Pacman Assignments - Shikun Xiong

1. What is the role of EmptySprite?

EmptySprite is used to show nothing after the object stop the animation loop.

For example, after the pacman dies, it will execute an 11-frame animation, after that, it will call EmptySprite.draw(), since it will draw nothing, the pacman will disappear.

2. What is the role of MOVE_INTERVAL and INTERVAL_VARIATION?

Both of them contribute to the delay between ghosts' moves in milliseconds.

```java
/**
 * The time that should be taken between moves.
 *
 * @return The suggested delay between moves in milliseconds.
 */
public long getInterval() {
    return this.moveInterval + new Random().nextInt(this.intervalVariation);
}
```

Random().nextInt(n) means to get a random int from [0,n), thus this function could make the interval between ghost's moves more randomly. And getInterval() will be called in startNPCs():

```
private void startNPCs() {
    for (final Ghost npc : npcs.keySet()) {
        ScheduledExecutorService service = Executors.newSingleThreadSchedu

        service.schedule(new NpcMoveTask(service, npc),
            |: npc.getInterval() / 2, TimeUnit.MILLISECONDS);

        npcs.put(npc, service);
    }
}
```

In conclusion, these two variables help to decide the intervals between

ghosts' moves.

3. If you wanted to add a fruit, which files would you need to change?

- In PacManSprites.java, add getAppleSprite():

```
public Sprite getAppleSprite() {
    return loadSprite( resource: "/sprite/apple.png");
}
```

- In LevelFactory.java, add APPLE_VALUE and createApple():

```
private static final int APPLE_VALUE = 15;
```

```
public Pellet createApple() {
    return new Pellet(APPLE_VALUE, sprites.getAppleSprite());
}
```

- In MapParser.java, add case 'A':

```
case 'A':
    Square appleSquare = boardCreator.createGround();
    grid[x][y] = appleSquare;
    levelCreator.createApple().occupy(appleSquare);
    break;
```

- Finally, in board.txt, changed some symbols to 'A':

```
#......................#
#.###.#.#######.#.###.#
#.....#..[A].#....#..[A]..#
####.#### # ####.#####
    #.#     G      #.#
#####.# ##      ## #.#####
    .   #G G G#   .
#####.# ####### #.#####
    #.#          #.#
#####.#   #####   #.#####
#...[AA]...#..........#
```

And here is the result: