Software Testing Homework1 Answer Sheet

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Derive input space partitioning test inputs for the BoundedQueue class with the following method signatures:

- public BoundedQueue(int capacity); // The Maximum number of elements
- public void enQueue(Object X);
- public Object deQueue();
- public boolean isEmpty();
- public boolean isFull();

Assume the usual semantics for a queue with a fixed, maximal capacity. Try to keep your partitioning simple -- choose a small number of partitions and blocks.

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

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

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

(d) Define values for each block.

(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	Params	Returns	Values	Exception	ID	Characteristic	Covered By
Bounded Queue	int			illegalArgument	C1	More values Throw illegal	
enQueue	object			NullPointer	C2	throw Null	
				illegalState	C3	throw illegal	
deQueue	state			illegalState	C4	throw illegal	
isEmpty	state	int	value				C2, C3, C4
isFull	state	int	value				C2, C3, C4

ID	Characteristic	BoundedQueue	enQueue	deQueue	Partition
C1	More values Throw illegal	V	V	V	True, false
C2	throw null		V	V	True, false
C3	throw illegal		V		True, false
C4	throw illegal			V	True, false

ID	Characteristic	Test Requirement	Infeasible TRs	TRs
BoundedQueue	C1	T, F		2
enQueue	C1, C2, C3	TTT, ~~FTT~~, TFT, TTF	FTT	3
deQueue	C1, C2, C4	TTT, ~~FTT~~, TFT, TTF	FTT	3