



# AdcBulkMem

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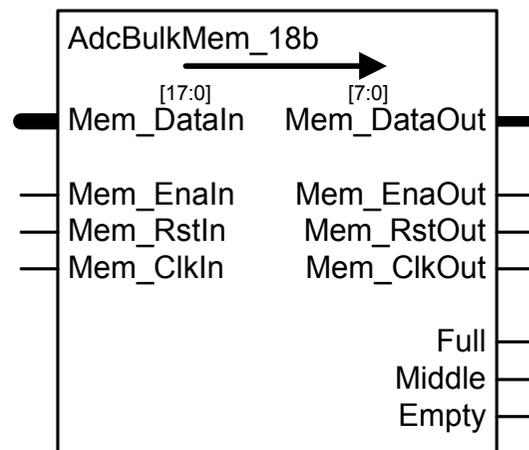
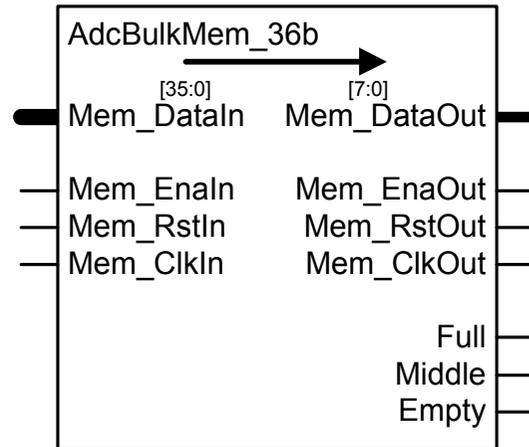
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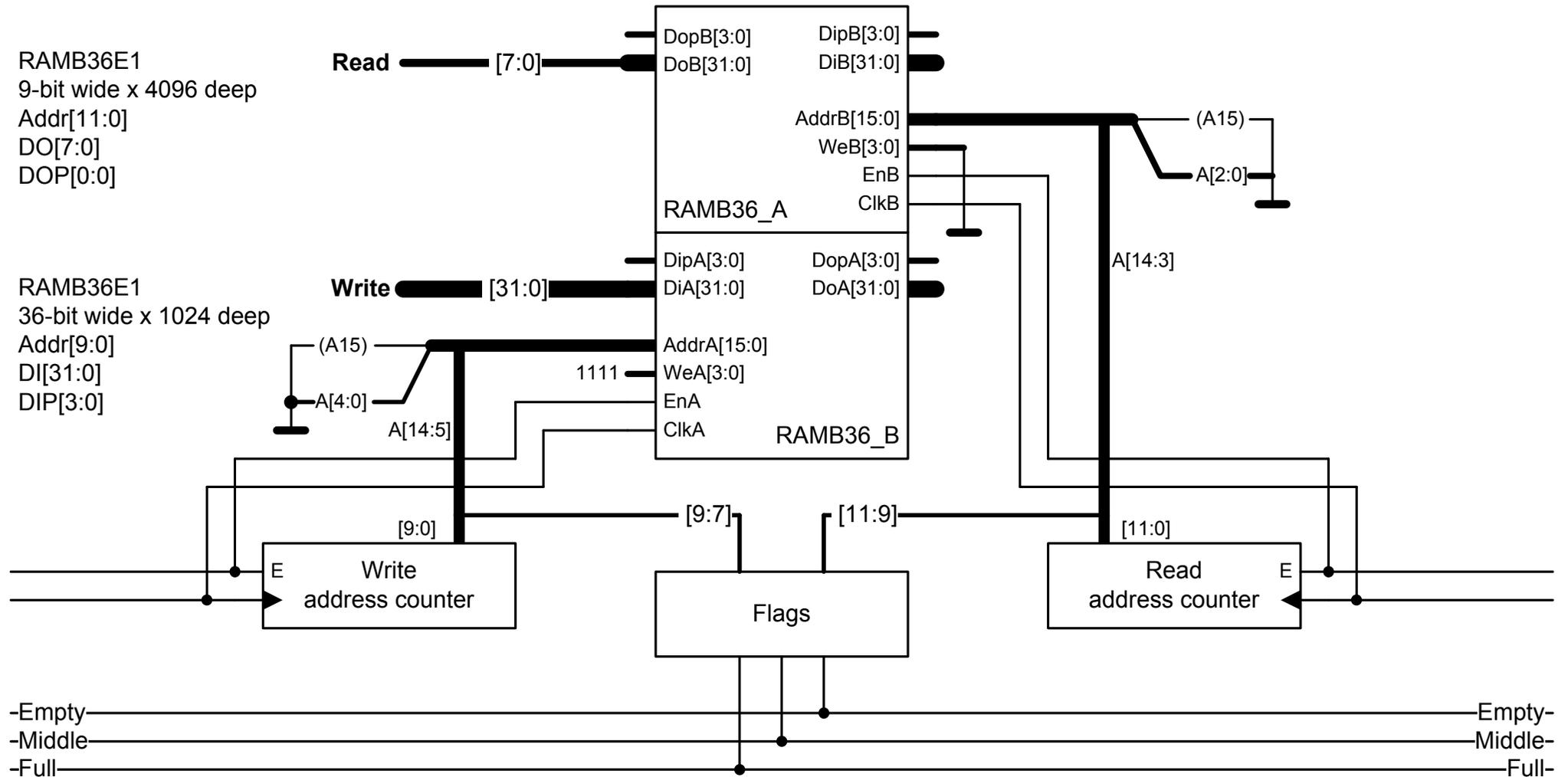
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# AdcBulkMem

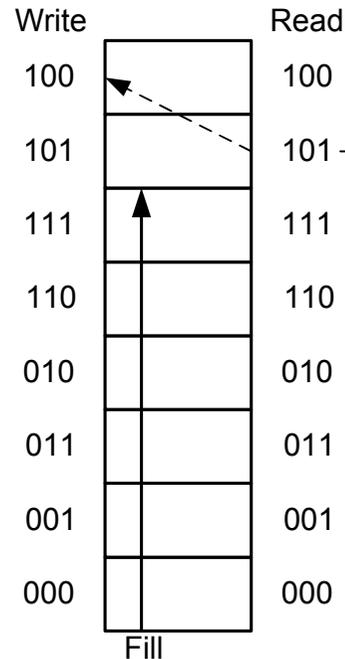


# AdcBulkMem

The ADC writes into the Block-RAM and the processor reads from it.



# Flags – Gray code



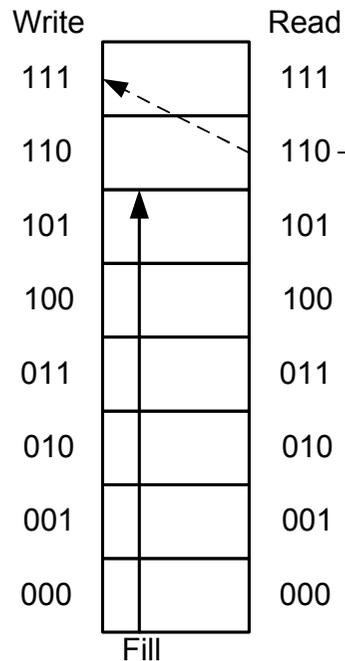
When the read pointer is right behind the write pointer, the FIFO is as good as empty.  
 When the write pointer is right behind the read pointer, the FIFO is nearly full.

EMPTY		FULL		Optional MIDDLE	
Write	Read	Write	Read	Write	Read
100	101	100	000	100	010
101	111	101	100	101	011
111	110	111	101	111	001
110	010	110	111	110	000
010	011	010	110	010	100
011	001	011	010	011	101
001	000	001	011	001	111
000	100	000	001	000	110

Assume that the write pointer runs faster than the read pointer, then:  
 The write pointer will reach “100” while the read pointer is still “000” the FULL flag goes high.  
 Writing must now be stopped until the read pointer reaches “101”, now the EMPTY flag can be set high and the FULL flag can be released.  
 Writing can continue from where it was stopped (Somewhere in the “100” region) and reading can be stopped. Writing goes over turn around in address space. When the write pointer reaches now “111 the FULL flag must be set again (Read pointer is at “101”). The read operation can start from where it last. When the read pointer reaches “110” the EMPTY flag can be set (reset the FULL flag).  
 And so on.....

# Flags – Binary

When the counters are binary coded the flag logic should look like this;



When the read pointer is right behind the write pointer, the FIFO is as good as empty.  
When the write pointer is right behind the read pointer, the FIFO is nearly full.

EMPTY		FULL		Optional MIDDLE	
Write	Read	Write	Read	Write	Read
111	110	111	000	111	011
110	101	110	111	110	010
101	100	101	110	101	001
100	011	100	101	100	000
011	010	011	100	011	111
010	001	010	011	010	110
001	000	001	010	001	101
000	111	000	001	000	100

Assume that the write pointer runs faster than the read pointer, then:  
The write pointer will reach “111” while the read pointer is still “000” the FULL flag goes high.  
Writing must now be stopped until the read pointer reaches “110”, now the EMPTY flag can be set high and the FULL flag can be released.  
Writing can continue from where it was stopped (Somewhere in the “111” region) and reading can be stopped. Writing goes over turn around in address space. When the write pointer reaches now “101 the FULL flag must be set again (Read pointer is at “110”). The read operation can start from where it last. When the read pointer reaches “100” the EMPTY flag can be set (reset the FULL flag).  
And so on.....