

Hw2

[a]

- List all of the input variables including the state variables.
 - 1. capacity
 - the input of constructor, which signifies the queue's capacity
 - 2. X
 - the input of enqueue(), which is if the element type of the queue(that is, object o).
 - 3. state
 - state can be considered as the state of the queue's iterator
 - Summary

variables	
input variables :	capacity, X
state variables :	state

[b]

- Define the characteristics of the input variables.
 - should cover all input variables.

Method	Params	Returns	Values	Exception	ChID	Characteristic	Covered by
BoundedQueue	int capacity				C1	Constructor	
-					C2	If argument is less than 0	
-				IllegalArgumentException		capacity < 0	C2
enqueue	Object o				C3	Make o the newest element of the queue	
-				NullPointerException	C4	If argument is null	
-				IllegalStateException		queue is full	C7
dequeue	state	element generic	Object o		C5	remove and return oldest element of Queue	
-				IllegalStateException		queue is empty	C6
isEmpty	state	boolean	T, F		C6	queue is empty	
isFull	state	boolean	T, F		C7	queue is full	

[c]

- Partition the characteristics into blocks.
 - Designate one block in each partition as the "Base" block.

ID	Characteristic	BoundedQueue(int capacity)	enqueue(Object o)	dequeue()	isEmpty()	isFull()
C1	Constructor	V				
C2	If argument is less than 0	V	V	V	V	V
C3	Make o the newest element of the queue		V			
C4	If argument is null		V			

ID	Characteristic	BoundedQueue(int capacity)	enqueue(Object o)	deQueue()	isEmpty()	isFull()
C5	Remove and return oldest element of queue			V		
C6	If queue is empty			V	V	
C7	If queue is full		V			V

[d]

- Define values for each block.

ID		Values
C1	Constructor	T
C2	If argument is less than 0	T, F
C3	Make o the newest element of the queue	T, F
C4	If argument is null	T, F
C5	Remove and return oldest element of queue	T, F
C6	If queue is empty	T, F
C7	If queue is full	T, F

[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	Characteristic	Base	Test Requirements	Infeasible TRs	Revised TRs	# of TRs
BoundedQueue	C1 C2	{TF}	{TF, TT}			2
enqueue	C2 C3 C4 C7	{FTFF}	{FTFF, TTFF, FFFF, FTTF, FTFT}	{TTFF, FFFF, FTTF, FTFT}	FFFF -> FTFF(重複), FTTF -> FTTF, FTFT -> FFFT	3
deQueue	C2 C5 C6	{FTF}	{FTF, TTF, FFF, FTT}	{TTF, FFF, FTT}	FFF -> FTF(重複), FTT -> FFT	2
isEmpty	C2 C6	{FF}	{FF, TF, FT}	{TF}		2
isFull	C2 C7	{FF}	{FF, TF, FT}	{TF}		2

- Summary

Method	Characteristic	Base	Test Requirements	# of TRs
BoundedQueue	C1 C2	{TF}	{TF, TT}	2
enqueue	C2 C3 C4 C7	{FTFF}	{FTFF, FTTF, FFFT}	3
deQueue	C2 C5 C6	{FTF}	{FTF, FFT}	2
isEmpty	C2 C6	{FF}	{FF, FT}	2
isFull	C2 C7	{FF}	{FF, FT}	2