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Activity 5 Exercises

Exercise 1:

1. **Buggy1:**

*Method*: isEmpty

*Possible Error*: The assertion error shows that the isEmpty method invocation returned false even though the deck is empty. This is most probably due to the condition for isEmpty being a check that size is less than 0 instead of equal to it.

1. **Buggy2:**

*Method*: size

*Possible Error*: This method returns the value of the size field for the Deck. It might be that the implementation of the class for this exercise doesn’t have an initialization for the size (from the constructor; for this project, it should be constructed as the size of the cards). The default value for uninitialized integers is 0, so it would make sense that 0 is returned instead of the expected 1 for this method test.

1. **Buggy3:**

*Method*: Constructor

*Possible Error*: The shuffle method might not be invoked from the constructor. The correct implementation has this present so no other invocations are necessary when constructing an appropriate deck. No shuffle calls are made in the test method, so it must be called from the Deck constructor in order to produce non-identical decks.

1. **Buggy4:**

*Method*: deal

*Possible Error*: The method decrements the size if the deck is not empty, and returns the card at the index size. So, this assertion error could have come from decrementing the size before checking for the deck being empty. Therefore, it’d still decrement if the size is 0, making it -1. Of course, this is out of bounds.

Exercise 2:

* Deck.Constructor:35 – The iterator starts at 1, so not all cards are added to the array. The initial value of j must be changed from 1 to 0.
* Deck.Constructor:40 – The initialization of size is missing. It will be the default value of 0 for ints.
* Deck.isEmpty:50 – The access if whether or not the deck is empty is wrong. If the deck size is 0, it is not less than 0 and thus the method returns false. The comparison operator should be switched from a less than to an equal.
* Deck.shuffle:60 – The loop iterated k from the number of cards minus 1 until k is less than 0. This should be switched to greater than.
* Deck.deal:83 – The decrement of size should occur after the check that the deck is empty. How can you reduce the size of an empty deck?