

# Assignment 4

Debugging

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## Debugging Replication

### Bug1

<b>Test Name</b>	Bug test_001
Bug Test tested:	Check weather pay will increase when players wins the game.
Test Description:	When the player win the one match balance should be increased
Pre-conditions:	The players' names and balance should be provided
Post-condition:	The player wins balance increased successfully.
Result (pass/fail/waring/incomplete)	Fail.

	Test Step	Expected Test Result	P	F
1.	Input players Name and balance	Methods takes the input	P	
2.	If player wins one match balance should	Balance increased		F
3.	If player loss one match balance should be reduce	Balance minimized	P	

### Bug2

Test Name	Bug test no 2
Bug test tested	Check weather players age greater than 18
Test description:	Age of the player should be greater than 18
Pre-condition:	Players have to input name and age
Post-condition	If the player's age greater than 18,player can play successfully.
Result:	Fail.

	Test step	Expected Test results	P	F
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1	Input player age greater than 18	Game is working	F	
2	Input the players age less than 18	Error message	<b>F</b>	

## Simplification

- Simplification

This is the test code that contain the bug 1

```

public void takeBet(int bet) {
    if (bet < 0) throw new IllegalArgumentException("Bet cannot be negative.");
    if (!balanceExceedsLimitBy(bet)) throw new IllegalArgumentException("Placing bet would go below limit.");
    balance = balance - bet;
}

public void receiveWinnings(int winnings) {
    if (winnings < 0) throw new IllegalArgumentException("Winnings cannot be negative.");
    balance = balance + winnings;
}

    int winnings = matches * bet;

    if (matches > 0) {
        player.receiveWinnings(winnings);
    }
    return winnings;
}

```

This is the test code that contain the bug 1.1

No any implementation to check the age of the player

Output from the test case for bug 1

Turn 34: Fred bet 5 on DIAMOND  
Rolled CROWN, CLUB, CLUB  
Fred lost, balance now 35

Turn 35: Fred bet 5 on CROWN  
Rolled CROWN, CLUB, CLUB  
Fred won 5, balance now 35

a) if the symbol appears on  
the uppermost face of 1 dice

Turn 22: Fred bet 5 on DIAMOND  
Rolled HEART, HEART, CROWN  
Fred lost, balance now 60

Turn 23: Fred bet 5 on ANCHOR  
Rolled HEART, HEART, CROWN  
Fred lost, balance now 55

Turn 24: Fred bet 5 on HEART  
Rolled HEART, HEART, CROWN  
Fred won 10, balance now 60

Turn 25: Fred bet 5 on DIAMOND  
Rolled HEART, HEART, CROWN  
Fred lost, balance now 55

b) if the symbol appears on  
the uppermost face of 2 dice

Turn 4: Fred bet 5 on CLUB  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred lost, balance now 95

Turn 5: Fred bet 5 on DIAMOND  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred won 15, balance now 105

c) if the symbol appears on  
the uppermost face of 3 dice

- Tracing

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

**Bug 1 origin:** We can notice there is a logical error in the program code

Turn 37: Fred bet 5 on CROWN  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred lost, balance now 20

Turn 38: Fred bet 5 on DIAMOND  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred won 15, balance now 30

Turn 39: Fred bet 5 on HEART  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred lost, balance now 25

Turn 40: Fred bet 5 on CLUB  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred lost, balance now 20

Turn 41: Fred bet 5 on CLUB  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred lost, balance now 15

Turn 42: Fred bet 5 on ANCHOR  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred lost, balance now 10

Turn 43: Fred bet 5 on DIAMOND  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred won 15, balance now 20

Turn 44: Fred bet 5 on HEART  
Rolled DIAMOND, DIAMOND, DIAMOND  
Fred lost, balance now 15

### Program code after the fixed bug 1

-In the Game.java

```
int winnings = matches * bet;

if (matches > 0) {
    player.receiveWinnings(winnings, bet);
}
return winnings;
```

-In the player.java

```
public void receiveWinnings(int winnings, int bet) {
    if (winnings < 0) throw new IllegalArgumentException("Winnings cannot be negative.");
    balance = balance + winnings + bet;
}
```

### Program code after the fixed bug 1.1

-In the main.java

```
while (age >= 18) {

    Scanner reader = new Scanner(System.in); // Reading from System.in
    System.out.println("Enter your name: ");
    String name1 = reader.next(); // Scans the next token of the input as string

    System.out.println("Enter your age: ");
    age = reader.nextInt(); // Scans the next token of the input as an Int

}

System.out.println("Sorry, age should be grater than 18");

}
```

### Output after the fixed bug 1

Turn 144: Fred bet 5 on CLUB  
Rolled DIAMOND, CROWN, ANCHOR  
Fred lost, balance now 130

Turn 145: Fred bet 5 on DIAMOND  
Rolled DIAMOND, CROWN, ANCHOR  
Fred won 5, balance now 135

Turn 885: Fred bet 5 on HEART  
Rolled CROWN, CLUB, CLUB  
Fred lost, balance now 180

Turn 886: Fred bet 5 on CLUB  
Rolled CROWN, CLUB, CLUB  
Fred won 10, balance now 190

a) if the symbol appears on the uppermost face of 1 dice

b) if the symbol appears on the uppermost face of 2 dice

Turn 769: Fred bet 5 on CROWN  
Rolled CROWN, CLUB, CLUB  
Fred won 5, balance now 140

Turn 770: Fred bet 5 on CLUB  
Rolled CLUB, CLUB, CLUB  
Fred won 15, balance now 155

c) if the symbol appears on the uppermost face of 3 dice

### Output after the fixed bug 1.1

Main (1) [Java Application] C:\Program File

Enter your name:

Enter your age:

Rolled CLUB, HEART, CROWN  
Fred lost, balance now 115

Turn 72: Fred bet 5 on ANCHOR  
Rolled CLUB, HEART, CROWN  
Fred lost, balance now 110

Turn 73: Fred bet 5 on CLUB  
Rolled CLUB, HEART, CROWN  
Fred won 5, balance now 115

Enter your name:

Enter your age:

Sorry, age should be greater than 18

When the player is less than 18 years old

When the player is greater than 18 years old

Tried with another tests after the fixed bug 1

Test ID	Test Data	Expected Output	Actual Output	Remarks
Test001	Bet=10	Balance should increase by 10 (same symbol in one time)	Fred lost, balance now 50  Turn 78: Fred bet 10 on ANCHOR Rolled CROWN, CROWN, ANCHOR Fred won 10, balance now 60	Expected output and actual output are same
		Balance should increase by 20 (same symbol in two times)	Fred lost, balance now 100  Turn 64: Fred bet 10 on CROWN Rolled CROWN, CROWN, ANCHOR Fred won 20, balance now 120	
		Balance should increase by 30 (same symbol in three times)	Fred lost, balance now 150  Turn 82: Fred bet 10 on CROWN Rolled CROWN, CROWN, CROWN Fred won 30, balance now 180	
Test002	Bet=15	Balance should		

		increase by 15 (same symbol in one time)	Fred lost, balance now 10  Turn 78: Fred bet 15 on CLUB Rolled CROWN, CROWN, CLUB Fred won 15, balance now 25	
		Balance should increase by 30 (same symbol in two times)	Fred lost, balance now 150  Turn 22: Fred bet 15 on DIAMOND Rolled CROWN, DIAMOND, DIAMOND Fred won 30, balance now 180	Expected output and actual output are same
		Balance should increase by 45 (same symbol in three times)	Fred lost, balance now 50  Turn 64: Fred bet 15 on CROWN Rolled CLUB, CLUB, CLUB Fred won 45, balance now 95	
Test003	Bet=20	Balance should increase by 20 (same symbol in one time)	Fred lost, balance now 30  Turn 84: Fred bet 20 on CROWN Rolled CROWN, ANCHOR, ANCHOR Fred won 20, balance now 50	Expected output and actual output are same
		Balance should increase by 40 (same symbol in two times)	Fred lost, balance now 100  Turn 32: Fred bet 20 on CROWN Rolled CROWN, CROWN, CLUB Fred won 40, balance now 140	
		Balance should increase by 60 (same symbol in	Fred lost, balance now 70  Turn 48: Fred bet 20 on DIAMOND Rolled DIAMOND, DIAMOND, DIAMOND	



Tried with another tests after the fixed bug 1.1

Test ID	Test Data	Expected Output	Actual Output	Remarks
Test004	Age=12	Error message	Enter your name:	Same outputs



			Enter your age:	
			Sorry, age should be greater than 18	
Test005	Age=18	Run the game	Run the game	Same outputs
Test006	Age=65	Run the game	Run the game	Same outputs

## Repository

<https://github.com/amoudgil07/Assignment-4/tree/master>