

Code Smell - Duplicate code - Ken Suda

```
@FXML
protected void bought1() {
    if (!GameData.getInstance().boughtTower(new BCTower())) {
        alertMessage();
    } else {
        GameData.getInstance().setCurrentScene("gamescreen");
    }
}

@FXML
protected void bought2() {
    if (!GameData.getInstance().boughtTower(new MoneyTower())) {
        alertMessage();
    } else {
        GameData.getInstance().setCurrentScene("gamescreen");
    }
}

@FXML
protected void bought3() {
    if (!GameData.getInstance().boughtTower(new BioTower())) {
        alertMessage();
    } else {
        GameData.getInstance().setCurrentScene("gamescreen");
    }
}
```

This happened because it was easier to implement the shop using standard JavaFX XML and a fixed set of towers rather than implement it in an extendable way. An additional side-effect is that if we needed to add a new tower, it would require adding even more duplicated code. The fix is to move the list of towers to the Shop class and iterate here over that list to add the UI controls to purchase the towers.

```

    }

    final AbstractTower t = tower;
    purchaseButton.setOnAction((ActionEvent) -> {
        if (!GameData.getInstance().boughtTower(t)) {
            alertMessage();
        } else {
            GameData.getInstance().setCurrentScene("gamescreen");
        }
    });
    purchasePanel.getChildren().add(purchaseButton);
    shopPanels.getChildren().add(purchasePanel);
}

@FXML
protected void purchaseCanceled() throws IOException {
    GameData.getInstance().setCurrentScene("gamescreen");
}

private void alertMessage() {
    Alert alert = new Alert(Alert.AlertType.WARNING);
    alert.setTitle("Oops!");
    alert.setContentText("You don't have enough money to buy this tower");
    alert.show();
}

```

The code to create each panel in the xml file and on action method was condensed into a single method that treats each tower generically. The code depends on the concrete instances of the tower class to provide the details to display.