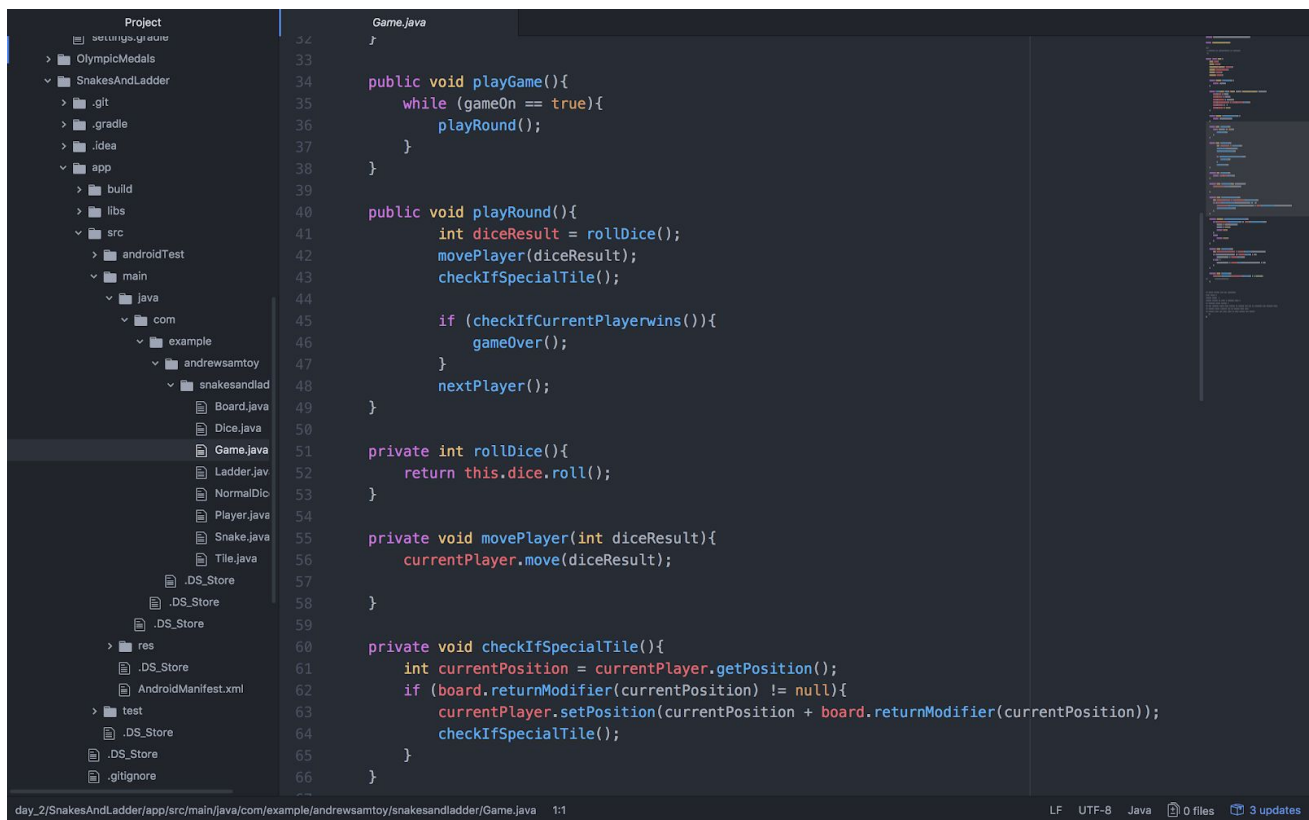


I.T. 1 - Encapsulation

Take a screenshot of an example of encapsulation in a program.



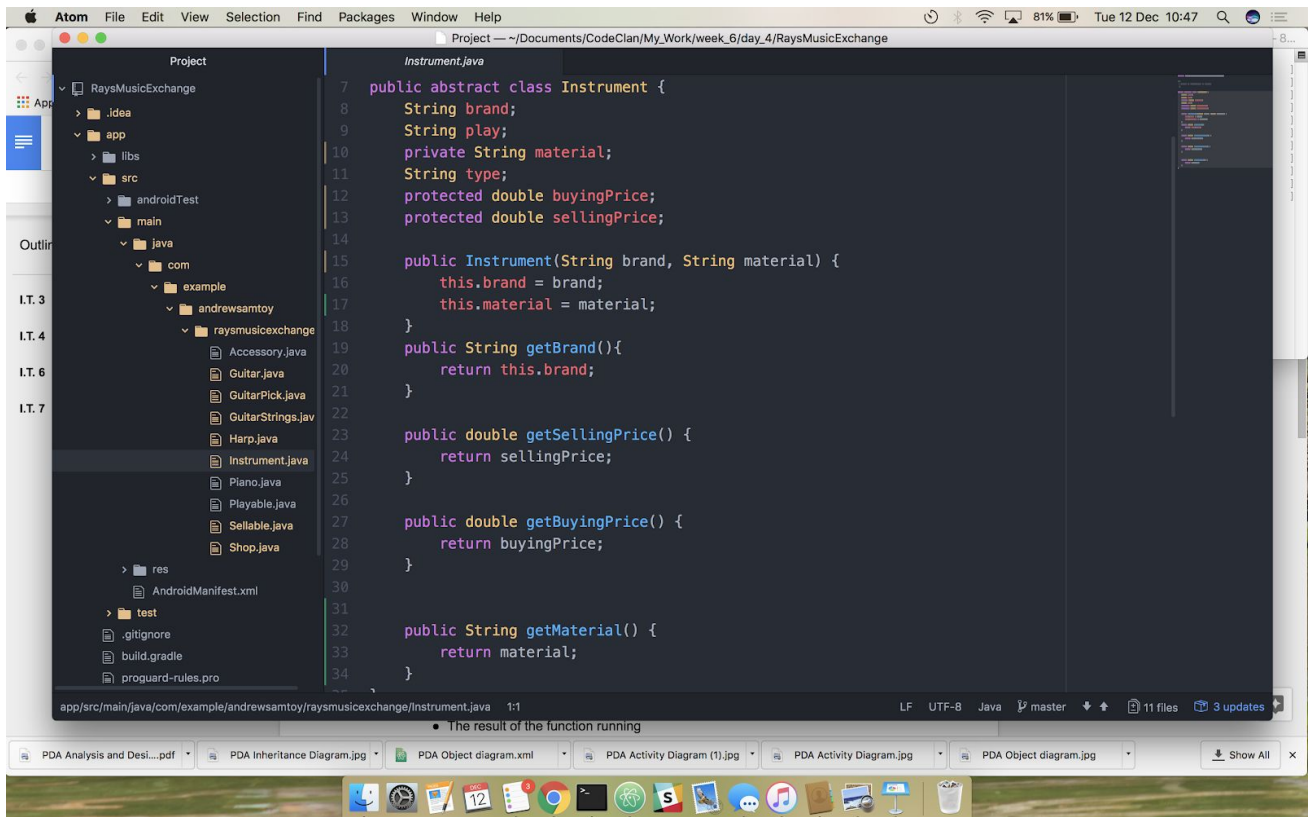
The screenshot shows an IDE with a project structure on the left and the `Game.java` file open in the center. The project structure includes a package `com.example.andrewsamtoy.snakesandladder` with files `Board.java`, `Dice.java`, `Game.java`, `Ladder.java`, `NormalDice.java`, `Player.java`, `Snake.java`, and `Tile.java`. The `Game.java` file contains the following code:

```
32 }
33
34 public void playGame(){
35     while (gameOn == true){
36         playRound();
37     }
38 }
39
40 public void playRound(){
41     int diceResult = rollDice();
42     movePlayer(diceResult);
43     checkIfSpecialTile();
44
45     if (checkIfCurrentPlayerwins()){
46         gameOver();
47     }
48     nextPlayer();
49 }
50
51 private int rollDice(){
52     return this.dice.roll();
53 }
54
55 private void movePlayer(int diceResult){
56     currentPlayer.move(diceResult);
57 }
58
59
60 private void checkIfSpecialTile(){
61     int currentPosition = currentPlayer.getPosition();
62     if (board.returnModifier(currentPosition) != null){
63         currentPlayer.setPosition(currentPosition + board.returnModifier(currentPosition));
64         checkIfSpecialTile();
65     }
66 }
```

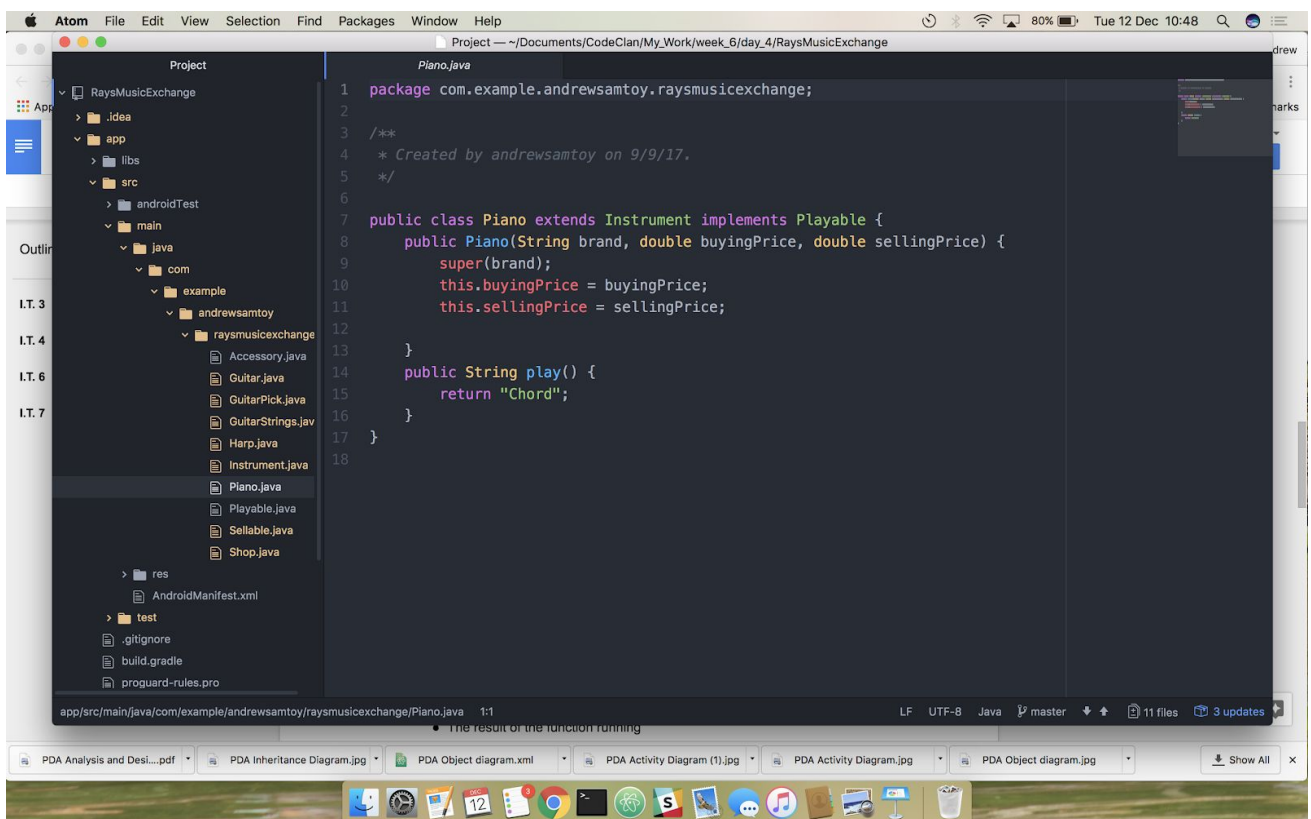
I.T. 2 - Inheritance in a program

Take a screenshot of the use of Inheritance in a program. Take screenshots of:

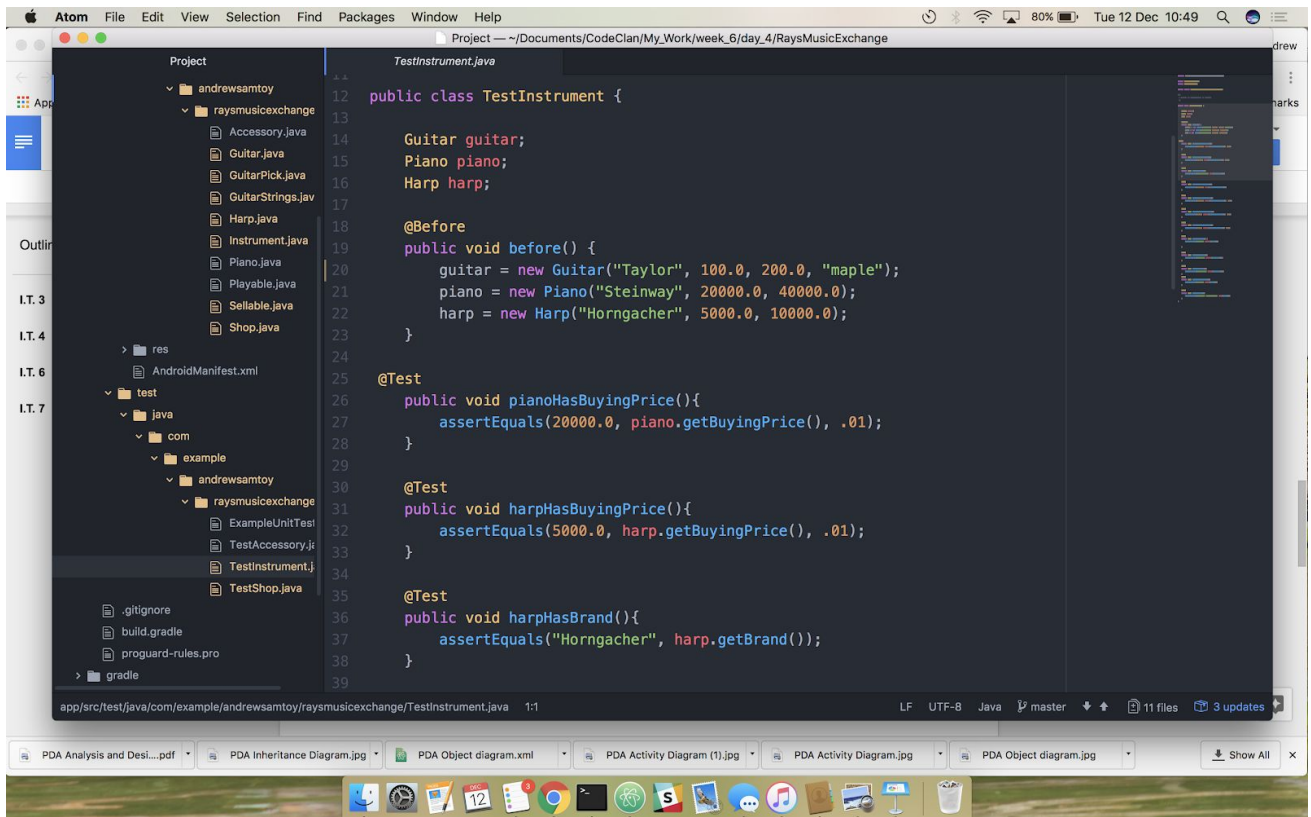
- A Class



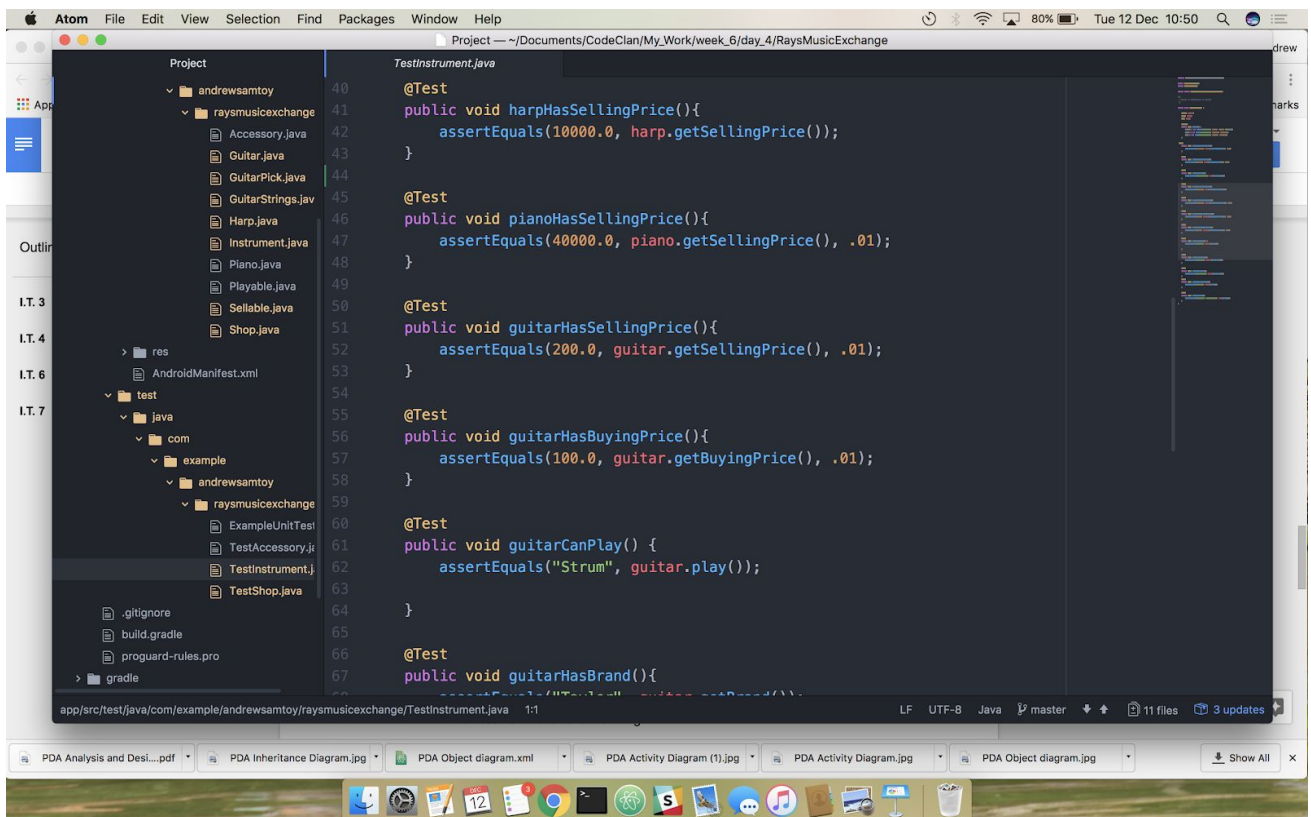
- A Class that inherits from the previous class



- An Object in the inherited class



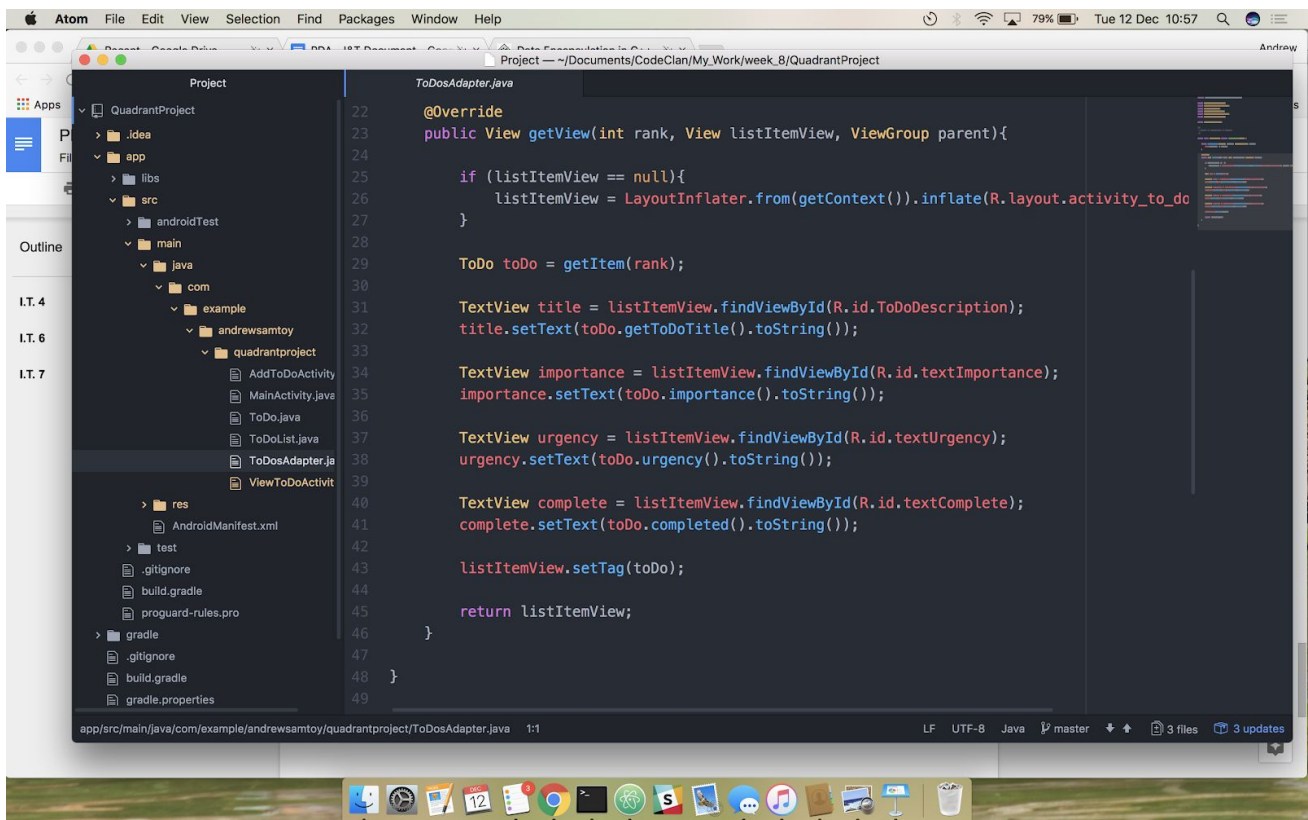
- A Method that uses the information inherited from another class.



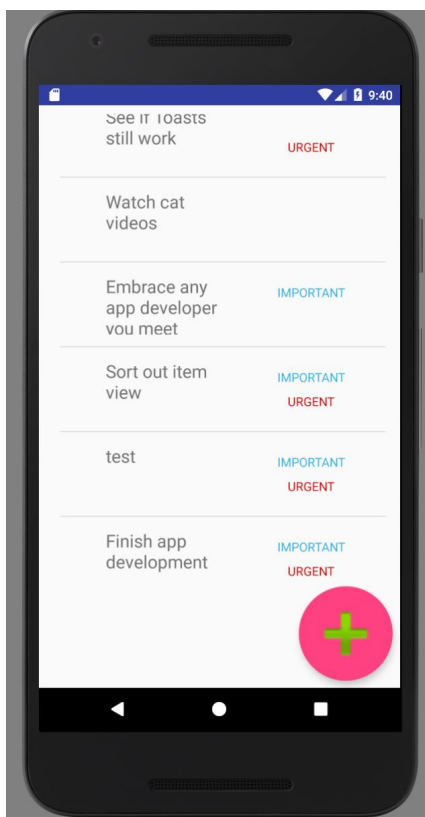
I.T. 3

Demonstrate searching data in a program. Take screenshots of:

- Function that searches data



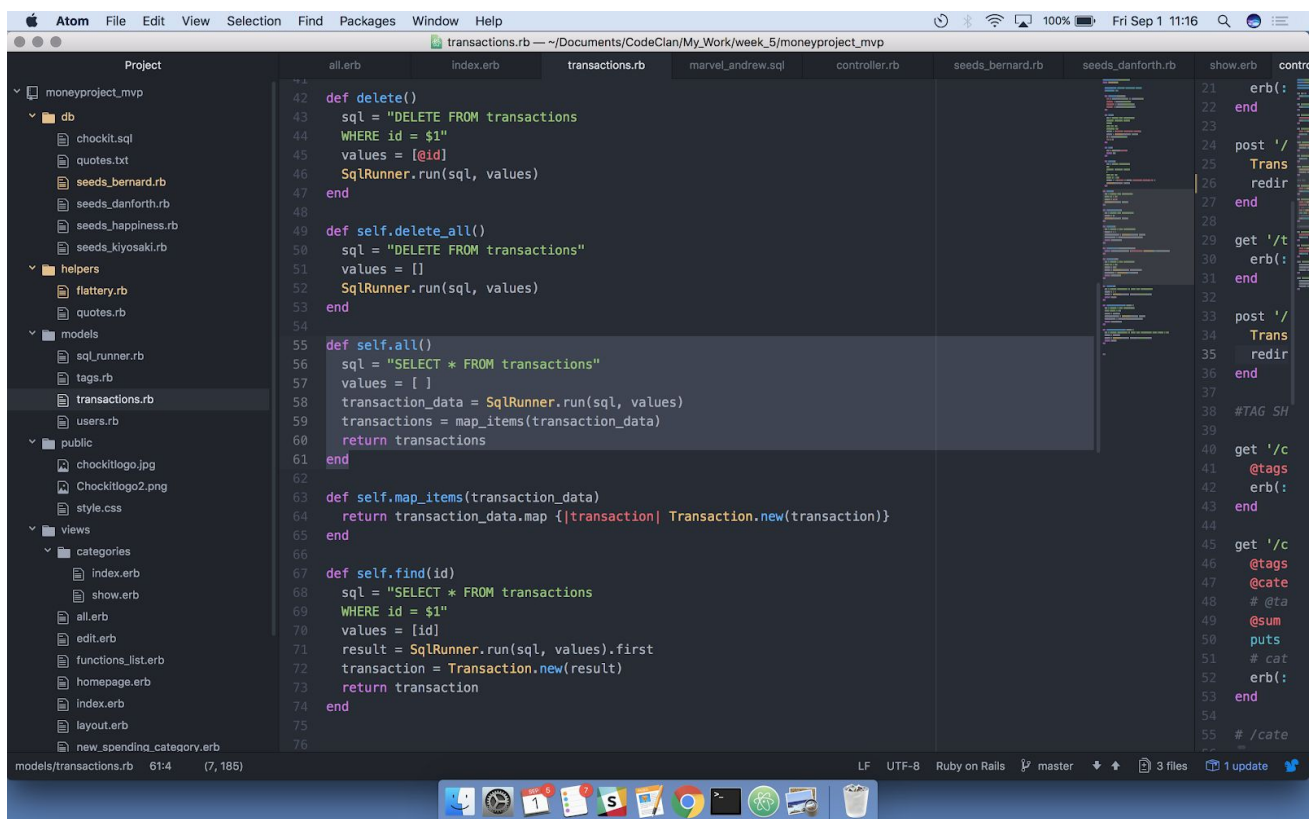
- The result of the function running



I.T. 4

Demonstrate sorting data in a program. Take screenshots of:

- Function that sorts data



```
def delete()
  sql = "DELETE FROM transactions
  WHERE id = $1"
  values = [@id]
  SqlRunner.run(sql, values)
end

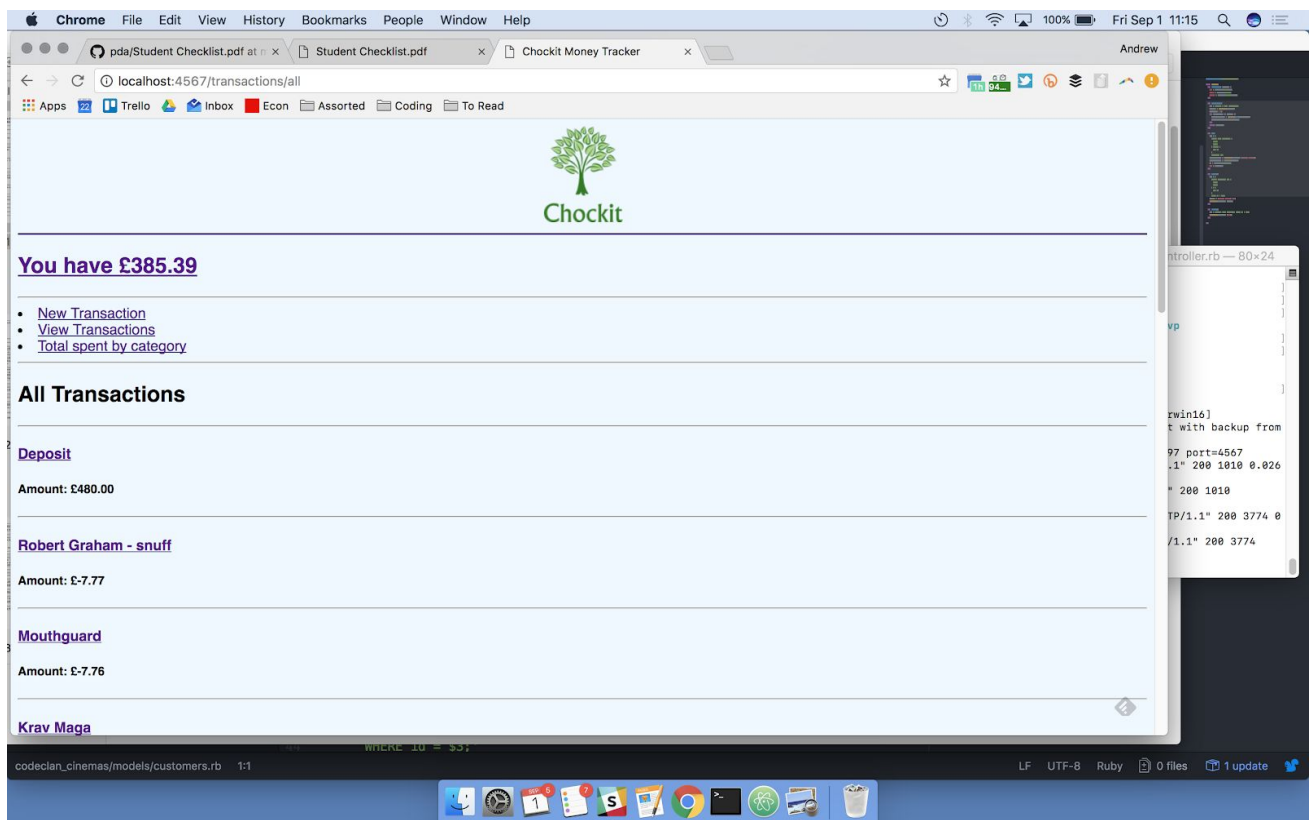
def self.delete_all()
  sql = "DELETE FROM transactions"
  values = []
  SqlRunner.run(sql, values)
end

def self.all()
  sql = "SELECT * FROM transactions"
  values = [ ]
  transaction_data = SqlRunner.run(sql, values)
  transactions = map_items(transaction_data)
  return transactions
end

def self.map_items(transaction_data)
  return transaction_data.map {|transaction| Transaction.new(transaction)}
end

def self.find(id)
  sql = "SELECT * FROM transactions
  WHERE id = $1"
  values = [id]
  result = SqlRunner.run(sql, values).first
  transaction = Transaction.new(result)
  return transaction
end
```

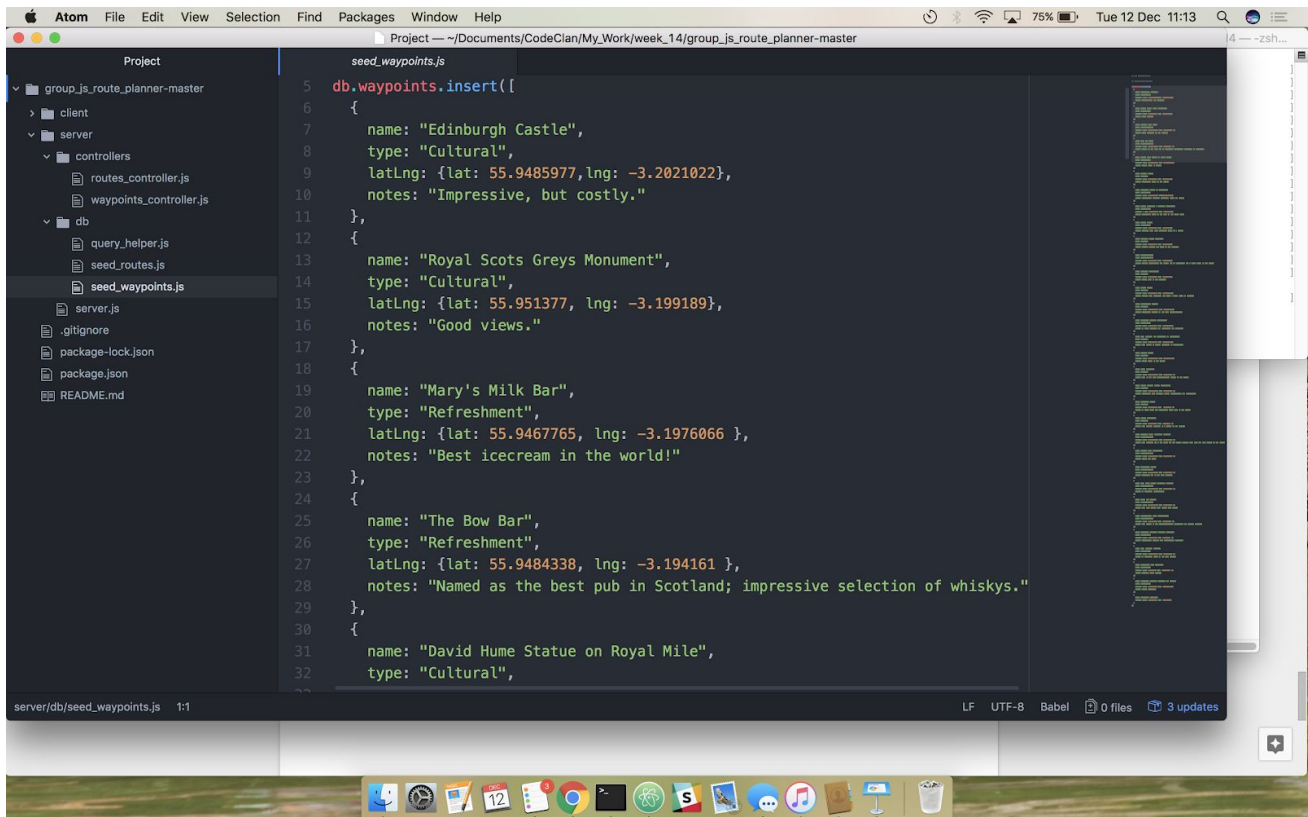
- The result of the function running



I.T. 5

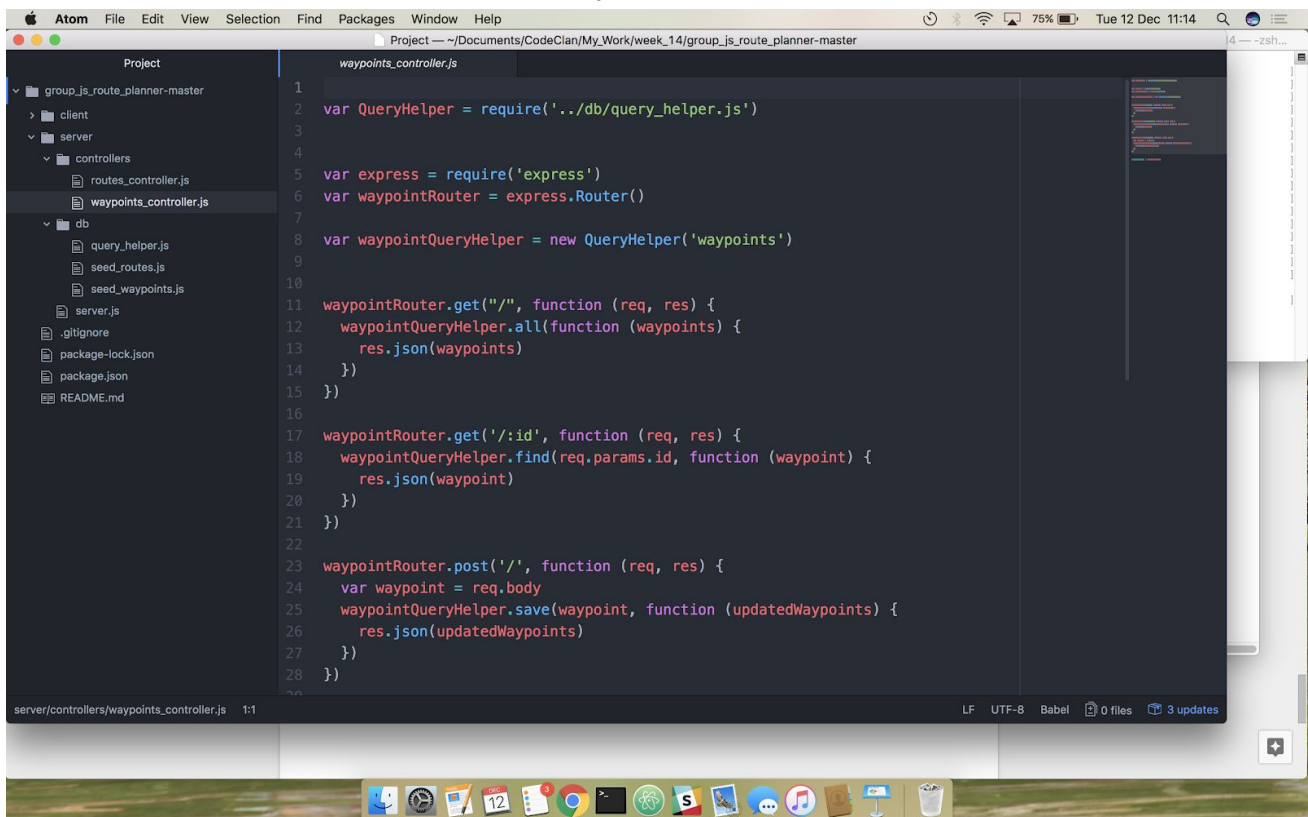
Demonstrate the use of an array in a program. Take screenshots of:

- An array in a program



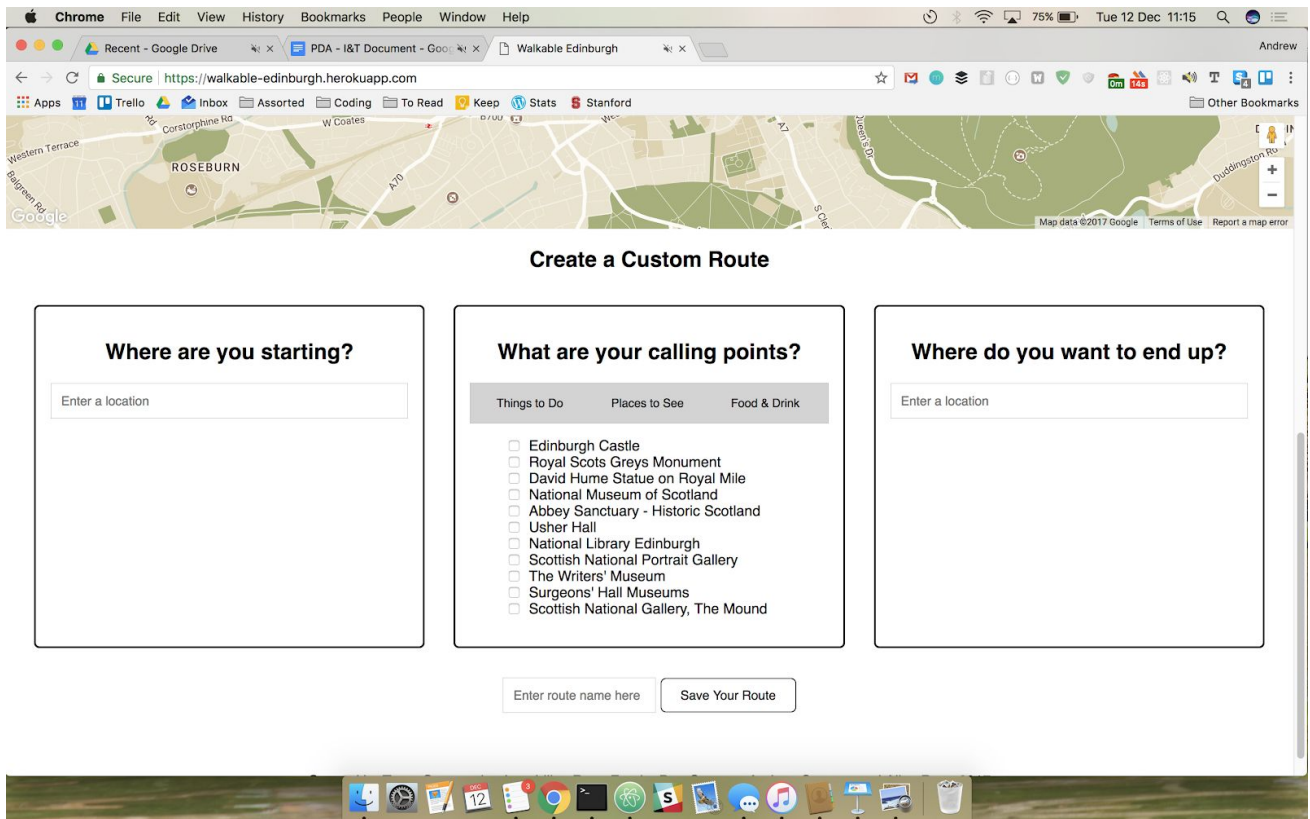
```
seed_waypoints.js
5 db.waypoints.insert([
6   {
7     name: "Edinburgh Castle",
8     type: "Cultural",
9     latLng: {lat: 55.9485977, lng: -3.2021022},
10    notes: "Impressive, but costly."
11  },
12  {
13    name: "Royal Scots Greys Monument",
14    type: "Cultural",
15    latLng: {lat: 55.951377, lng: -3.199189},
16    notes: "Good views."
17  },
18  {
19    name: "Mary's Milk Bar",
20    type: "Refreshment",
21    latLng: {lat: 55.9467765, lng: -3.1976066 },
22    notes: "Best icecream in the world!"
23  },
24  {
25    name: "The Bow Bar",
26    type: "Refreshment",
27    latLng: {lat: 55.9484338, lng: -3.194161 },
28    notes: "Named as the best pub in Scotland; impressive selection of whiskys."
29  },
30  {
31    name: "David Hume Statue on Royal Mile",
32    type: "Cultural",
33  },
34 ])
```

- A function that uses the array



```
waypoints_controller.js
1
2 var QueryHelper = require('../db/query_helper.js')
3
4
5 var express = require('express')
6 var waypointRouter = express.Router()
7
8 var waypointQueryHelper = new QueryHelper('waypoints')
9
10
11 waypointRouter.get('/', function (req, res) {
12   waypointQueryHelper.all(function (waypoints) {
13     res.json(waypoints)
14   })
15 })
16
17 waypointRouter.get('/:id', function (req, res) {
18   waypointQueryHelper.find(req.params.id, function (waypoint) {
19     res.json(waypoint)
20   })
21 })
22
23 waypointRouter.post('/', function (req, res) {
24   var waypoint = req.body
25   waypointQueryHelper.save(waypoint, function (updatedWaypoints) {
26     res.json(updatedWaypoints)
27   })
28 })
```

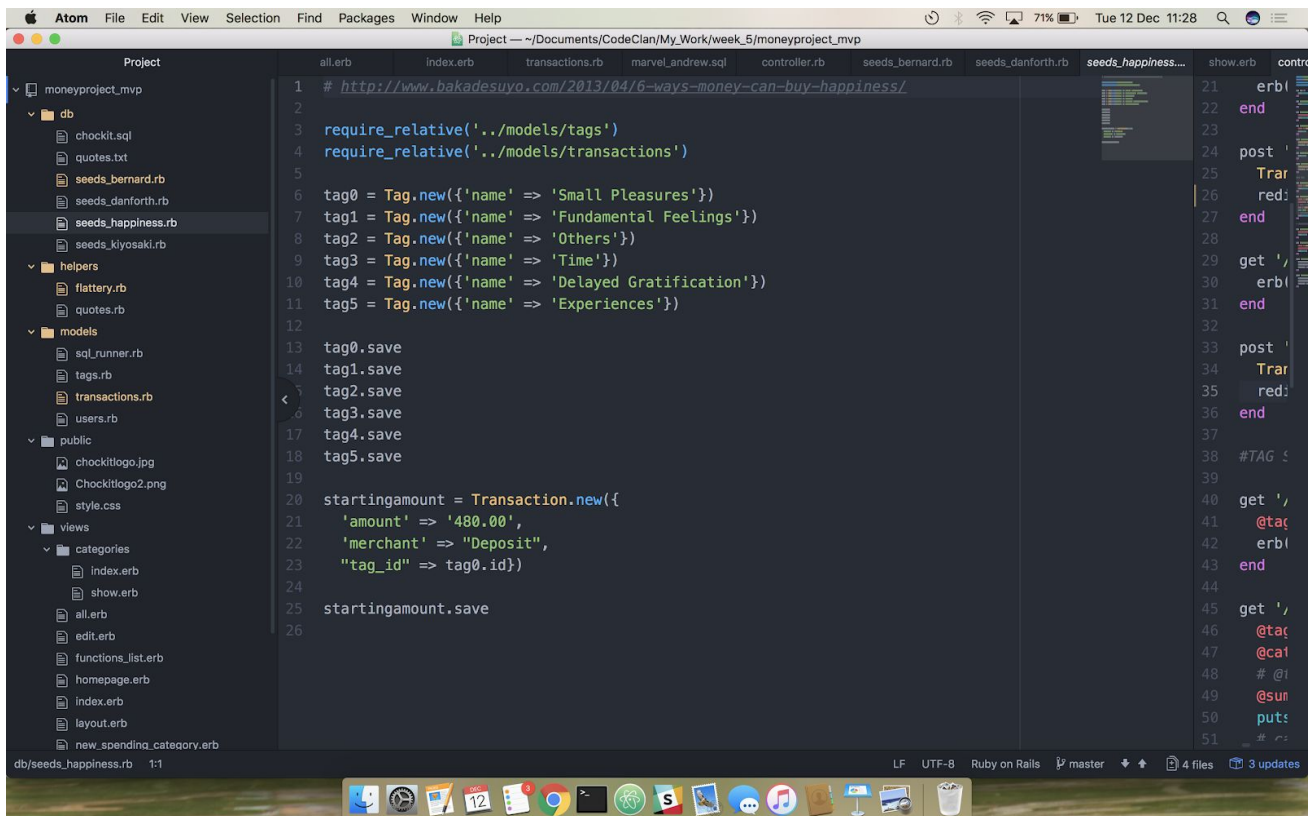
- The result of the function running



I.T. 6

Demonstrate the use of a hash in a program. Take screenshots of:

- A hash in a program



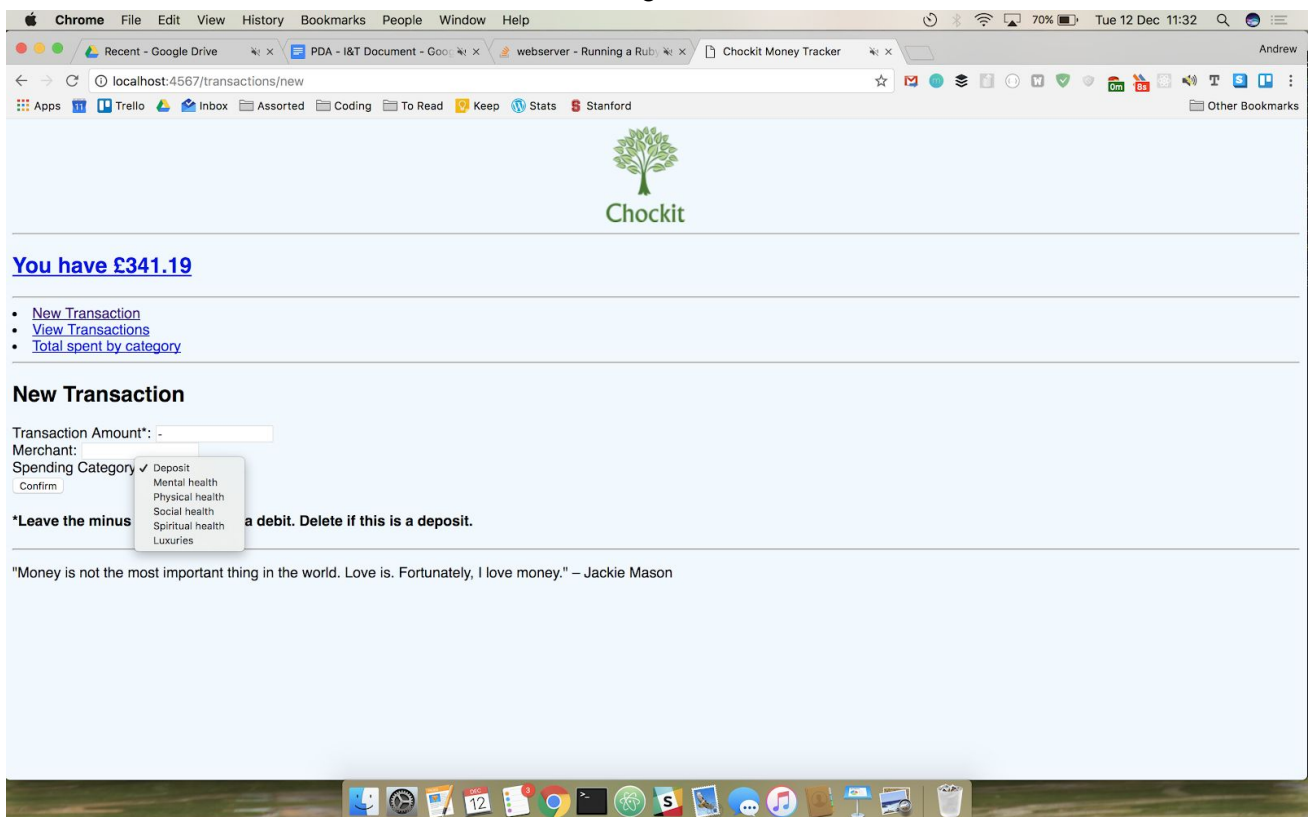
- A function that uses the hash


```
Atom
File Edit View Selection Find Packages Window Help
Project -- ~/Documents/CodeClan/My_Work/week_5/moneyproject_mvp
all.erb index.erb transactions.rb new.erb marvel_andrew.sql controller.rb seeds_bernard.rb seeds_danforth.rb show.erb contr

1 <h2>New Transaction</h2>
2 <form method="POST" action="/transactions">
3   <div class="form-wrapper">
4
5     <div class="form-trans">
6       <label for="amount">Transaction Amount*:</label>
7       <input type="numeric" name="amount" id="amount" value="-"/>
8     </div>
9
10    <div class="form-trans">
11      <label for="merchant">Merchant:</label>
12      <input type="text" name="merchant" id="merchant"/>
13    </div>
14
15    <div class="form-trans">
16      <label for="tag">Spending Category:</label>
17      <select name="tag_id" id="tag_select">
18        <% @tags.each do |tag| %>
19          <option value=<%= tag.id %>><%= tag.name.capitalize %></option>
20        <% end %>
21      </select>
22    </div>
23
24    <div class="form-trans">
25      <input type="submit" value="Confirm"/>
26    </div>
27  </div>
28
29 </form>
30
31 <h4>*Leave the minus sign in if this is a debit. Delete if this is a deposit.</h4>

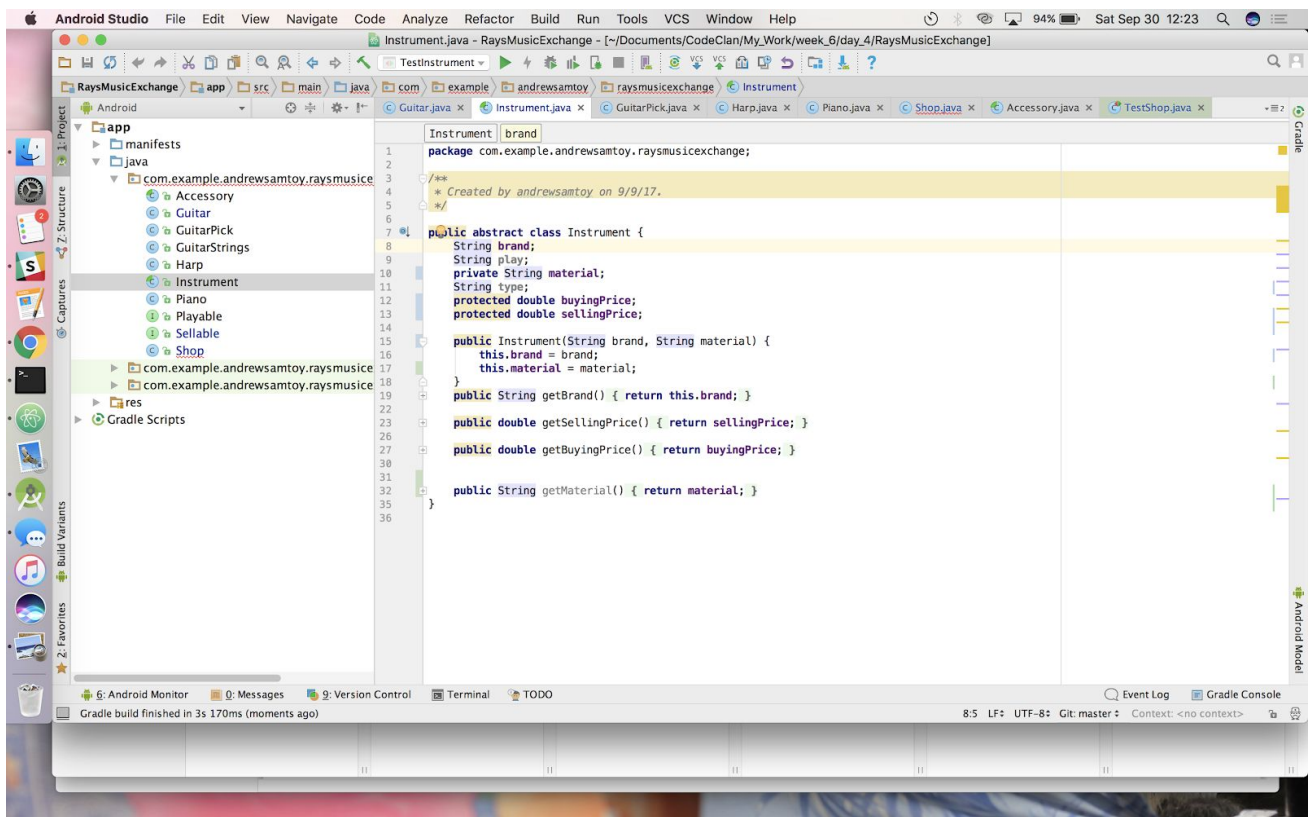
21 erb
22 end
23
24 post '
25 Trar
26 red:
27 end
28
29 get '/'
30 erb
31 end
32
33 post '
34 Trar
35 red:
36 end
37
38 #TAG
39
40 get '/'
41 @tag
42 erb
43 end
44
45 get '/'
46 @tag
47 @cat
48 # @t
49 @sun
50 puts
51 # r2
```

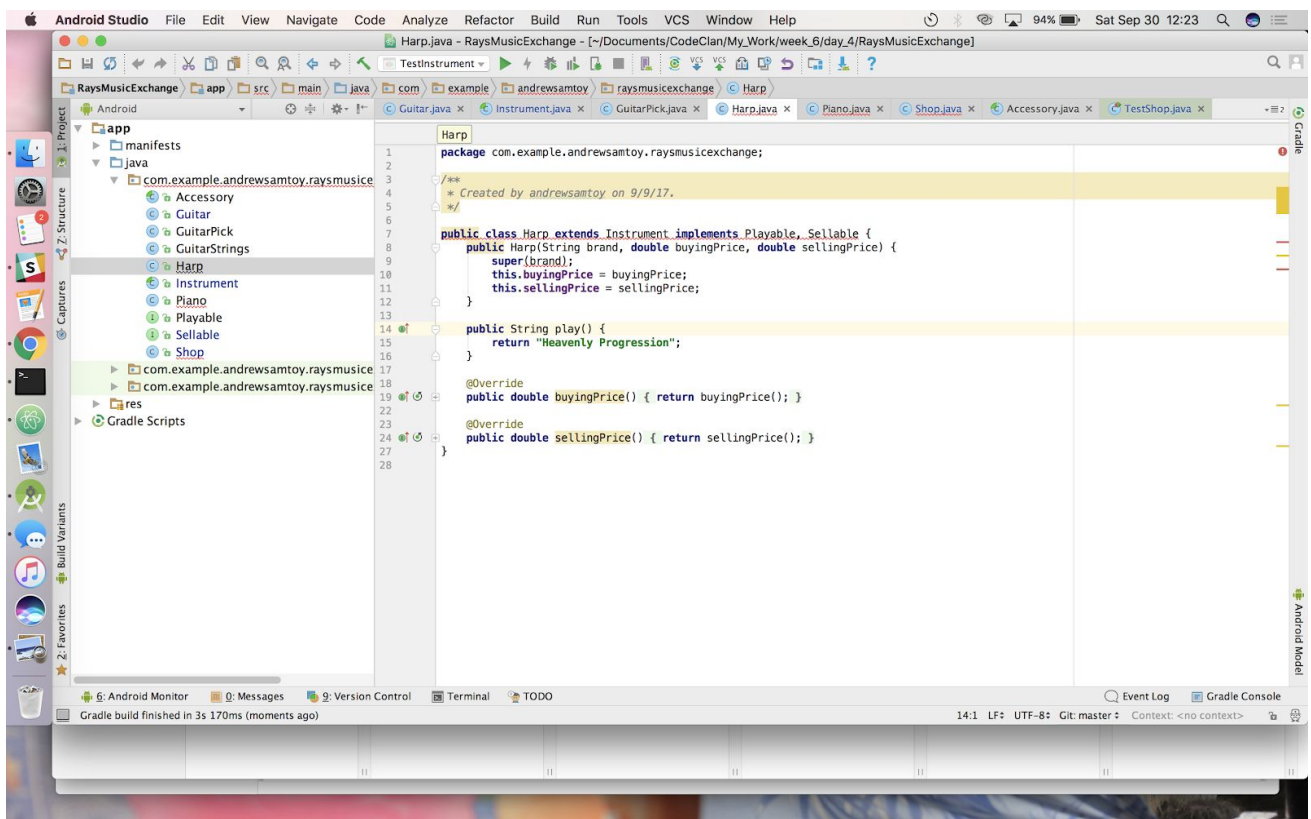
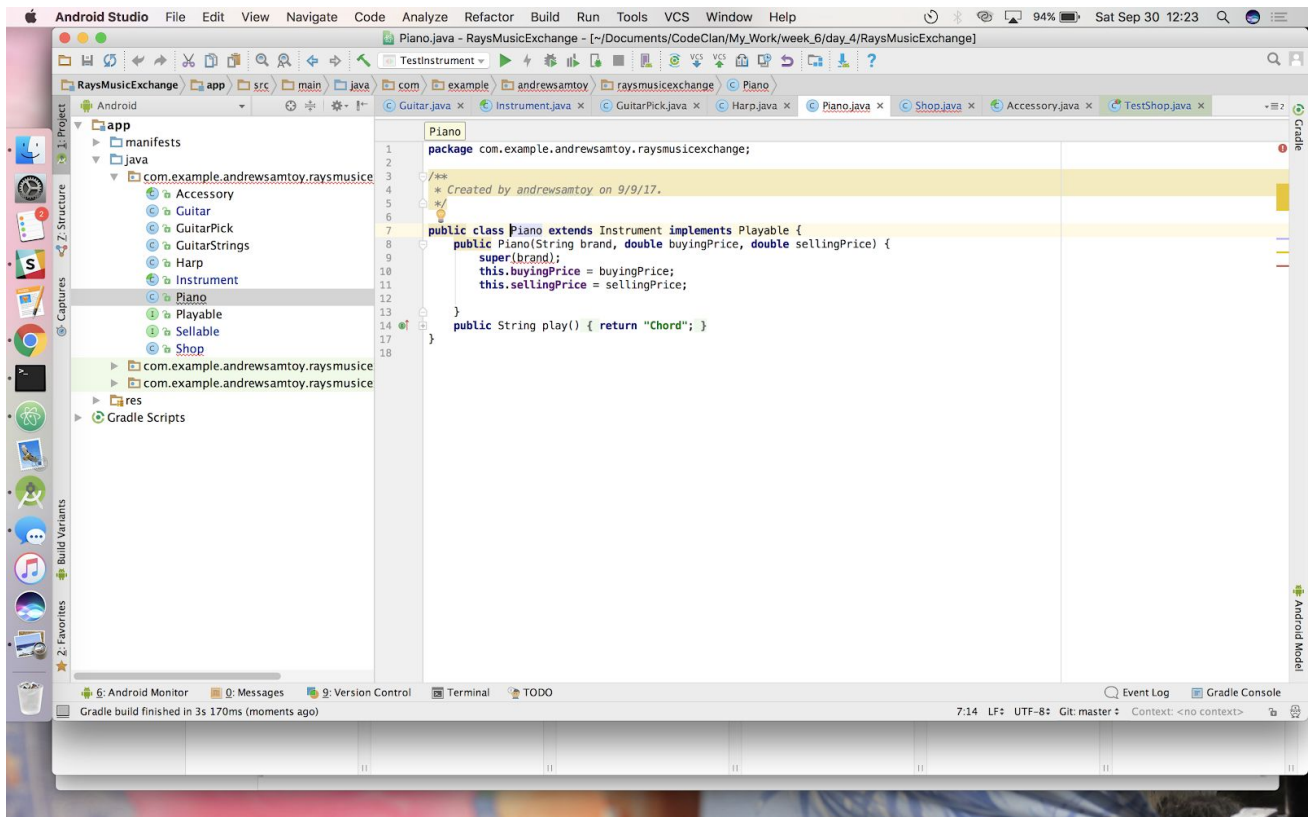
• The result of the function running



I.T. 7

Demonstrate the use of Polymorphism in a program.





Testing code: your testing example is missing the following: The test code failing to pass. Example of the test code once errors have been corrected. The test code passing.

