

[illegible]

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BEFORE

```

//////////////////////////////////// GUI RELATED METHODS //////////////////////////////////////
private void linkBoardVisuals(){
    //Player 1's own gpane
    players.get(0).getBoard().linkBoardVisuals(player1Controller.getPlayergpane());
    //Player 1's enemy gpane
    players.get(0).getEnemyBoardGui().linkBoardVisuals(player1Controller.getEnemygpane());
    //Player 2's own gpane
    players.get(1).getBoard().linkBoardVisuals(player2Controller.getPlayergpane());
    //Player 2's enemy gpane
    players.get(1).getEnemyBoardGui().linkBoardVisuals(player2Controller.getEnemygpane());
}

//Method for testing, does same thing as initializeBoardVisuals, but does not initialize gridpanes
//This method only gets called from game constructor that is for Testing purposes

```

```
public class PlayerController implements Initializable {
```

```
    private Game game;
```

```
    private Player player;
```

```
    private Player enemyPlayer;
```

```
    @FXML
```

```
    private GridPane playergpane;
```

```
    @FXML
```

```
    private GridPane enemygpane;
```

```
    @FXML
```

```
    private Button placeShipButton;
```

```
    @FXML
```

```
    private Button passTurnButton;
```

```
    @FXML
```

```
    private Button fireWeaponButton;
```

```

//Refreshes a given gpane with all of this board's tile objects (canvas nodes)
public void linkBoardVisuals(GridPane gpane) {

    Tile tile;

    for (int j = 0; j <= columns; j++) {
        tile = this.tiles[0][j][0];
        this.renderer.register(tile);
        gpane.add(tile, 0, j);
    }

    for (int i = 1; i <= rows; i++) {
        tile = this.tiles[i][0][0];
        this.renderer.register(tile);
        gpane.add(tile, i, 0);
    }

    for (int i = 1; i <= columns; i++) {
        for (int j = 1; j <= rows; j++) {
            tile = this.tiles[i][j][0];
            this.renderer.register(tile);
            gpane.add(tile, i, j);
        }
    }
}

```

AFTER:

```

1 package edu.colorado.fourdimensionalonedgames.render.gui;
2
3 //boards
4 public interface Subject {
5     void registerObserver(Observer observer);
6     void removeObserver(Observer observer);
7     void updateObservers();
8 }
9

```

```

1 package edu.colorado.fourdimensionalonedgames.game;
2
3 import edu.colorado.fourdimensionalonedgames.game.ship.Orientation;
4 import edu.colorado.fourdimensionalonedgames.render.Render;
5 import edu.colorado.fourdimensionalonedgames.game.ship.Ship;
6 import edu.colorado.fourdimensionalonedgames.render.gui.Observer;
7 import edu.colorado.fourdimensionalonedgames.render.gui.Subject;
8 import edu.colorado.fourdimensionalonedgames.render.tile.*;
9 import javafx.geometry.Point3D;
10 import javafx.scene.layout.GridPane;
11
12 import java.util.ArrayList;
13 import java.util.List;
14
15 public class Board implements Subject {
16
17     private final int rows;
18     private final int columns;
19     private final int depth;
20
21     public Tile[][][] tiles;
22     public Render renderer;
23
24     private List<Observer> observers;
25
26     public Board(int columns, int rows, int depth, Render renderer) {
27
28         this.rows = rows;
29         this.columns = columns;
30         this.depth = depth;

```

```

1 package edu.colorado.fourdimensionalonedgames.render.gui;
2
3 import edu.colorado.fourdimensionalonedgames.render.tile.Tile;
4
5 //grid panes
6 public interface Observer {
7     void update(Tile[][][] tiles);
8 }
9

```

```

1 package edu.colorado.fourdimensionalonedgames.render.gui;
2
3 import ...
4
5
6
7 public class Display implements Observer{
8     protected GridPane gpane;
9     protected Tile[][][] boardState;
10    protected Render renderer;
11
12    //Send initial board to display
13    public Display(GridPane gpane, Tile[][][] board, Render renderer){
14        this.boardState = board;
15        this.renderer = renderer;
16        this.gpane = gpane;
17    }
18
19    @Override
20    public void update(Tile[][][] newBoardState) {
21        //unregister and reregister tiles to renderer
22        //remove and add children to gpane
23
24        for(Tile[][] tileColumn : newBoardState){
25            for(Tile[] tileRow : tileColumn){
26                swapTile(tileRow[0]);
27            }
28        }
29
30        boardState = newBoardState;
31    }
32

```

```

5 import edu.colorado.fourdimensionalonedgames.render.tile.SeaTile;
6 import edu.colorado.fourdimensionalonedgames.render.tile.ShipTile;
7 import edu.colorado.fourdimensionalonedgames.render.tile.Tile;
8 import javafx.scene.layout.GridPane;
9
10 public class EnemyDisplay extends Display implements Observer{
11
12    //Send initial board to display
13    public EnemyDisplay(GridPane gpane, Tile[][][] board, Render renderer) { super(gpane, board, renderer);
14
15
16
17    @Override
18    public void update(Tile[][][] newBoardState) {
19        //unregister and reregister tiles to renderer
20        //remove and add children to gpane
21
22        for(Tile[][] tileColumn : newBoardState){
23            for(Tile[] tileRow : tileColumn){
24                Tile newTile = tileRow[0];
25                if(newTile instanceof ShipTile){
26                    if(newTile.revealed || newTile.shot){
27                        swapTile(newTile);
28                    }
29                    else{
30                        //swapTile(new SeaTile(newTile.getColumn(), newTile.getRow()));
31                    }
32                }
33                else if(newTile instanceof SeaTile || newTile instanceof LetterTile){
34                    swapTile(newTile);
35                }
36            }
37        }
38    }
39

```