SE 465 - Assignment 3

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March 29, 2023

Question 1

$$p = (a \wedge b) \vee (b \wedge c) \vee (a \wedge c)$$

$$p_a = (b \vee c) \wedge \neg(b \wedge c) = b \oplus c$$

$$p_b = (a \vee c) \vee \neg(a \wedge c) = a \oplus c$$

$$p_c = (a \vee b) \vee \neg(a \wedge b) = a \oplus b$$

	a	b	c	p	p_a	p_b	p_c
1	T	T	T	T	F	F	F
2	T	T	F	T	T	T	F
3	T	F	T	T	T	F	T
4	T	F	F	F	F	T	T
5	F	T	T	T	F	T	T
6	F	T	F	F	T	F	T
7	F	F	T	F	T	T	F
8	F	F	F	F	F	F	F

GACC. Pairs of rows that satisfy GACC:
a: { 2, 3 } x { 6, 7 }
b: { 2, 5 } x { 4, 7 }
c: { 3, 5 } x { 4, 6 }
One full test case: (2, 7) + (3, 4) = (2, 7, 3, 4)

CACC. Pairs of rows that satisfy CACC:
a: { 2, 3 } x { 6, 7 }
b: { 2, 5 } x { 4, 7 }
c: { 3, 5 } x { 4, 6 }
One full test case: (2, 7) + (2, 7) + (3, 4) = (2, 7, 3, 4)

RACC. Pairs of rows that satisfy RACC:
a: (2, 6), (3, 7)
b: (2, 4), (5, 7)
c: (3, 4), (5, 6)
One full test case: (2, 7) + (2, 7) + (3, 6) = (2, 7, 3, 6)

Question 2

size of s2, completeness. No, if S2 is null then it doesn't have an even or odd number of elements.

size of s2, disjointness. Yes, there is no size of a set that can be both even and odd.

relation, completeness. No, if either S1 and/or S2 is null then comparing the sizes of S1 and S2 is meaningless.

relation, disjointnessness. No, if S1 and S2 are of the same size then they are not disjoint.

Base choice TRs. There are two choices for each characteristic. The first characteristic can be either even or odd and the second characteristic can have the first set be smaller than or equal to the second set or have the second set be smaller than or equal to the first set. $B_1 = 2, B_2 = 2$.

Thus, the number of base choice tests is given by $1 + \sum^2 (B_i - 1) = 1 + ((2-1) + (2-1)) = 3$.

Question 3

(a)

The title of the bug report is too vague. "Multiple reciepients are shown wrong" states that there is some problem with how the program displays emails with multiple reciepients, but fails to describe how the program is displaying the emails incorrectly. The title should be more specific, such as "Sending an email to N distinct reciepients will display N copies of the first recipient's email address."

It's hard to visually see where the submitter talks about what behaviour of the system is wrong, they should put it under a subheading.

The submitter should have included a screenshot of the bug when they submitted it, not after having to be prompted to do so by a maintainer.

The submitted should have included the build date and version of the software they were using when they submitted the bug report, not after having to be prompted to do so by a maintainer.

(b)

Overview: Inserting an element who's key is already in the hashtable fails to update the value of the existing key.

Steps to reproduce:

```
System.out.println("Creating a new hashtable with 11 buckets");
HashTable h = new HashTable(11);

System.out.println("Inserting a key-value pair with key: key, value: value");
h.insert("key", "value");

System.out.println("Printing the values in the hashmap");
h.output();

System.out.println("Inserting a new key-value pair with the same key: key, value: new value");
h.insert("key", "new value");

System.out.println("Printing the values in the hashmap");
h.output();
```

Actual Results:

```
Creating a new hashtable with 11 buckets
Inserting a key-value pair with key: key, value: value
Printing the values in the hashmap
key: value
Inserting a new key-value pair with the same key: key, value: new value
Printing the values in the hashmap
key: value
```

Expected Results:

```
Creating a new hashtable with 11 buckets
Inserting a key-value pair with key: key, value: value
Printing the values in the hashmap
key: value
Inserting a new key-value pair with the same key: key, value: new value
Printing the values in the hashmap
key: new value
```

Build date and platform: 2023-03-29, Macos 13.2.1, Java 8