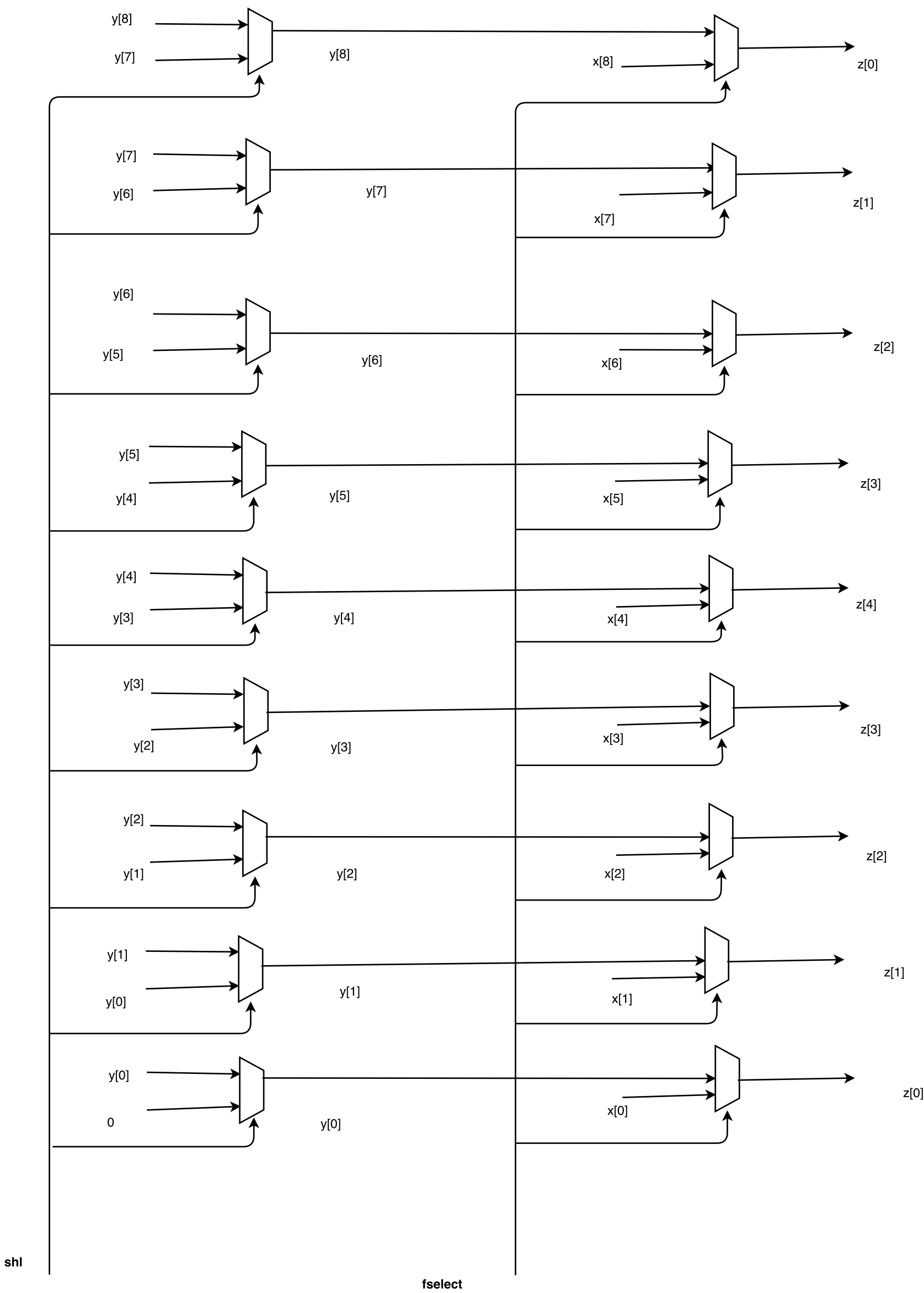


Internal Working of ALU

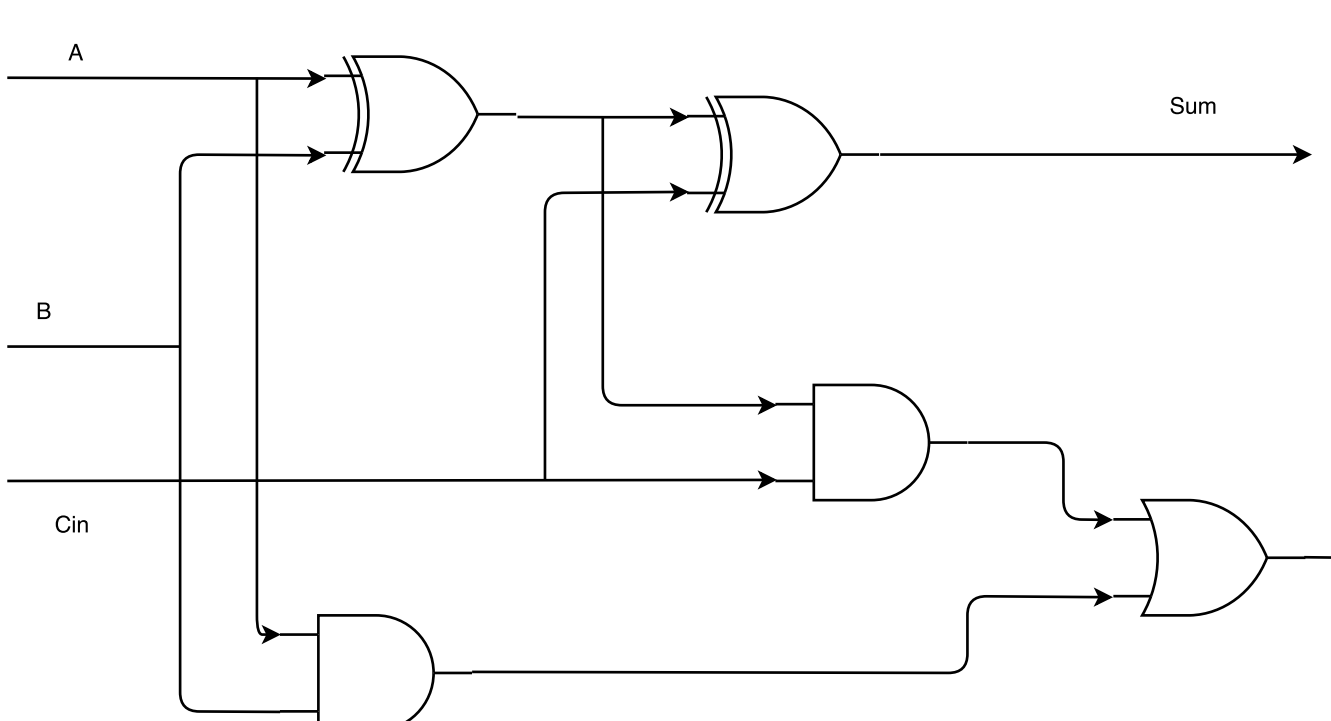
For all the multiplexers below :



ALU operations of $x+y$ and $x+2y$ and $x-y$ and $x-2y$



Circuit of Full Adder



Circuit of Full Subtractor

