Software Testing HW2

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(a) List all of the input variables, including the state variables.

Input Variable	Int capacity	Object o			
State Variable	Final object element [ ]	Int size	Int front	Int end	Final Int capacity

(b) Define the characteristics of the input variables. Make sure you cover all input variables.

Method	Paras	Return	Values	Exception	CH id	Characteristic
BoundedQueue	Int				C1	Constructor
				IllegalArgumentException	C2	Arg < 0
enQueue	Object				C3	Make o the newest obj.
				IllegalStateException	C7	
				NullPointException	C4	Object is null
deQueue	State	Object	Object/null		C5	Remove and return oldest object
				IllegalStateException	C6	
isEmpty	State	Boolean	True/False		C6	Queue is empty
isFull	State	Boolean	True/False		C7	Queue is full

(c) Partition the characteristics into blocks. Designate one block in each partition as the "Base" block.

ID	Characteristic	BoundedQueue(int)	enQueue(Object)	deQueue()	isEmpty()	isFull()
C1	Constructor	x	x	x	x	x
C2	If Argument less than 0	x	x	x	x	x
.C3	Make o the newest element of the queue		x			
C4	If argument is NULL		x			
C5	Remove and return oldest of the queue			x		
C6	If queue is empty			x	x	
C7	If queue is full		x			x

(d) Define values for each block.

ID	Characteristic	BoundedQueue(int)	enQueue(Object)	deQueue()	isEmpty()	isFull()	partition
C1	Constructor	x	x	x	x	x	
C2	If Argument less than 0	x	x	x	x	x	{True, False}
C3	Make o the newest element of the queue		x				{True, False}
C4	If argument is NULL		x				{True, False}
C5	Remove and return oldest of the queue			x			{True, False}
C6	If queue is empty			x	x		{True, False}
C7	If queue is full		x			x	{True, False}
	Base Block	{F} New a queue capacity > 0	{FTFF} Not full, Enqueue an object	{FTF} Not empty, dequeue	{FF} Not empty	{FF} Not full	

(e) Define a test set that satisfies Base Choice Coverage (BCC). Write your tests with the values from the previous step. Be sure to include the test oracles.

Method	Characteristics	Test Requirements	Infeasible TRs	Revised TRs	# TR
BoundedQueue	C1, C2	{T, F}			2
Enqueue	C1, C2, C3, C4, C7	{FTFF, FTFT, FTTF, FTTT}	TTFF, TTFT TTTF, TTTT	TTFF->FTFF TTFT->FTFT TTTF->FTTF TTTT->FTTT	4
Dequeue	C1, C2, C5, C6	{FTT, FTF}	TTT, TTF TFT, TFF	TTT->FTT, TTF->FTF TFT->FFT, TFF-> FFF	2
isEmpty	C1, C2, C6	{FT, FF}	TT, TF	TT->FT, TF->FF	2
isFull	C1, C2, C7	{FT, FF}	TT, TF	TT->FT, TF->FF	2