
Bug 3

Limit set to 0, but game ends with player still with 5 (dollars) remaining

Sample Buggy Output

2 turns later. End Game 99: Fred now has balance 5 Win count = 1750, Lose Count = 2595, 0.40	44 turns later. End Game 99: Fred now has balance 5 Win count = 1877, Lose Count = 2820, 0.40
2 turns later. End Game 99: Fred now has balance 5 Win count = 1514, Lose Count = 2301, 0.40	2 turns later. End Game 99: Fred now has balance 5 Win count = 2629, Lose Count = 3894, 0.40

H1. The bug is in the Main function, line 41

```
while (player.balanceExceedsLimitBy(bet) && player.getBalance() < 200)
```

where a while loop checks if a player has the balance to cover the bet.

Test	Place a breakpoint on the while loop and check the values of balance, bet and limit.
Prediction	<code>Player.balanceExceedsLimitBy(int amount)</code> isn't functioning correctly, returning a false before the amount reaches the limit.
Result	Didn't find much useful information, maybe I am missing something.
	2 turns later. End Game 99: Fred now has balance 5 Win count = 5231, Lose Count = 3364, 0.61
Notes	<ul style="list-style-type: none">• Changed the value of <code>int balance</code> to 5 to speed things up.• After not finding much, thought I would move the breakpoint to inside <code>Player.balanceExceedsLimitBy(int amount)</code> and view values there.

H2. I still think that the bug is somewhere in `Player.balanceExceedsLimitBy(int amount)`.

Test	Place a breakpoint in on the <code>balanceExceedsLimitBy()</code> return statement.
Prediction	There is a problem in the logic of the comparison of balance, amount and limit.
Result	N/A
Notes	<ul style="list-style-type: none"> When placing breakpoint, I noticed that it was checking if amount is greater than limit. This is the bug, it needs to be greater than or equal to. So that when the player is down to their last 5, they can still place one more bet.

H3. Fixed comparison operator in `Player.balanceExceedsLimitBy(int amount)`..

Test	Run the game.
Prediction	It should be working correctly now that I have changed the comparison operator from <code>></code> to <code>>=</code>
Result	<p>The game functions correctly, the game ends with the player having a balance of 0.</p> <p>3 turns later.</p> <p>End Game 99: Fred now has balance 0</p> <p>Win count = 7489, Lose Count = 5109, 0.59</p>
Notes	<ul style="list-style-type: none"> N/A

Sample Fixed Output

End Game 99: Fred now has balance 0	End Game 99: Fred now has balance 0
Win count = 1174, Lose Count = 1730, 0.40	Win count = 3104, Lose Count = 2084, 0.60
End Game 99: Fred now has balance 0	End Game 99: Fred now has balance 0
Win count = 131, Lose Count = 546, 0.19	Win count = 3335, Lose Count = 2235, 0.60

Before and after screen shot of the bug.

```
public boolean balanceExceedsLimitBy(int amount) {
    return (balance - amount > limit);
}
```

```
public boolean balanceExceedsLimitBy(int amount) {
    return (balance - amount >= limit);
}
```