Milestone 3

Trent Sam Lexi Addison

Team C

Testing Strategy

Continuous Integration

For our project, we employed TravisCI for our continuous integration. We used Ant to build the project and test suite, and then required Travis to use the build file to automatically run our test suite. If all the tests pass in Travis, the current build is pushed to Github If the tests fail, the build fails and the changes are cached in Travis until the tests pass. This allows us to keep a higher standard of coding practices for code allowed into our repository. One way we could increase quality even more would be to require 90% code coverage in any new class committed to our repository. This is similar to industry practices.

Testing Strategies Used

Scripted Unit Testing

Unit testing was our main source of tests throughout the entire project. We have currently made unit test for all of our non-GUI related classes, including Game, Card, Armor, Player, etc. All of these test were in the TDD style for the project. An example of a scripted unit test that deals with player is below.

@Test

public void testSetAndGetName(){

String name = "BOMB";

this.player.setName(name);

assertEquals(name, this.player.getName());

}

@Test

public void testSetAndGetGender(){

String gender = "female";

this.player.setGender(gender);

assertEquals(gender, this.player.getGender());

}

Exploratory, White Box, System Testing

This strategy allowed us to find last minute bugs that TDD missed or could not catch, such as making sure certain buttons were available at the correct time. After the redesign of our project, we had a little bit of time to do some exploratory white box system testing to make sure all functionality remained the same. By doing exploratory testing on our project, we finalized the bulletproofing of our game. System testing was white box because we wrote the code, and when things went wrong we could directly change the code.

Integration Testing

In many of our tests, we involved more than one class. Normally, the classes tested included the CardFunc, Player, and Game classes. One such example of the test involves the adding Treasure cards to an armor set.

private Action action;

private ArmorSet armor;

private Game game;

@Before

public void setUp(){

action = Action.getInstance();

armor = new ArmorSet();

game = new Game(2);

}

@Test

public void testAddFootGear() {

armor.removeFootgear();

ITreasure notboots = new MinersHelmet();

notboots.cardInPlay();

ITreasure boots = new MonsterStompers(game);

armor.addFootGear(notboots);

assertEquals("Not Footgear armor",action.getAction());

assertEquals(0, armor.getFootgear().size());

boots.cardInPlay();

armor.addFootGear(boots);

assertEquals(1, armor.getFootgear().size());

assertEquals(boots, armor.getFootgear().get(0));

armor.addFootGear(boots);

assertEquals("Already at max armor for footgear", action.getAction());

assertEquals(1, armor.getFootgear().size());

armor.removeFootgear();

armor.addFootGear(boots);

assertEquals(1, armor.getFootgear().size());

assertEquals(boots, armor.getFootgear().get(0));

}

Acceptance Testing

For acceptance testing, we simply ran the application and played the game as a usual two-person game by ourselves. While the game is not EXACTLY as the out of the box version, we feel it is a pretty good representation for the scope of this project.

Testing strategies not used

Automated GUI Testing

Black Box Testing

Mutation Testing

Thoroughness of our testing

Our testing was very extensive and thorough. We managed to increase our coverage to 92% line coverage. The parts of our code lacking code coverage are gui elements, such as labels, buttons, and images. We are pretty confident in our game’s performance and correctness, despite the gigantic redesign that our game just underwent and the very tight time schedule that our team has been subjected to.

Description of Our Project

**Problem Statement**:

Our group plans to implement the board game, Munchkin, specifically the expansion pack, Munchkin Cthulhu, as a Java application. We are currently refactoring a previous version, in which there were no design patterns implemented. Our implementation incorporates the following rules and features:

**Setup**

* Each player gets four cards from the Door deck and four cards from the treasure deck.

**Card Management**

* Players can draw from discards only when they play a card that allows them to.
* Cards in play are public information and must be visible to the other players.
* Cards in your hand can’t be taken away except by cards that specifically affect “your hand”
* At the end of your turn, you may have no more than eight cards in your hand.

**Character Creation**

* Everyone starts at Level 1 with no class.
* Munchkin characters are exclusively male or female, and your character’s sex is the same as your own unless you declare otherwise.
* If you have any Class cards in your initial eight cards, you may (if you like) play one of them.
* If you have any usable Items, you may play them

**Starting and Finishing the Game**

* Player 1 always starts in the two player game
* When the first player finishes his turn, the player to his left takes a turn, and so on.
* The first player to reach Level 10 wins, and one must reach Level 10 by killing a monster.

**Conflicts between Cards and Rules**

* When the rules disagree with a card, follow the card.
* However, ignore any card effect that might seem to contradict one of the rules listed below unless the card explicitly says it supersedes that rule.
* Nothing can reduce a player below level 1, although card effects might reduce a player’s or a monster’s combat strength below 1.
* You go up a level after combat only if you kill a monster.
* You cannot collect rewards for defeating a monster (e.g., treasure, levels) in the middle of a combat. You must finish the fight before gaining any rewards.

**When You May Take Actions**

You may perform these actions at any time:

1. Discard a Class.
2. Play a Go Up a Level.
3. Play a Curse.

You may perform these actions at any time, as long as you are not in combat

1. Change which Items you have equipped.
2. Play a card that you have just received (some cards may be played even during combat).

You may perform these actions on your own turn:

1. Play a new Class card (at any time).
2. Sell Items for levels (except when you are in combat).
3. Play an Item (most Items cannot be played during combat, but some one-shot Items can).

**Turn Phases:**

**Look For Trouble/Loot The Room:**

* Look for Trouble: Play a monster from your hand and fight it. Don’t play a monster you can’t handle, unless you’re sure you can count on getting help!
* Loot the Room: Draw a card from the Door deck, face down, and place it in your hand.

**Combat Basic Rules:**

* When you fight a monster, you compare your combat strength (your level plus any bonuses or penalties) against the monster’s combat strength. If your combat level is equal to or lower than the monster’s, the monster wins.

**Character Stats**

* Each character is basically a collection of weapons, armor, and magic items, with two stats: Level and Class.

* **Level**: This is a measure of how generally buff and studly you are. When the rules or cards refer to your Level, capitalized, they mean this number. You gain a level when you kill a monster, or when a card says that you do. You can also sell Items to buy levels (see Items). You lose a level when a card says you do. Your level can never go below 1. However, your combat strength can be negative, if you get hit by a Curse or suffer some other kind of penalty.
* **Class**: Characters may be Cultist, Monster Whacker, Professor and Investigator. If you have no Class card in front of you, you have no class.You can discard a Class card at any time, even in combat: “I don’t wanna be a Monster Whacker anymore.” When you discard a Class card, you become classless until you play another Class card.

**Treasures**:

Treasure cards include permanent and “one-shot” cards. Any Treasure card may be played to the table as soon as you get it, or at any time on your own turn except during combat (unless the rules below or the card itself says otherwise).

**Items**:

* Most Treasures are Items. Items have a Gold Piece value. (“No Value” is equivalent to zero Gold Pieces, and these cards are also Items.)
* All Items you have in play are considered “carried.” Items that are actually giving you a bonus are “equipped.” You may not alter the status of your Items during a combat or while running away.
* Anyone can carry any Item, but you may equip only one Headgear, one suit of Armor, one pair of Footgear, and two “1 Hand” Items (or one “2 Hands” Item) . . . unless you have a card that lets you ignore these limits, or unless one of the cards says otherwise. If you are carrying two Headgear cards, for instance, you can equip only one of them at a time.
* Some Items have restrictions: for instance, The Elder Sign is only usable by an Investigator.
* You cannot discard Item cards “just because.” You may sell Items for a level, trade Items with other players, or give an Item to another player who wants it. You may discard Items to power certain Class abilities. And a Curse or a monster’s Bad Stuff may force you to get rid of something!
* Selling Items for Levels: At any point during your turn except during combat or Running Away, you may discard Items worth a total of at least 1,000 Gold Pieces and immediately go up one level. (“No Value” cards are the same as zero Gold Pieces.) If you discard (for instance) 1,100 Gold Pieces worth, you don’t get change. But if you can manage 2,000 worth, you can go up two levels at once, and so on. You may sell Items from your hand as well as those you are carrying. You may not sell Items to go to Level 10.

**One-Shot Treasures**

A Treasure card that says “Usable once only” is often called a “one-shot” Treasure. Most of these are used during combat to strengthen the munchkins or the monsters, and may be played from your hand or from the table. Some have other effects, however, so read the card carefully! Discard these cards as soon as the combat is over or their effect is resolved.

**Other Treasures**:

Other Treasure cards (like Go Up a Level cards) are not Items. Most of these cards say when they can be played, and whether they stay in play or are discarded.

**Combat**:

* To fight a monster, compare its combat strength to yours. Combat strength is the total of Level plus all modifiers– positive or negative – given by Items and other cards. If the monster’s combat strength is greater than yours, you lose the combat and must Run Away. If the player’s combat strength is greater than or equal to the monster’s, the player wins the turn and goes up a level (two levels for some big monsters). You’ll also get the number of Treasures shown on its card.
* Sometimes a card will let you get rid of the monster without killing it. This is still “winning,” but you don’t get a level or the treasures.
* Some monster cards have special powers that affect combat – a bonus against a Class, for instance.
* You and the other player may play one-shot Treasures or use Class abilities to help or harm you in your combat. Some Door cards may also be played into a combat, such as Monster Enhancers.
* While you are in combat, you cannot sell, equip, unequip, or trade Items, or play Treasures from your hand, unless these rules or the card says otherwise.
* If you kill a monster, discard the monster and any other cards played, and claim your rewards.

**Monsters**:

* If acquired, they go into your hand and may be played during your own turn to Look For Trouble, or played to join another player’s fight with the Wandering Monster card.
* Each Monster card is a single monster, even if the name on the card is plural.

**Monster Enhancers**:

* Monster Enhancers raise or lower the combat strength of individual monsters. (Penalties to monsters are still considered Enhancers.) They also affect the number of Treasures the monsters are worth. Monster Enhancers may be played by any player during any combat.
* All Enhancers on a single monster add together.

**Asking for Help**:

If you fight a monster, and lose, you could be required to help. There is no point in helping the other player since it is a two person game….

* Only one player can help you, adding his combat strength to yours. Anyone can play cards to affect your combat.
* If someone successfully helps you kill the monster, discard it, draw Treasures (see Rewards, below), and follow any special instructions on the monster card. You level up for each slain monster. Your helper does not go up any levels. You draw the Treasure cards, even if it was your helper’s special ability that defeated the monster, and distribute them according to the agreement you reached.

**Interfering With Combat**:

* Use a one-shot card. You could help another player by using a one-shot to strengthen his side. Of course, you can “accidentally” strengthen the monster with it, instead . . .
* Play a Monster Enhancer. These cards (usually) make a monster stronger . . . and give it more Treasure. You can play these either during your own combats or during someone else’s combat.
* Curse them, if you have a Curse card.

**Rewards**:

* When you kill a monster, you get one level per monster, unless the Monster card says something else, and you get all its Treasure! Each monster has a Treasure number on the bottom of its card. Draw that many Treasures, modified by any Monster Enhancers played on it.
* If you defeat a monster by nonlethal means, you do not get a level and you may or may not get the Treasure, depending on the method.

**Running Away**:

If you cannot win, you must Run Away. You don’t get any levels or Treasure. You don’t even get to Loot the Room. And you don’t always escape unharmed . . .

* Roll the die. You escape on a 4 or more. Some Class abilities and some Treasures make it easier or harder to Run Away from all monsters. And some monsters give you a bonus or penalty to your roll for that monster only.
* If you fail to Run Away from a monster, it does Bad Stuff to you, as described on its card. This may vary from losing an Item, to losing one or more levels, to Death.
* Once you have resolved all Run Away rolls, discard the monster(s).

**Death**:

* If you die, you lose all your stuff. You keep your Class(es) and Level (and any Curses that were affecting you when you died) – your new character will look just like your old one. Once you have died, you don’t have to Run Away from any remaining monsters.
* On your next turn, start by drawing four face-down cards from each deck and playing any legal cards you want to, just as when you started the game. Then take your turn normally.

**Curses**:

* If acquired, Curse cards go into your hand and may be played on any player at any time.
* Usually, a Curse affects its victim immediately (if it can) and is then discarded. However, some Curses give a penalty later in the game or have a continuing effect. Keep these cards until you get rid of the Curse or the penalty takes effect. (Curse cards you keep as a reminder may not be discarded to power Class or Race abilities. Nice try!)
* If a Curse can apply to more than one Item, the victim decides which Item is lost or Cursed.
* If a Curse applies to something you don’t have, ignore it. For instance, if you need to Lose Your Armor and you have no Armor, nothing happens; discard the card. (Some Curses have alternate effects, though, so read the card!)
* There will be times when it will help you to play a Curse or Monster on yourself, or to “help” another player in a way that costs him Treasure.

**KEY FEATURES**:

* Game implementation on interactive screen
* Ability to customize your profile
* Ability to see your hand and the other cards in play
* Functioning buttons to click when multiple options arise
* Combat screen for battles that display the monster you are fighting
* Implementation of the rules as described above