| **Test Name** | | | Game odds do not appear to be correct | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Use Case Tested:** | | | Crown and Anchor Game | | | |
| **Test Description:** | | | Crown and Anchor game have an approximate 8% bias to the house. The win+lose ratio should equal approximately 0.42. This does not appear to be the case | | | |
| **Pre-conditions** | | | Default game setup | | | |
| **Post-conditions** | | | Once the game has finished the reported win ratio should be around 0.42. Because this value is only an approximate and the game is random we are going to say that an acceptable difference is minus/plus two percent in either direction. This means that the win ratio can be anywhere between 0.4 and 0.44 to be acceptable. | | | |
| **Notes:** | | **In order to test this bug the game must be played a few times. We know the bug does exist as it was reported so the game needs to be player until the ratio is off. In order to confirm the bug we will also say that if the bug does not show up after 20 games then the bug doesn’t actually exist. A pass will indicate that the bug does in fact exist** | | | | |
| **Result (Pass/Fail/Warning/Incomplete)** | |  | | | | |
|  | **TEST STEP** | | | **EXPECTED TEST RESULTS** | P | F |
|  | Run program | | |  | x |  |
|  | Look through all the results and count how many times the house has win/lose. Work out the ratio that the house is winning | | | The ratio that the house is winning/losing at should not be close to 0.42 | x |  |
|  |  | | |  |  |  |

# Test Result

Output from game

**Run One**

195 turns later.

End Game 99: Fred now has balance 200

Win count = 9037, Lose Count = 13279, 0.40

The first run is in the acceptable range, so we need to play the game again in order to find the bug

**Run two**

113 turns later.

End Game 99: Fred now has balance 0

Win count = 10746, Lose Count = 15772, 0.41

**Run Three**

359 turns later.

End Game 99: Fred now has balance 200

Win count = 8890, Lose Count = 13112, 0.40

**Run Four**

153 turns later.

End Game 99: Fred now has balance 0

Win count = 9594, Lose Count = 14129, 0.40

**Run Five**

112 turns later.

End Game 99: Fred now has balance 200

Win count = 6279, Lose Count = 4279, 0.59

Diagnose

In order to reproduce the bug so that the win ratio was not in the acceptable range I had to run the game five times. From looking at the results the first few runs had the win ratio hang around 0.4, this is a little low from what the game is meant to be at, but as the game is random this is still an acceptable range. The last run had the win ratio at 0.59 which is way too high to be acceptable and is an indication that the game is not placing a bias onto the house to insure that the house wins more than the player does.