SAT: Specification-based Testing

1. A game has the following condition: `numberOfPoints <= 570`. Perform boundary analysis on the condition. What are the on and off points?

2. Perform boundary analysis on the following equality: `x == 10`. What are the on and off points?

3. A program called FizzBuzz does the following: given an integer n, return the string formed from the number followed by "!". If the number is divisible by 3, use "Fizz" instead of the number; and if the number is divisible by 5, use "Buzz" instead of the number, and if the number is divisible by both 3 and 5, use "Fizz- Buzz" instead of the number. What is a good test suite and why?

4. How many parameters should be considered when designing specification-based tests for the following code snippet? What is a good test suite and why?

```
1   /**
2     * Puts the supplied value into the Map,
3     * mapped by the supplied key.
4     * If the key is already in the map, its
5     * value will be replaced by the new value.
6     *
7     * NOTE: Nulls are not accepted as keys;
8     *   a RuntimeException is thrown when key is null.
9     *
10    * @param key the key used to locate the value
11    * @param value the value to be stored in the HashMap
12    * @return the prior mapping of the key,
13    *   or null if there was none.
14    */
15   public V put(K key, V value) {
16      // implementation here
17   }
```

5. Postal codes in some imaginary country are always composed of four numbers and two letters: for example, 2628CD. Numbers are in the range [1000, 4000]. Letters are in the range [C, M]. Consider a program that receives two inputs—an integer (for the four numbers) and a string (for the two letters)—and returns true (valid postal code) or false (invalid postal code). What is a good test suite and why?