



Software Testing & Debugging

Final Presentation

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System Under Test

- i) A replication of popular video game Plants vs. Zombies
- ii) Desktop App. Ran on Windows and MacOS
- iii) Single-player game for anyone who is interested in playing
- iv) Java and JavaFX

<https://github.com/himanshuraj18/PlantsVsZombies>





Testing Summary

- (1) Actors (Plants, Zombie, SunToken, Bullet, and Lawnmower) primarily tested by Unit tests (JUnit)
- (2) Game logic is tested by both Unit Test and GUI Test
- (3) The save/load and multiplayer feature in README is not implemented

Unit test demo (JUnit)

GUI test demo (TestFX)



Summary of Faults (Unit Tests)

- Lack of documentation/comments
 - Difficult to understand logic
 - Difficult to understand decisions made (ex: active vs dead for lawnmower)
- `act()` does not check if Actor is dead
- `setX` and `setY` are named poorly (actually add to X and Y, not set)
- Zombie speed does not enforce being negative (moving to left)
- Decrease health allows negative values (increasing health)
- Sunflower and walnut have same health and price, making walnut unfavorable
- Zombie Last Attack not initialized correctly (passed in but not set)



Summary of Faults (Save Functionality)

- **Save/load from save functionality does not work**
- “Saved games” heading background color cannot display, giving an error
- Provided saved_game.txt file is in the wrong location from where the code looks.
- Provided saved_game.txt file cannot be cast to LoginManager type
- LoginManager does not add anything to its User ArrayList attribute u, so saving game would not actually save anything



Summary of Faults (GUI)

- Does not run properly on Mac (Font issue)
- Select level asks to Select user instead. Works as expected, but confusing typo
- Game will not run until the end. Stops in the middle and says “You won this level”, giving no option other than to exit (no play again, next level, etc.)
- Cherry bomb is not actually a bomb (does not explode). Acts like Potato Mine in original game (kills Zombies when they touch it)
- After game has ended, can still plant new plants
- The fxml file are poorly designed, a lot of missing id and label so many components are not reachable



Conclusion

- Thorough testing can reveal faults that can may otherwise go unnoticed by developer. Can help target areas of improvement
- Proper documentation can greatly improve the readability of your code (and lack of it can greatly harm readability)
- Program development is not finished when it “works” on demo case

Questions?

Thank You!
