

Coffee Maker Quest

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CS 1699 – Deliverable 2: Unit Testing and Code Coverage

When writing tests for Coffee Maker Quest, dependencies were the main source of any issues that we faced. There are some tests that have dependencies on other methods within the same class, which cannot be stubbed out. For example, the test for the method `getSugar()` in the `Player` class depends on the method `hasAllItems()` working correctly in order to pass. This is not ideal, since it means that the test is more brittle; however, we had no other way to check that sugar was acquired, as the Boolean variable that holds the state of sugar possession is private. There was also the issue of testing methods that return the same value via different branches. For example, the `drink()` method in the `Player` class returns true if the player has all three items (sugar, cream, and coffee) and false if the player is missing any one or more of the items. In order to ensure that the correct branches were taken we decided to test the console output by redirecting the print stream to a byte array output stream and checking that it contained the appropriate message(s), since the branches printed unique messages to the player.

We anticipate experiencing both of the issues we faced when testing code in the future. To avoid having too many dependencies within a class that cannot be mocked or stubbed it is important to write modularized object-oriented code. Breaking classes into smaller, more unique classes or subclasses will help prevent brittle tests such as our `testGetSugar()` test. Also, having methods that return unique error codes instead of simply Boolean values would help prevent having to write difficult tests that check console logs.

After running our tests, we had a total of five tests fail. Both `testDoSomethingHelp()` and `testDoSomethingHelpLowercase()`, which test the help command in the `Game` class's `doSomething()` method, failed because that command is not implemented. We manually failed

these tests because we knew beforehand that the command wasn't implemented. Our test `testDoSomethingNorthLowercase()` failed because the `Game` class's `doSomething()` method does not check for the lowercase letter "n", just the uppercase. The `testMoveSouthNoDoor()` and `testMoveNorthNoDoor()` tests failed because the `House` class's `moveSouth()` and `moveNorth()` methods, on which they are dependent, respectively, do not first check whether the room the player is in has the necessary door.


Repository is located here: <https://github.com/markalan7/d2>

Screenshots of executed unit tests

Coffee Maker Tests run

Finished after 0.048 seconds

Runs: 2/2 Errors: 0 Failures: 0




▲ CoffeeMakerTests [Runner: JUnit 4] (0.013 s)

- testRunArgsReturnsZero (0.010 s)
- testRunArgsPrintsSuccessfully (0.003 s)

Game Tests run

Finished after 0.631 seconds

Runs: 14/14 Errors: 0 Failures: 3






▲ GameTests [Runner: JUnit 4] (0.599 s)

- testDoSomethingNorthLowercase (0.532 s)
- testDoSomethingInventory (0.029 s)
- testDoSomethingInvalid (0.003 s)
- testDoSomethingSouthLowercase (0.001 s)
- testDoSomethingDrinkLose (0.013 s)
- testDoSomethingDrinkWin (0.001 s)
- testDoSomethingHelp (0.001 s)
- testDoSomethingLook (0.008 s)
- testDoSomethingDrinkWinLowercase (0.001 s)
- testDoSomethingInventoryLowercase (0.001 s)
- testDoSomethingHelpLowercase (0.001 s)
- testDoSomethingLookLowercase (0.001 s)
- testDoSomethingNorth (0.002 s)
- testDoSomethingSouth (0.001 s)










House Tests run

Finished after 0.601 seconds

Runs: 9/9  Errors: 0  Failures: 2






HouseTests [Runner: JUnit 4] (0.561 s)

-  testMoveNorthNoDoor (0.039 s)
-  testMoveSouthWithDoor (0.000 s)
-  testGenerateRoomsNumber (0.001 s)
-  testLookWithItems (0.514 s)
-  testGenerateRoomsItems (0.001 s)
-  testGetCurrentRoomInfo (0.000 s)
-  testLookNoItems (0.002 s)
-  testMoveNorthWithDoor (0.001 s)
-  testMoveSouthNoDoor (0.001 s)





















Player Tests Run

Finished after 0.055 seconds

Runs: 20/20  Errors: 0  Failures: 0






PlayerTests [Runner: JUnit 4] (0.026 s)



-  testDrinkHaveSugar (0.011 s)
-  testHasAllItemsHaveSugarAndCream (0.000 s)
-  testPlayerConstructorTrueArguments (0.001 s)
-  testGetCream (0.000 s)
-  testGetSugar (0.001 s)
-  testShowInventoryHaveCoffee (0.001 s)
-  testShowInventoryNoItems (0.001 s)
-  testDrinkHaveNothing (0.000 s)
-  testShowInventoryHaveCreamAndSugar (0.001 s)
-  testDrinkHaveAllItems (0.001 s)
-  testDrinkHaveSugarOutput (0.001 s)
-  testDrinkHaveAllItemsOutput (0.000 s)
-  testGetCoffee (0.000 s)
-  testPlayerConstructor (0.001 s)
-  testHasAllItemsHaveCream (0.001 s)
-  testPlayerConstructorArguments (0.002 s)
-  testHasAllItemsHaveAllItems (0.001 s)
-  testDrinkHaveCoffeeAndCream (0.000 s)
-  testDrinkHaveCoffeeAndCreamOutput (0.001 s)
-  testHasAllItemsHaveNoItems (0.002 s)


















Room Tests run

Finished after 0.064 seconds

Runs: 17/17  Errors: 0  Failures: 0



  RoomTests [Runner: JUnit 4] (0.021 s)

-  testHasCoffeeWithCoffee (0.011 s)
-  testHasCreamWithCream (0.001 s)
-  testRoomConstructor (0.000 s)
-  northExitNoNorthExit (0.000 s)
-  northExitHasNorthExit (0.000 s)
-  testHasCoffeeNoCoffee (0.001 s)
-  southExitHasSouthExit (0.001 s)
-  southExitNoSouthExit (0.000 s)
-  testGetDescriptionNotNull (0.000 s)
-  testHasItemHaveCoffee (0.001 s)
-  testHasCreamNoCream (0.000 s)
-  testHasItemHaveCoffeeAndCream (0.000 s)
-  testGetDescriptionNotEmpty (0.001 s)
-  testHasSugarWithSugar (0.000 s)
-  testRoomConstructorFalse (0.001 s)
-  testHasItemHaveNoItems (0.002 s)
-  testHasSugarNoSugar (0.002 s)

Screenshots of coverage

Code coverage

CoffeeMakerTests (Feb 17, 2015 3:09:57 PM)

Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
▲ d2	91.8 %	2,660	237	2,897
▲ src	90.9 %	1,365	137	1,502
▲ com.laboon	90.9 %	1,365	137	1,502
▲ Game.java	54.5 %	73	61	134
Game	54.5 %	73	61	134
run()	0.0 %	0	61	61
Game(Player, House)	100.0 %	15	0	15
doSomething(String)	100.0 %	58	0	58
▲ CoffeeMaker.java	20.3 %	14	55	69
CoffeeMaker	20.3 %	14	55	69
main(String[])	0.0 %	0	50	50
runGameLoop(Player, House,	0.0 %	0	5	5
runArgs(String)	100.0 %	11	0	11
▲ Player.java	90.6 %	144	15	159
Player	90.6 %	144	15	159
drink()	75.4 %	46	15	61
Player()	100.0 %	12	0	12
Player(boolean, boolean, bool	100.0 %	21	0	21
getCoffee()	100.0 %	7	0	7
getCream()	100.0 %	7	0	7
getSugar()	100.0 %	7	0	7
hasAllItems()	100.0 %	13	0	13
showInventory()	100.0 %	31	0	31
▲ House.java	96.8 %	181	6	187
House	96.8 %	181	6	187
look(Player, Room)	82.4 %	28	6	34
House(int)	100.0 %	23	0	23
House(Room[])	100.0 %	21	0	21
generateRooms(int)	100.0 %	75	0	75
getCurrentRoomInfo()	100.0 %	20	0	20
moveNorth()	100.0 %	7	0	7
moveSouth()	100.0 %	7	0	7
▲ Room.java	100.0 %	953	0	953
Room	100.0 %	953	0	953
Room(boolean, boolean, bool	100.0 %	40	0	40
generateDescription()	100.0 %	59	0	59
getAdjective()	100.0 %	662	0	662
getDescription()	100.0 %	3	0	3
getNoun()	100.0 %	158	0	158
hasCoffee()	100.0 %	3	0	3
hasCream()	100.0 %	3	0	3
hasItem()	100.0 %	13	0	13
hasSugar()	100.0 %	3	0	3
northExit()	100.0 %	3	0	3
southExit()	100.0 %	3	0	3

Test coverage

Problems @ Javadoc Declaration Console Coverage Error Log				
CoffeeMakerTests (1) (Feb 17, 2015 3:25:49 PM)				
Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
src	91.8 %	2,660	237	2,897
tests	90.9 %	1,365	137	1,502
(default package)	92.8 %	1,295	100	1,395
HouseTests.java	92.8 %	1,295	100	1,395
HouseTests	83.5 %	330	65	395
testMoveNorthNoDoor()	83.5 %	330	65	395
testMoveSouthNoDoor()	0.0 %	0	32	32
testGenerateRoomsItems()	0.0 %	0	32	32
clearOutputStream()	97.0 %	32	1	33
setOutputStream()	100.0 %	3	0	3
testGenerateRoomsNumber()	100.0 %	7	0	7
testGetCurrentRoomInfo()	100.0 %	13	0	13
testLookNoItems()	100.0 %	11	0	11
testLookWithItems()	100.0 %	84	0	84
testMoveNorthWithDoor()	100.0 %	84	0	84
testMoveSouthWithDoor()	100.0 %	43	0	43
GameTests.java	100.0 %	45	0	45
GameTests	91.6 %	361	33	394
testDoSomethingNorthLowercase()	91.6 %	361	33	394
testDoSomethingHelp()	0.0 %	0	27	27
testDoSomethingHelpLowercase()	0.0 %	0	3	3
clearOutputStream()	0.0 %	0	3	3
setOutputStream()	100.0 %	3	0	3
testDoSomethingDrinkLose()	100.0 %	7	0	7
testDoSomethingDrinkWin()	100.0 %	38	0	38
testDoSomethingDrinkWinLowercase()	100.0 %	38	0	38
testDoSomethingInvalid()	100.0 %	38	0	38
testDoSomethingInventory()	100.0 %	28	0	28
testDoSomethingInventoryLowercase()	100.0 %	29	0	29
testDoSomethingLook()	100.0 %	29	0	29
testDoSomethingLookLowercase()	100.0 %	31	0	31
testDoSomethingNorth()	100.0 %	31	0	31
testDoSomethingSouth()	100.0 %	27	0	27
testDoSomethingSouthLowercase()	100.0 %	27	0	27

Problems @ Javadoc Declaration Console Coverage Error Log				
CoffeeMakerTests (1) (Feb 17, 2015 3:25:49 PM)				
Element	Coverage	Covered Instructio...	Missed Instructions	Total Instructions
PlayerTests.java	99.4 %	307	2	309
PlayerTests	99.4 %	307	2	309
testShowInventoryHaveCreamAndSugar()	96.2 %	25	1	26
testShowInventoryNoItems()	96.7 %	29	1	30
clearOutputStream()	100.0 %	3	0	3
setOutputStream()	100.0 %	7	0	7
testDrinkHaveAllItems()	100.0 %	11	0	11
testDrinkHaveAllItemsOutput()	100.0 %	19	0	19
testDrinkHaveCoffeeAndCream()	100.0 %	11	0	11
testDrinkHaveCoffeeAndCreamOutput()	100.0 %	19	0	19
testDrinkHaveNothing()	100.0 %	11	0	11
testDrinkHaveSugar()	100.0 %	11	0	11
testDrinkHaveSugarOutput()	100.0 %	19	0	19
testGetCoffee()	100.0 %	13	0	13
testGetCream()	100.0 %	13	0	13
testGetSugar()	100.0 %	13	0	13
testHasAllItemsHaveAllItems()	100.0 %	11	0	11
testHasAllItemsHaveCream()	100.0 %	11	0	11
testHasAllItemsHaveNoItems()	100.0 %	11	0	11
testHasAllItemsHaveSugarAndCream()	100.0 %	11	0	11
testPlayerConstructor()	100.0 %	9	0	9
testPlayerConstructorArguments()	100.0 %	12	0	12
testPlayerConstructorTrueArguments()	100.0 %	12	0	12
testShowInventoryHaveCoffee()	100.0 %	18	0	18
CoffeeMakerTests.java	100.0 %	48	0	48
CoffeeMakerTests	100.0 %	48	0	48
clearOutputStream()	100.0 %	3	0	3
setOutputStream()	100.0 %	7	0	7
testRunArgsPrintsSuccessfully()	100.0 %	17	0	17
testRunArgsReturnsZero()	100.0 %	13	0	13

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GameTests.java	83.5 %	330	65	395
PlayerTests.java	91.6 %	361	33	394
CoffeeMakerTests.java	99.4 %	307	2	309
RoomTests.java	100.0 %	48	0	48
RoomTests	100.0 %	249	0	249
clearOutputStream()	100.0 %	3	0	3
northExitHasNorthExit()	100.0 %	13	0	13
northExitNoNorthExit()	100.0 %	13	0	13
setOutputStream()	100.0 %	7	0	7
southExitHasSouthExit()	100.0 %	13	0	13
southExitNoSouthExit()	100.0 %	13	0	13
testGetDescriptionNotEmpty()	100.0 %	17	0	17
testGetDescriptionNotNull()	100.0 %	17	0	17
testHasCoffeeNoCoffee()	100.0 %	13	0	13
testHasCoffeeWithCoffee()	100.0 %	13	0	13
testHasCreamNoCream()	100.0 %	13	0	13
testHasCreamWithCream()	100.0 %	13	0	13
testHasItemHaveCoffee()	100.0 %	13	0	13
testHasItemHaveCoffeeAndCream()	100.0 %	13	0	13
testHasItemHaveNoItems()	100.0 %	13	0	13
testHasSugarNoSugar()	100.0 %	13	0	13
testHasSugarWithSugar()	100.0 %	13	0	13
testRoomConstructor()	100.0 %	14	0	14
testRoomConstructorFalse()	100.0 %	14	0	14