Label	Description	Stimulus Generation
FIFO_1	When the reset is asserted, the internal pointers, counter and overflow, underflow will reset	Directed at the start of the sim, then randomized with constraint that drives reset to be off most of the sim time
FIFO_2	When wr_en and rd_en are high and the fifo is empty, the priorty is to write to fifo	Randomization under constraint on wr_en to be high 70% of the time and rd_en to be high 30% 0f the time
FIFO_3	When wr_en and rd_en are high and the fifo is full, the priorty is to read from fifo	Randomization under constraint on wr_en to be high 70% of the time and rd_en to be high 30% 0f the time
FIFO_4	When wr_en is high and rd_en is low and the fifo is not full, write operation is done	Randomization under constraint on wr_en to be high 70% of the time
FIFO_5	When wr_en is low and rd_en is high and the fifo is not empty, read operation is done	Randomization under constraint on wr_en to be high 30% of the time
FIFO_6	When count is equal to depth - 1	
FIFO_7	When count is equal to 1	
FIFO_8	When wr_en is high and fifo is not full. wr_ack is high	
FIFO_9	When wr_en is high and fifo is full, overflow is high	
FIFO_10	When rd_en is high and fifo is empty, underflow is high	
FIFO_11	When count = depth, fifo is full	
FIFO_12	When count = 0, fifo is empty	
FIFO_13	data_in	Randomized during the simulation

Functional Coverage	Functionality Check
-	immediate assertion to check the reset functionality
coverpoints wr_en and rd_e n and cross cover with empty and full signals	concurent assertion to check count is increased
coverpoints wr_en and rd_en and cross cover with empty and full signals	concurent assertion to check count is decreased
cross cover between wr_en and full signal	concurent assertion to check count is increased, self check using reference model
cross cover between rd_en and empty signal	concurent assertion to check count is decreased, self check using reference model
cross cover between almostfull and wr_en and rd_en	immediate assertion to check almostfull is high, self check using reference model
cross cover between almostempty and wr_en and rd_en	immediate assertion to check almostempty is high, self check using reference model
cross cover between wr_ack and wr_en and rd_en	concurent assertion to check wr_ack is high, self check using reference model
cross cover between overflow and wr_en and rd_en	concurent assertion to check overflow is high, self check using reference model
cross cover between underflow and wr_en and rd_en	concurent assertion to check underflow is high, self check using reference model
cross cover between full and wr_en and rd_en	immediate assertion to check full is high, self check using reference model
cross cover between empty and wr_en and rd_en	immediate assertion to check empty is high, self check using reference model