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Class: EE382V (Software Testing Class)
HW#3 – Due Oct 31, 2014 @ 11:59pm

1. Section 4.1 Question 1 (Page 159)
2. Section 4.1 Question 2 (Page 159) [answer this question with respect to only the method
    Push() using exactly two characteristics where each characteristic has two blocks in its partition
3. Section 4.2 Question 2 (Page 163)
4. Section 4.2 Question 4 (Page 163–164)

Section 4.1 Question 1 (Page 159) [Answer]
a)
If there is only one element in the list, it will satisfy the partitions "Block 1" and "Block 2". This violates
the condition of the disjointness property.

b)
The supplied three blocks do not account for the empty list case or the case where the list is null (null
pointer exception). Since no blocks account for these cases, it violates the condition of the
completeness property.

c)
Use the following partition blocks instead for Characteristic "Location of element in the list"
Block 1: Element is in the list
Block 2: Element is not in the list
Block 3: List or Element is null

Section 4.1 Question 2 (Page 159) [Answer]
Ref: http://www.cs.armstrong.edu/liang/intro9e/html/GenericStackWithLineNumber.html

```
1  public class GenericStack<E> {
2    private java.util.ArrayList<E> list = new java.util.ArrayList<E>();
3
4    public int getSize() {
5      return list.size();
6    }
7
8    public E peek() {
9      return list.get(getSize() - 1);
10   }
11
12   public void push(E o) {
13     list.add(o);
14   }
15
16   public E pop() {
17     E o = list.get(getSize() - 1);
18     list.remove(getSize() - 1);
19     return o;
20   }
21
22   public boolean isEmpty() {
23     return list.isEmpty();
24   }
25
26   @Override
27   public String toString() {
```

```
28     return "stack: " + list.toString();
29   }
30 }
```

a)
Characteristic 1: Element (X) is null or not
Characteristic 2: Element (X) is an integer or not

b)
For Characteristic 1:
Block 1: Element (X) is not null (any valid Java object)
Block 2: Element (X) is null

For Characteristic 2:
Block 1: Element (X) is an integer
Block 2: Element (X) is not an integer

c)
For Characteristic 1:
Block 1 example: Push("a")
Block 2 example: Push (null)

For Characteristic 2:
Block 1 example: Push(1)
Block 2 example: Push ("a")

Section 4.2 Question 2 (Page 163) [Answer]
Side 1: 2 , 1, 0, -1
Side 2: 2 , 1, 0, -1
Side 3: 2 , 1, 0, -1

48 PWC Tests
(Side 1, Side 2)
(2, 2) (2, 1) (2, 0) (2, -1)
(1, 2) (1, 1) (1, 0) (1, -1)
(0, 2) (0, 1) (0, 0) (0, -1)
(-1, 2) (-1, 1) (-1, 0) (-1, -1)

(Side 1, Side 3)
(2, 2) (2, 1) (2, 0) (2, -1)
(1, 2) (1, 1) (1, 0) (1, -1)
(0, 2) (0, 1) (0, 0) (0, -1)
(-1, 2) (-1, 1) (-1, 0) (-1, -1)

(Side 2, Side 3)
(2, 2) (2, 1) (2, 0) (2, -1)
(1, 2) (1, 1) (1, 0) (1, -1)

(0, 2) (0, 1) (0, 0) (0, -1)
(-1, 2) (-1, 1) (-1, 0) (-1, -1)

Combining them yields:
{(2, 2, 2), (2, 1, 1), (2, 0, 0), (2,−1,−1), (1, 2, 1), (1, 1, 2), (1, 0,−1), (1,−1, 0), (0, 2, 0), (0, 1,−1), (0, 0, 2), (0,−1, 1), (−1, 2,−1), (−1, 1, 0), (−1, 0, 1), (−1,−1, 2)}

Section 4.2 Question 4 (Page 163–164) [Answer]
a)
Yes "Type of S1" satisfies the completeness property

b)
Yes "Type of S1" satisfies the disjointness property

c)
No "Relation between s1 and s2" does not satisfy the completeness property.
Example: s1 = {1, 2} s2 = {2, 3}. s1 and s2 have an element in common

d)
No "Relation between s1 and s2" does not satisfy the disjointness property.
Example: s1 = {} s2 = {}. s1 and s2 will satisfy all four blocks.

e)
Answer = 1 + remaining blocks Characteristic 1 + remaining blocks Characteristic 2 = 6