

Replication:

Test 1:

Test Name	Balance Increment				
Use Case Tested:	Increasing player's balance after winning				
Test Description:	There is an increase in balance of the player when winning the bet				
Pre-conditions	Player must be win the bet				
Post-conditions	Increase in balance				
Notes:	Player must be have played bet				
Result (Pass/Fail/Warning/Incomplete)					
	TEST STEP	EXPECTED TEST RESULTS	P	F	
1.	Set bet on 'Crown'	Set bet of Rs. 5 on 'Crown'	P		
2.	Dice rolled	Any three dice values come (Out of three values, there is one 'Crown', then...)	P		
3.	Result	Increase in player's balance of Rs. 10	P		

Test Data Table					
	1	2	3	4	5
Player's name	Fred	Fred	Fred	Fred	Fred
Balance	100 (Starting bet)	95 (when Fred lost)	90 (Again Fred lost)	90 (Fred won)	85 (Fred lost)
Limit	0	0	0	0	0

Test 2:

Test Name	End balance
------------------	-------------

Use Case Tested:	Game end when player has balance 5 (instead of balance 0)			
Test Description:	Game ends when player has zero balance			
Pre-conditions	Player must play all turns and loose all money			
Post-conditions	Game ends			
Notes:	Player must be have played bet			
Result (Pass/Fail/Warning/Incomplete)				
TEST STEP	EXPECTED TEST RESULTS	P	F	
Set bet on 'Crown'	Set bet of Rs. 5 on 'Crown'	P		
Dice rolled and player lose bet and balance got zero	Any three dice values came and player lose the bet	P		
Result	Balance did not get zero	P		

Test Data Table					
	1	2	3	4	5
Player's name	Fred	Fred	Fred	Fred	Fred
Balance	100 (Starting bet)	95 (when Fred lost)	45 (Again Fred lost)	25 (Fred won)	5 (End game)
Limit	0	0	0	0	0

Test 3:

Test Name	Odds of winnings			
Use Case Tested:	Total win counts of the player			
Test Description:	Odds of winnings should not be more than 0.42			
Pre-conditions	Player must play bets			
Post-conditions	Total win counts of player			
Notes:	Player must be have played bet			
Result (Pass/Fail/Warning/Incomplete)				
	TEST STEP	EXPECTED TEST RESULTS	P	F
1.	Set bet on 'Crown'	Set bet of Rs. 5 on 'Crown'	P	
2.	Dice rolled and player lose bet in turns and balance got zero	Any three dice values came	P	
3.	Result	Total win counts 0.61	P	

Test Data Table					
	1	2	3	4	5
Player's name	Fred	Fred	Fred	Fred	Fred
Balance	100 (Starting bet)	95 (when Fred lost)	45(Again Fred lost)	25 (Fred won)	5 (End game)
Total wincounts			2874(Win count)	1900 (Loose count)	0.61

Simplification:

Bug 1: Game does not pay out at correct level.

When player wins on 1 match, balance does not increase.

Bug 2: Player cannot reach betting limit:

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

Bug 3: Odds in the game do not appear to be correct.

Crown and Anchor games have an approximate 8% bias to the house. So the win : (win+lose) ratio should approximately equal 0.42. This does not appear to be the case.

```

1 public class Player {
2     private String name;
...
Console
Main (9) [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (06-Oct-2016, 8:05:51 PM)
Fred won 5, balance now 65

Turn 17: Fred bet 5 on ANCHOR
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 60

Turn 18: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 60

Turn 19: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 60

Turn 20: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 60

Turn 21: Fred bet 5 on CROWN
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 55

Turn 22: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 55

Turn 23: Fred bet 5 on DIAMOND
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 55

```

```

1 public class Player {
2     private String name;

```

Console Output:

```

Main (9) [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (06-Oct-2016, 8:05:51 PM)
Fred won 5, balance now 15

Turn 58: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 59: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 60: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 61: Fred bet 5 on DIAMOND
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 62: Fred bet 5 on ANCHOR
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 10

Turn 63: Fred bet 5 on CROWN
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 5

63 turns later.
End Game 99: Fred now has balance 5

Win count = 2962, Lose Count = 1900, 0.61

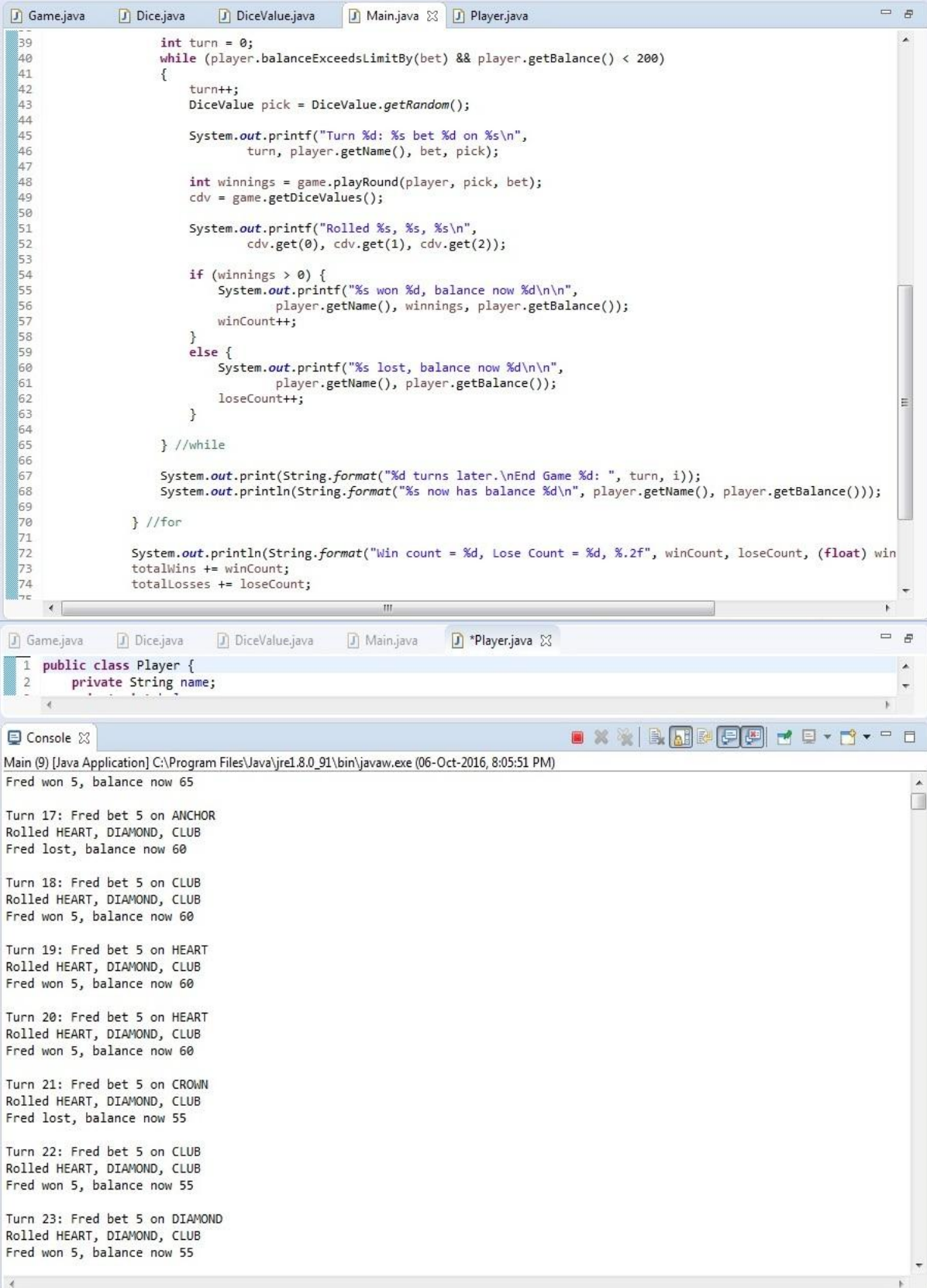
```

Method	Parameters	Mutates	Returns
Constructor	String player	Sets player name, balance etc.	Object reference
Main	Int arguments	Initialize main program	Int
Winnings	Int winning	Calculate total winnings of player	Int

Method	Parameters	Mutates	Returns
Constructor	String name, Int balance	Check name and balance of the player(i.e should not be null)	Object reference
Set limit	Int limit	Initialize limit	Void
balanceExceedsLimit	Int amount	If balance greater than limit, show balance	Boolean
balanceExceedsLimitBy	-----	Exception throw if balance greater than limit	Boolean
takeBet	Int bet	Checks conditions for bet	Int
recieveWinnings	Int winnings	If winnings greater than zero, increase balance, otherwise exception thrown	Int
toString			Name, Balance, Limit

Tracing:

Bug 1 (Origin):



The screenshot displays an IDE with two tabs: `Main.java` and `*Player.java`. The `Main.java` tab is active, showing a game loop. The code starts with `int turn = 0;` and a `while` loop that continues as long as `player.balanceExceedsLimitBy(bet) && player.getBalance() < 200`. Inside the loop, the turn is incremented, a random dice value is picked, and the game round is played. The player's balance is updated based on the outcome. The loop ends when the player's balance is no longer sufficient to place the bet. After the loop, the win and lose counts are printed.

```
39         int turn = 0;
40         while (player.balanceExceedsLimitBy(bet) && player.getBalance() < 200)
41         {
42             turn++;
43             DiceValue pick = DiceValue.getRandom();
44
45             System.out.printf("Turn %d: %s bet %d on %s\n",
46                               turn, player.getName(), bet, pick);
47
48             int winnings = game.playRound(player, pick, bet);
49             cdv = game.getDiceValues();
50
51             System.out.printf("Rolled %s, %s, %s\n",
52                               cdv.get(0), cdv.get(1), cdv.get(2));
53
54             if (winnings > 0) {
55                 System.out.printf("%s won %d, balance now %d\n\n",
56                                   player.getName(), winnings, player.getBalance());
57                 winCount++;
58             }
59             else {
60                 System.out.printf("%s lost, balance now %d\n\n",
61                                   player.getName(), player.getBalance());
62                 loseCount++;
63             }
64         }
65     } //while
66
67     System.out.print(String.format("%d turns later.\nEnd Game %d: ", turn, i));
68     System.out.println(String.format("%s now has balance %d\n", player.getName(), player.getBalance()));
69
70 } //for
71
72 System.out.println(String.format("Win count = %d, Lose Count = %d, %.2f", winCount, loseCount, (float) win
73 totalWins += winCount;
74 totalLosses += loseCount;
```

The `*Player.java` tab is also visible, showing the `Player` class definition:

```
1 public class Player {
2     private String name;
```

The console output shows the game progress for a player named Fred. It displays the turn number, the player's bet, the dice roll, and the resulting balance. The game ends after 23 turns.

```
Main (9) [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (06-Oct-2016, 8:05:51 PM)
Fred won 5, balance now 65

Turn 17: Fred bet 5 on ANCHOR
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 60

Turn 18: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 60

Turn 19: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 60

Turn 20: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 60

Turn 21: Fred bet 5 on CROWN
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 55

Turn 22: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 55

Turn 23: Fred bet 5 on DIAMOND
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 55
```

Bug 2 (Origin):

```
Dice.java  DiceValue.java  Game.java  Main.java  Player.java  Player.java ✕
1 public class Player {
2     private String name;
3     private int balance;
4     private int limit;
5
6     public Player(String name, int balance) {
7         if (name == null || name.isEmpty()) throw new IllegalArgumentException("Name cannot be null or empty");
8         if (balance < 0) throw new IllegalArgumentException("Balance cannot be negative");
9         this.name = name;
10        this.balance = balance;
11        this.limit = 0;
12    }
13
14    public String getName() { return name; }
15    public int getBalance() { return balance; }
16    public int getLimit() { return limit; }
17
18    public void setLimit(int limit) {
19        if (limit < 0) throw new IllegalArgumentException("Limit cannot be negative.");
20        if (limit > balance) throw new IllegalArgumentException("Limit cannot be greater than balance.");
21        this.limit = limit;
22    }
23
24    public boolean balanceExceedsLimit() {
25        return (balance > limit);
26    }
27
28    public boolean balanceExceedsLimitBy(int amount) {
29        return (balance - amount > limit);
30    }
31
32    public void takeBet(int bet) {
33        if (bet < 0) throw new IllegalArgumentException("Bet cannot be negative.");
34        if (!balanceExceedsLimitBy(bet)) throw new IllegalArgumentException("Placing bet would go below limit.");
35        balance = balance - bet;
36    }
37
```

```
Game.java  Dice.java  DiceValue.java  Main.java  *Player.java ✕
1 public class Player {
2     private String name;
3     private int balance;
4     private int limit;
5
6     public Player(String name, int balance) {
7         if (name == null || name.isEmpty()) throw new IllegalArgumentException("Name cannot be null or empty");
8         if (balance < 0) throw new IllegalArgumentException("Balance cannot be negative");
9         this.name = name;
10        this.balance = balance;
11        this.limit = 0;
12    }
13
14    public String getName() { return name; }
15    public int getBalance() { return balance; }
16    public int getLimit() { return limit; }
17
18    public void setLimit(int limit) {
19        if (limit < 0) throw new IllegalArgumentException("Limit cannot be negative.");
20        if (limit > balance) throw new IllegalArgumentException("Limit cannot be greater than balance.");
21        this.limit = limit;
22    }
23
24    public boolean balanceExceedsLimit() {
25        return (balance > limit);
26    }
27
28    public boolean balanceExceedsLimitBy(int amount) {
29        return (balance - amount > limit);
30    }
31
32    public void takeBet(int bet) {
33        if (bet < 0) throw new IllegalArgumentException("Bet cannot be negative.");
34        if (!balanceExceedsLimitBy(bet)) throw new IllegalArgumentException("Placing bet would go below limit.");
35        balance = balance - bet;
36    }
37
```

Console ✕

Main (9) [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (06-Oct-2016, 8:05:51 PM)

Fred won 5, balance now 15

Turn 58: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 59: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 60: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 61: Fred bet 5 on DIAMOND
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 62: Fred bet 5 on ANCHOR
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 10

Turn 63: Fred bet 5 on CROWN
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 5

63 turns later.
End Game 99: Fred now has balance 5

Win count = 2962, Lose Count = 1900, 0.61

Writable Smart Insert 1:1

Bug 3 (Origin):

```
Game.java Dice.java DiceValue.java Main.java Player.java
45     System.out.printf("Turn %d: %s bet %d on %s\n",
46         turn, player.getName(), bet, pick);
47
48     int winnings = game.playRound(player, pick, bet);
49     cdv = game.getDiceValues();
50
51     System.out.printf("Rolled %s, %s, %s\n",
52         cdv.get(0), cdv.get(1), cdv.get(2));
53
54     if (winnings > 0) {
55         System.out.printf("%s won %d, balance now %d\n\n",
56             player.getName(), winnings, player.getBalance());
57         winCount++;
58     }
59     else {
60         System.out.printf("%s lost, balance now %d\n\n",
61             player.getName(), player.getBalance());
62         loseCount++;
63     }
64
65 } //while
66
67 System.out.print(String.format("%d turns later.\nEnd Game %d: ", turn, i));
68 System.out.println(String.format("%s now has balance %d\n", player.getName(), player.getBalance()));
69
70 } //for
71
72 System.out.println(String.format("Win count = %d, Lose Count = %d, %.2f", winCount, loseCount, (float) winCount/(w
73 totalWins += winCount;
74 totalLosses += loseCount;
75
76 String ans = console.readLine();
77 if (ans.equals("q")) break;
78 } //while true
79
80 System.out.println(String.format("Overall win rate = %.1f%%", (float)(totalWins * 100) / (totalWins + totalLosses)));
```

```
Game.java Dice.java DiceValue.java Main.java *Player.java
1 public class Player {
2     private String name;
3 }

Console
Main (9) [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (06-Oct-2016, 8:05:51 PM)
Fred won 5, balance now 15

Turn 58: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 59: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 60: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 61: Fred bet 5 on DIAMOND
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 62: Fred bet 5 on ANCHOR
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 10

Turn 63: Fred bet 5 on CROWN
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 5

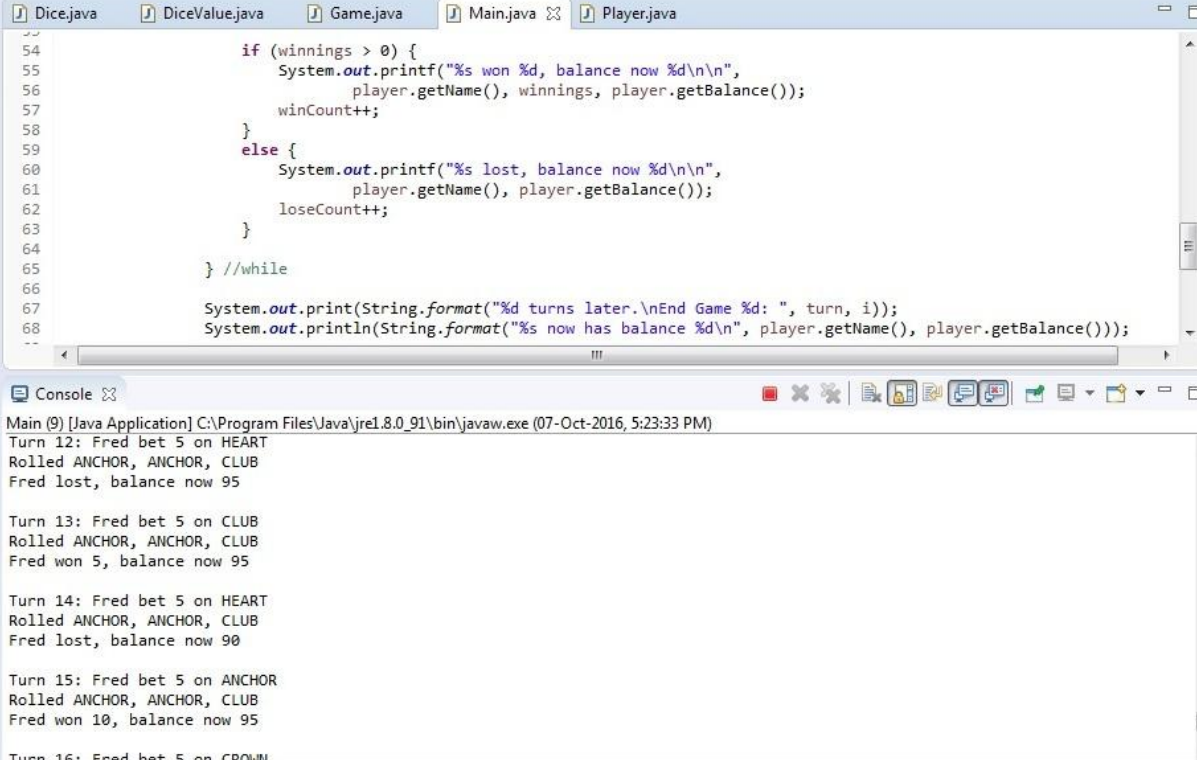
63 turns later.
End Game 99: Fred now has balance 5

Win count = 2962, Lose Count = 1900, 0.61
```

Resolution:

Bug 1: Game does not pay out at correct level.

When player wins on 1 match, balance does not increase.



The screenshot shows an IDE with several tabs: Dice.java, DiceValue.java, Game.java, Main.java, and Player.java. The Game.java tab is active, displaying a code snippet from lines 54 to 68. The code is part of a while loop that checks if a player has won or lost based on their balance and the game's state. The console window below shows the output of the program, indicating the game's progress over 16 turns. The console output shows that the player's balance remains at 95 throughout the game, which is the bug being discussed.

```
54         if (winnings > 0) {
55             System.out.printf("%s won %d, balance now %d\n\n",
56                               player.getName(), winnings, player.getBalance());
57             winCount++;
58         }
59         else {
60             System.out.printf("%s lost, balance now %d\n\n",
61                               player.getName(), player.getBalance());
62             loseCount++;
63         }
64     } //while
65
66     System.out.print(String.format("%d turns later.\nEnd Game %d: ", turn, i));
67     System.out.println(String.format("%s now has balance %d\n", player.getName(), player.getBalance()));
68 }
```

Console Output:

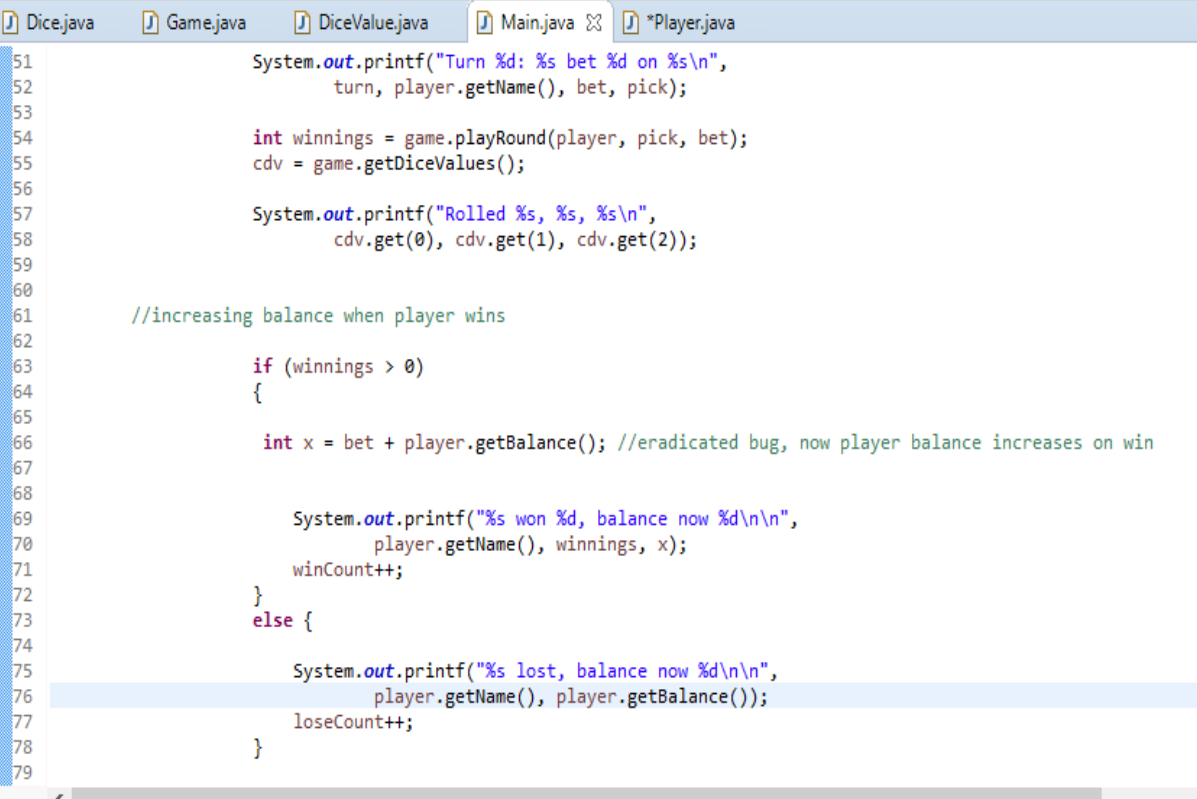
```
Main (9) [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (07-Oct-2016, 5:23:33 PM)
Turn 12: Fred bet 5 on HEART
Rolled ANCHOR, ANCHOR, CLUB
Fred lost, balance now 95

Turn 13: Fred bet 5 on CLUB
Rolled ANCHOR, ANCHOR, CLUB
Fred won 5, balance now 95

Turn 14: Fred bet 5 on HEART
Rolled ANCHOR, ANCHOR, CLUB
Fred lost, balance now 90

Turn 15: Fred bet 5 on ANCHOR
Rolled ANCHOR, ANCHOR, CLUB
Fred won 10, balance now 95

Turn 16: Fred bet 5 on CROWN
```



The screenshot shows the same IDE with the Game.java tab active. The code is now updated to fix the bug. The fix involves calculating the correct winnings when a player wins and updating the player's balance accordingly. The console output is not visible in this screenshot, but the code changes are clearly shown.

```
51         System.out.printf("Turn %d: %s bet %d on %s\n",
52                             turn, player.getName(), bet, pick);
53
54         int winnings = game.playRound(player, pick, bet);
55         cdv = game.getDiceValues();
56
57         System.out.printf("Rolled %s, %s, %s\n",
58                             cdv.get(0), cdv.get(1), cdv.get(2));
59
60
61         //increasing balance when player wins
62
63         if (winnings > 0)
64         {
65
66             int x = bet + player.getBalance(); //eradicatd bug, now player balance increases on win
67
68             System.out.printf("%s won %d, balance now %d\n\n",
69                               player.getName(), winnings, x);
70             winCount++;
71         }
72         else {
73             System.out.printf("%s lost, balance now %d\n\n",
74                               player.getName(), player.getBalance());
75             loseCount++;
76         }
77     }
78 }
```



```
Console Tasks
Main (5) [Java Application] C:\Program Files\Java\jre1.8.0_101\bin\javaw.exe (28Sep,2016, 7:06:06 am)
Turn 31: Fred bet 5 on CLUB
Rolled CLUB, HEART, ANCHOR
Fred won 5, balance now 25

Turn 32: Fred bet 5 on DIAMOND
Rolled CLUB, HEART, ANCHOR
Fred lost, balance now 15

Turn 33: Fred bet 5 on CROWN
Rolled CLUB, HEART, ANCHOR
Fred lost, balance now 10

Turn 34: Fred bet 5 on ANCHOR
Rolled CLUB, HEART, ANCHOR
Fred won 5, balance now 15
```

Bug 2: Player cannot reach betting limit:

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

```
44
45 public boolean balanceExceedsLimit() {
46     return (balance > limit);
47 }
48
49 public boolean balanceExceedsLimitBy(int amount)
50 {
51     //Eradicated bug 2 now player reach to betting limit, game ends when balance goes 0
52     return (balance - amount > limit);
53 }
54
55 public void takeBet(int bet) {
56     if (bet < 0) throw new IllegalArgumentException("Bet cannot be negative.");
57     if (!balanceExceedsLimitBy(bet)) throw new IllegalArgumentException("Placing bet would go below limit.");
58     balance = balance - bet;
59 }
60
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44
45 public boolean balanceExceedsLimit() {
46     return (balance > limit);
47 }
48
49 public boolean balanceExceedsLimitBy(int amount)
50 {
51     //Eradicated bug 2 now player reach to betting limit, game ends when balance goes 0
52     return (balance - amount >= limit);
53 }
54
55 public void takeBet(int bet) {
56     if (bet < 0) throw new IllegalArgumentException("Bet cannot be negative.");
57     if (!balanceExceedsLimitBy(bet)) throw new IllegalArgumentException("Placing bet would go below limit.");
58     balance = balance - bet;

```

Problems @ Javadoc Declaration Console Git Staging History

Main (7) [Java Application] C:\Program Files\Java\jre1.8.0_101\bin\javaw.exe (6Oct,2016, 11:05:01 am)

Rolled ANCHOR, CLUB, ANCHOR
Fred lost, balance now 10

Turn 44: Fred bet 5 on CROWN
Rolled ANCHOR, CLUB, ANCHOR
Fred lost, balance now 5

Turn 45: Fred bet 5 on DIAMOND
Rolled ANCHOR, CLUB, ANCHOR
Fred lost, balance now 0

45 turns later.
End Game 99: Fred now has balance 0

Win count = 2098, Lose Count = 3061, 0.41

Bug 3: Odds in the game do not appear to be correct.

Crown and Anchor games have an approximate 8% bias to the house. So the win : (win+lose) ratio should approximately equal 0.42. This does not appear to be the case.

```

Dice.java DiceValue.java Game.java Main.java Player.java
48 int winnings = game.playRound(player, pick, bet);
49 cdv = game.getDiceValues();
50
51 System.out.printf("Rolled %s, %s, %s\n",
52     cdv.get(0), cdv.get(1), cdv.get(2));
53
54 if (winnings > 0) {
55     System.out.printf("%s won %d, balance now %d\n\n",
56         player.getName(), winnings, player.getBalance());
57     winCount++;
58 }
59 else {
60     System.out.printf("%s lost, balance now %d\n\n",
61         player.getName(), player.getBalance());
62     loseCount++;
63 }
64 } //while
65
66 System.out.print(String.format("%d turns later.\nEnd Game %d: ", turn, i));
67 System.out.println(String.format("%s now has balance %d\n", player.getName(), player.getBalance()));
68
69 } //for
70
71 System.out.println(String.format("Win count = %d, Lose Count = %d, %.2f", winCount, loseCount,
72     (float) winCount/(winCount+loseCount)));
73 totalWins += winCount;
74 totalLosses += loseCount;
75
76 String ans = console.readLine();
77 if (ans.equals("q")) break;
78 } //while true
79
80 System.out.println(String.format("Overall win rate = %.1f%%", (float)(totalWins * 100) / (totalWins + totalLosses
81
82 }
83
84 }

```

```

1 public class Player {
2     private String name;

```

Console

Main (9) [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (06-Oct-2016, 8:05:51 PM)

```

Fred won 5, balance now 15

Turn 58: Fred bet 5 on HEART
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 59: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 60: Fred bet 5 on CLUB
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 61: Fred bet 5 on DIAMOND
Rolled HEART, DIAMOND, CLUB
Fred won 5, balance now 15

Turn 62: Fred bet 5 on ANCHOR
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 10

Turn 63: Fred bet 5 on CROWN
Rolled HEART, DIAMOND, CLUB
Fred lost, balance now 5

63 turns later.
End Game 99: Fred now has balance 5

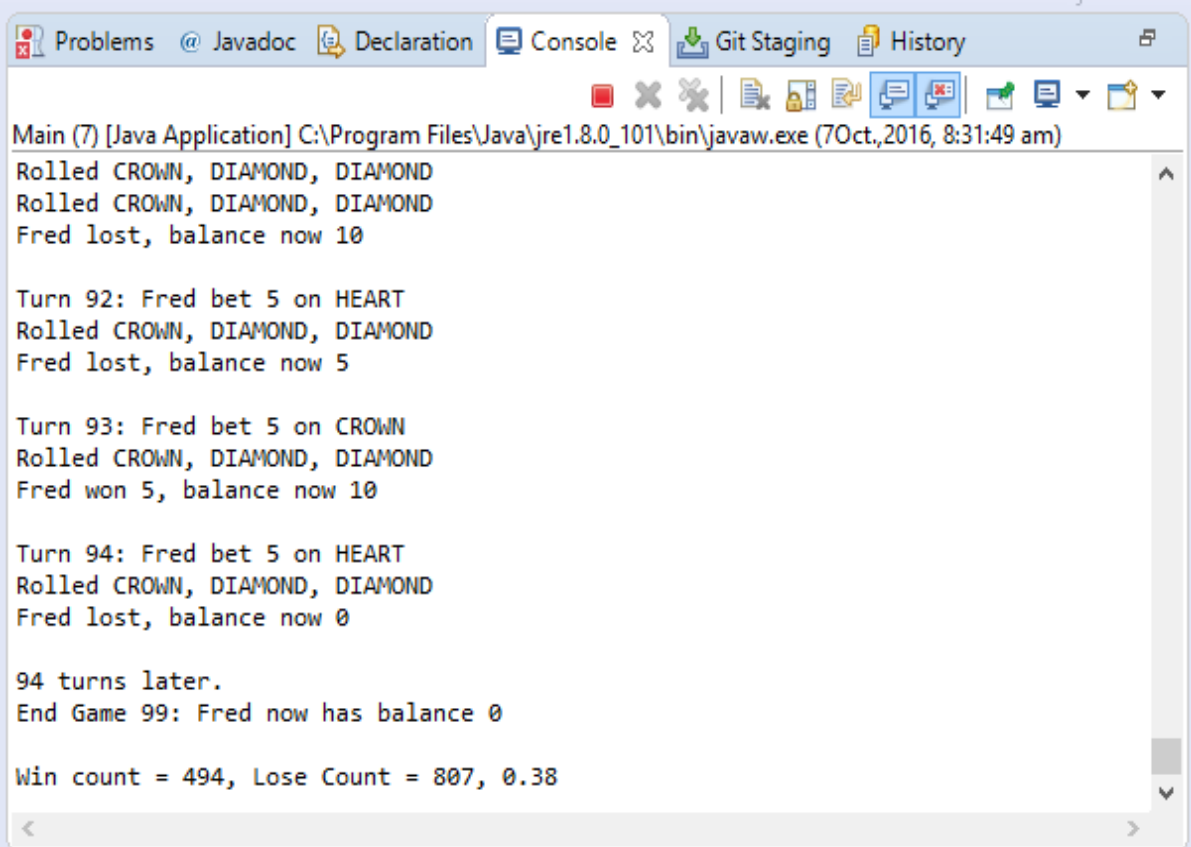
Win count = 2962, Lose Count = 1900, 0.61

```

```

64 {
65
66     int x = bet + player.getBalance(); //eradicatod bug, now player balance increases on win
67
68
69     System.out.printf("%s won %d, balance now %d\n\n",
70         player.getName(), winnings, x);
71     winCount++;
72 }
73 else {
74
75     System.out.printf("%s lost, balance now %d\n\n",
76         player.getName(), player.getBalance());
77     loseCount++;
78 }
79
80 'while checking bugs
81 'Eradicate bug 3, Getting right winCounts
82 :em.out.print(String.format("%d turns later.\nEnd Game %d: ", turn, i));
83 :em.out.println(String.format("%s now has balance %d\n", player.getName(), player.getBalance()));
84
85
86
87 out.println(String.format("Win count = %d, Lose Count = %d, %.2f", winCount, loseCount, (float) loseCount/(winCount+loseCount
88 is += winCount;
89 :ses += loseCount;
90
91 ins = console.readLine();
92 .equals("q")) break;
93
94 rprintln(String.format("Overall win rate = %.1f%%", (float)((totalLosses / (totalWins + totalLosses)*100)));
95 }

```



The screenshot shows an IDE window with several tabs: Problems, Javadoc, Declaration, Console, Git Staging, and History. The Console tab is active, displaying the output of a Java application. The output text is as follows:

```
Main (7) [Java Application] C:\Program Files\Java\jre1.8.0_101\bin\javaw.exe (7Oct,2016, 8:31:49 am)
Rolled CROWN, DIAMOND, DIAMOND
Rolled CROWN, DIAMOND, DIAMOND
Fred lost, balance now 10

Turn 92: Fred bet 5 on HEART
Rolled CROWN, DIAMOND, DIAMOND
Fred lost, balance now 5

Turn 93: Fred bet 5 on CROWN
Rolled CROWN, DIAMOND, DIAMOND
Fred won 5, balance now 10

Turn 94: Fred bet 5 on HEART
Rolled CROWN, DIAMOND, DIAMOND
Fred lost, balance now 0

94 turns later.
End Game 99: Fred now has balance 0

Win count = 494, Lose Count = 807, 0.38
```

Version Control:

The git hub URL is follow;

https://github.com/GaganjotKaurSaini/Debugging_Game/tree/GaganjotKaurSaini

Bitrix24 URL is follow:

https://codedebuggers.bitrix24.com/?current_fieldset=SOCSERV