

ASSIGNMENT 4

Debugging

Lecturer Recep

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Debugging Replication

Bug 1

Test Name	Test 1 Date : 11/10/2018			
Use Case Tested:	Booking			
Test Description:	Test if Added Service charges are displayed correctly when checking out			
Pre-conditions	Booking is Placed, Checked In and Added Service Charges of \$120			
Post-conditions	Display Total as \$120			
Notes:	The expected result has not been equaled to the actual result. Function is not working accurately.			
Result (Pass/Fail/Warning/Incomplete)	FAIL			
	TEST STEP	EXPECTED TEST RESULTS	P	F
1.	Select Check Out Option	Next Step: Prompt to enter room ID	✓	
2.	Enter Room Id	Display Total: \$120.00 and prompt to Accept Charges		✓

Bug 2

Test Name	Test 2 Date : 12/10/2018			
Use Case Tested:	Hotel			
Test Description:	Test whether the program won't allow to charge a room for service after the guest checked out.			
Pre-conditions	Booking is Placed, Checked In and Checked Out			
Post-conditions	Display No active booking for room id:			
Notes:	The expected result has not been equalled to the actual result. Function is not working accurately.			
Result (Pass/Fail/Warning/Incomplete)	FAIL			
	TEST STEP	EXPECTED TEST RESULTS	P	F
2.	Select Record Service Option	Next Step: Prompt to enter room ID	✓	
2.	Enter Room Id	Display Message : No active booking for room id:		✓

Simplification

- This is the test code that contain the bug 1

booking.java

```
public void addServiceCharge(ServiceType serviceType, double cosst) {  
    charges.add(new ServiceCharge(serviceType, cost));  
}
```

- This is the test code that contain the bug 2

hotel.java

```
public void checkout(int roomId) {  
    Booking booking = activeBookingsByRoomId.get(roomId);  
    if (booking == null) {  
        String msg = String.format("Hotel: checkout: no booking present for room id : %d", roomId);  
        throw new RuntimeException(msg);  
    }  
    booking.checkOut();  
}
```

room.java

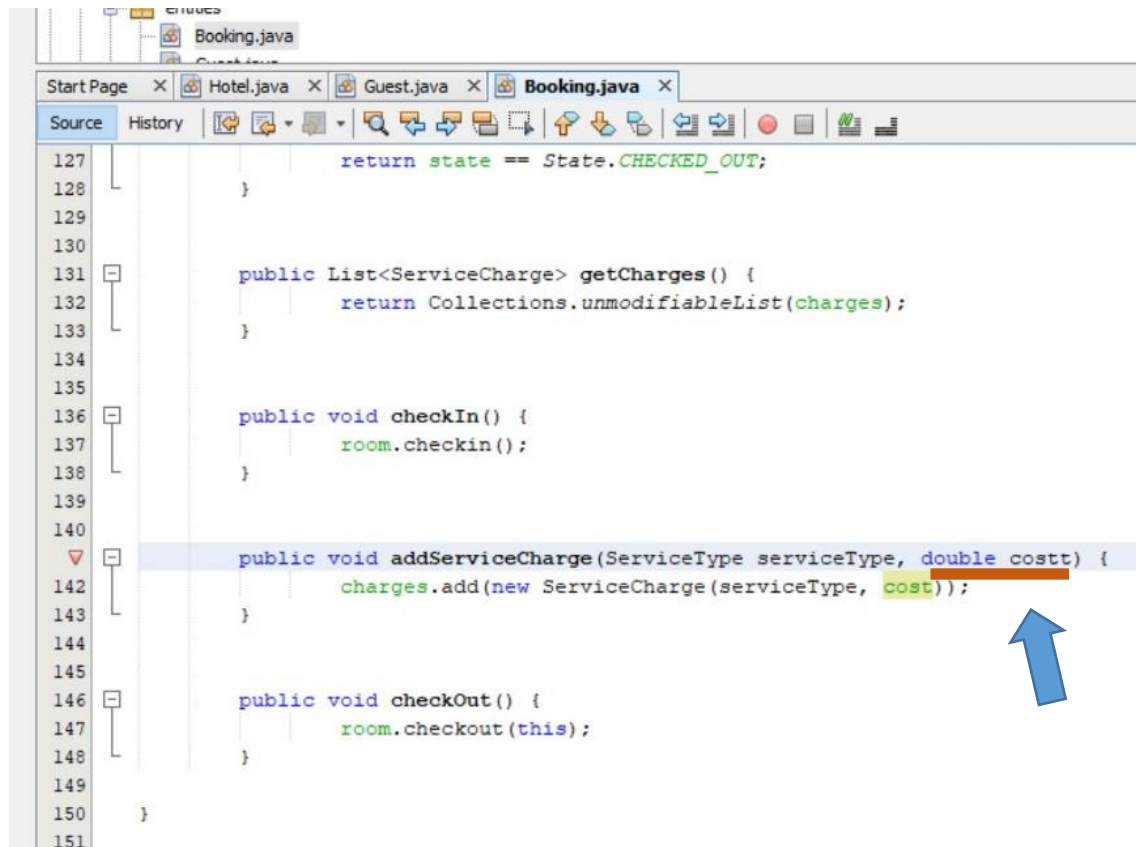
```
public void checkout(Booking booking) {  
    state = state.READY;  
}
```

Output from the test case for bug 1

Output - Application04 (run)	Output - Application04 (run)
<pre>D: Check Out Q: Quit Selection : R Recording service Enter Room Id: 101 B: Bar Fridge R: Restaurant S: Room Service Enter service typeB Enter cost: 120 Room 101 charged \$120.00 for Bar Fridge Hit <enter> to continue Pay for service completed Hotel Management System</pre>	<pre>B: Book a Room C: Check In R: Record Service D: Check Out Q: Quit Selection : D Checking out Enter room number: 101 Charges for room: 101, booking: 1092018101 Arrival date: 10-10-2018, Staylength: 1 Guest: Dushan, Address: 339, Spring, Phone: 450739793 Charges: Bar Fridge : \$0.00 Total: \$0.00 Accept charges (Y/N) : </pre>

- Tracing

Bug - (1) All Service charges are reported as 0.00 when checking out
Bug Origin – There is a logical error in the code.



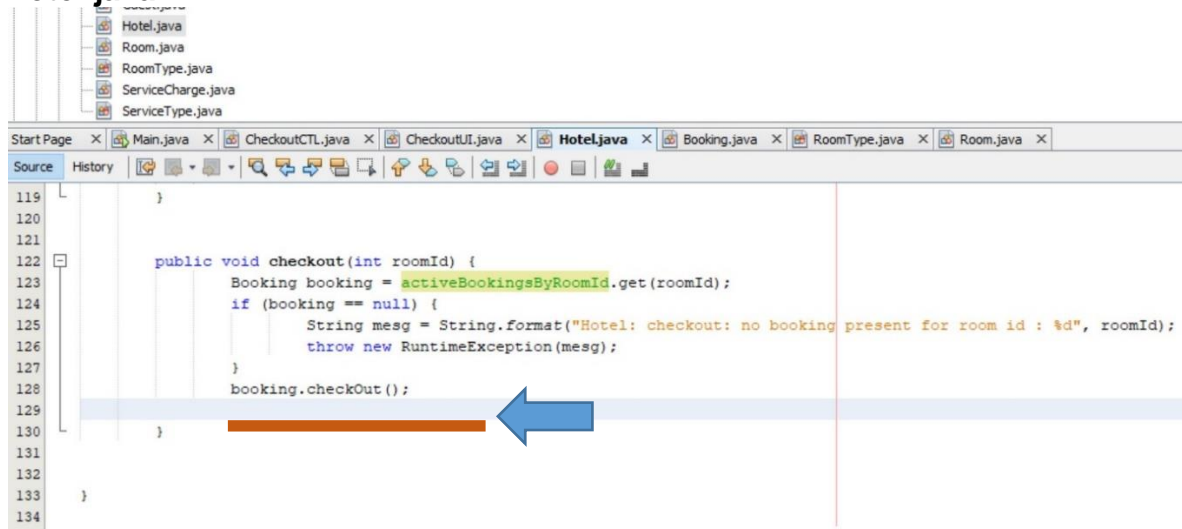
The screenshot shows an IDE window with the following tabs: Start Page, Hotel.java, Guest.java, and Booking.java. The Booking.java tab is active, showing the following code:

```
127         return state == State.CHECKED_OUT;
128     }
129
130
131     public List<ServiceCharge> getCharges() {
132         return Collections.unmodifiableList(charges);
133     }
134
135
136     public void checkIn() {
137         room.checkin();
138     }
139
140
141     public void addServiceCharge(ServiceType serviceType, double costt) {
142         charges.add(new ServiceCharge(serviceType, cost));
143     }
144
145
146     public void checkOut() {
147         room.checkout(this);
148     }
149
150 }
151
```

A blue arrow points to the variable `cost` in line 142, which is highlighted in yellow. The parameter `costt` in the method signature is highlighted in orange. This indicates a logical error where the local variable `cost` is used instead of the parameter `costt`.

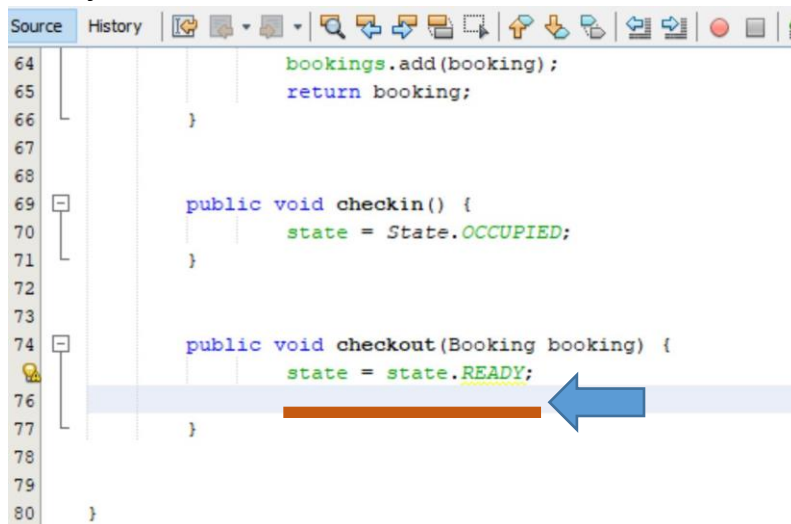
Bug - (2) It is possible to charge a room for service after the guest has checked out
Bug Origin – Active booking is not removed in checkout method

hotel.java



```
119 }
120
121
122 public void checkout(int roomId) {
123     Booking booking = activeBookingsByRoomId.get(roomId);
124     if (booking == null) {
125         String msg = String.format("Hotel: checkout: no booking present for room id : %d", roomId);
126         throw new RuntimeException(msg);
127     }
128     booking.checkOut();
129 }
130
131
132
133 }
134
```

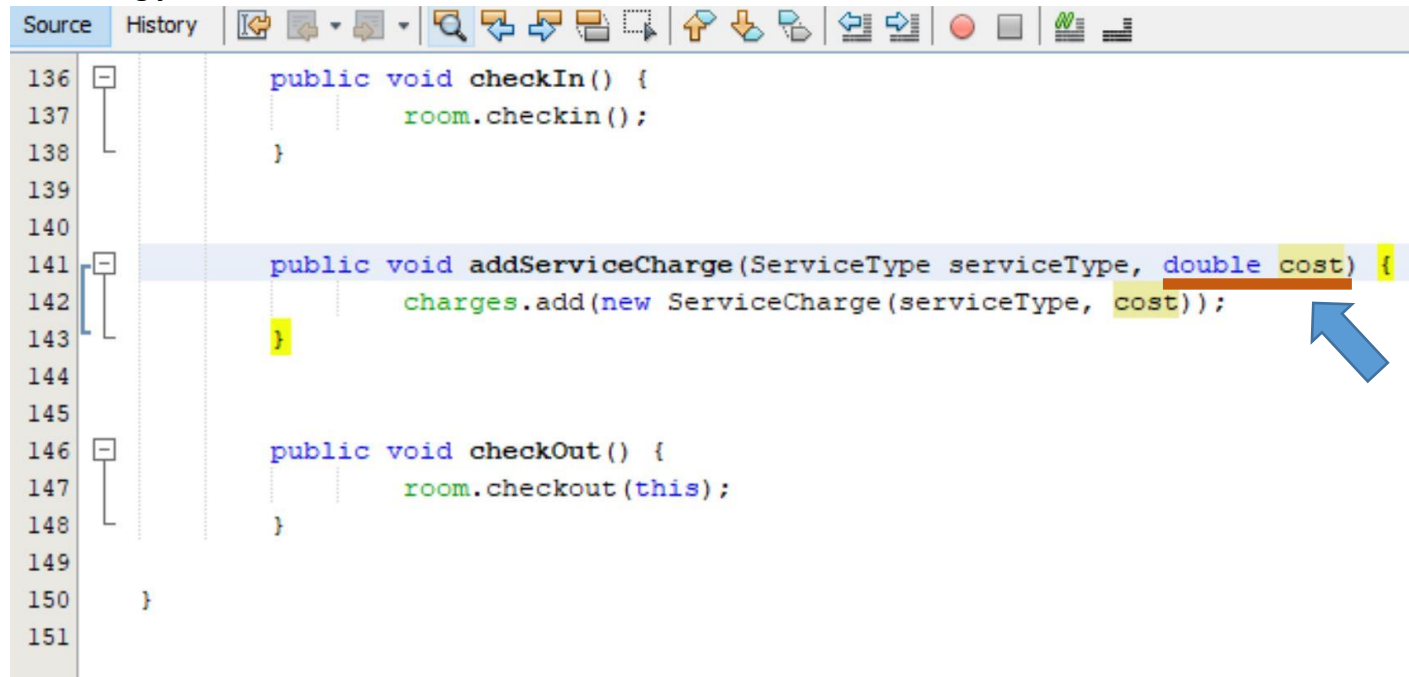
room.java



```
64     bookings.add(booking);
65     return booking;
66 }
67
68
69 public void checkin() {
70     state = State.OCCUPIED;
71 }
72
73
74 public void checkout(Booking booking) {
75     state = state.READY;
76 }
77
78
79
80 }
```


Bug 01 program code after fix

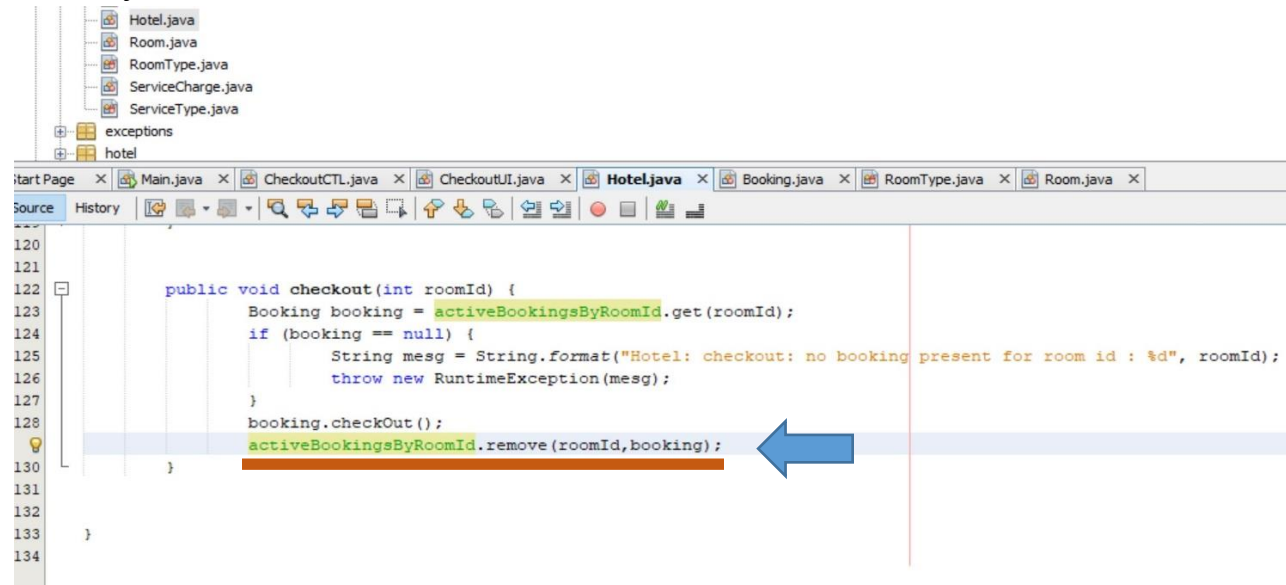
In booking.java



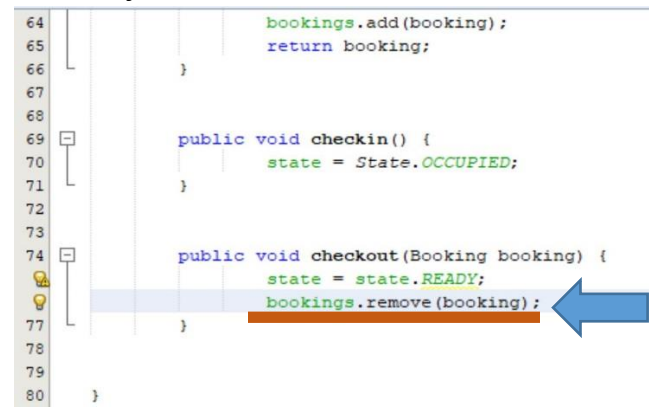
```
136 public void checkIn() {
137     room.checkin();
138 }
139
140
141 public void addServiceCharge(ServiceType serviceType, double cost) {
142     charges.add(new ServiceCharge(serviceType, cost));
143 }
144
145
146 public void checkOut() {
147     room.checkout(this);
148 }
149
150 }
151
```

Bug 02 program code after fix









In hotel.java



In room.java



Output after the fixed Bug 01

Output - Application04 (run)	Output - Application04 (run)
    D: Check Out Q: Quit Selection : R Recording service Enter Room Id: 101 B: Bar Fridge R: Restaurant S: Room Service Enter service typeB Enter cost: 120 Room 101 charged \$120.00 for Bar Fridge Hit <enter> to continue Pay for service completed Hotel Management System	    B: Book a Room C: Check In R: Record Service D: Check Out Q: Quit Selection : D Checking out Enter room number: 101 Charges for room: 101, booking: 1092018101 Arrival date: 10-10-2018, Staylength: 1 Guest: Dushan, Address: 339, Spring, Phone: 450739793 Charges: Bar Fridge : \$120.00 <u>Total: \$120.00</u> Accept charges(Y/N) :

Output after the fixed bug 02

Output - Application04 (run)	Output - Application04 (run)
<pre>Checking out Enter room number: 101 Charges for room: 101, booking: 1092018101 Arrival date: 10-10-2018, Staylength: 1 Guest: Dushan, Address: 339, Spring, Phone: 450739793 Charges: Bar Fridge : \$120.00 Total: \$120.00 Accept charges(Y/N) : Y Charges accepted Enter credit card details V: Visa M: MasterCard Enter credit card type selection: V Enter credit card number: 1 Enter CCV: 12 Visa credit card number 1 was debited \$120.00 Hit <enter> to continue</pre>	<pre>R. RECORD SERVICE D: Check Out Q: Quit Selection : R Recording service Enter Room Id: 101 No active booking for room id: 101 Enter Room Id: </pre>

Tried with test after fixed bug01

Test ID	Test Data	Expected Output	Actual Output	Remarks
Test1A	room number=101 Service Type=B Cost=100	Total should be \$100	Charges for room: 101, booking: 1092018101 Arrival date: 10-10-2018, Staylength: 1 Guest: Dushan, Address: 339, Spring, Phone: 450739793 Charges: Bar Fridge : \$100.00 Total: \$100.00	Expected output and actual output are same.
	room number=101 Service Type=B Cost=150	Total should be \$250	Charges for room: 101, booking: 1092018101 Arrival date: 10-10-2018, Staylength: 1 Guest: Dushan, Address: 339, Spring, Phone: 450739793 Charges: Bar Fridge : \$100.00 Bar Fridge : \$150.00 Total: \$250.00	

Test ID	Test Data	Expected Output	Actual Output	Remarks
Test1B	room number=201 Service Type=R Cost=40	Total should be \$40	Enter room number: 201 Charges for room: 201, booking: 1092019201 Arrival date: 10-10-2019, Staylength: 2 Guest: Dushan, Address: 339, Spring, Phone: 450739793 Charges: Restaurant : \$40.00 Total: \$40.00	Expected output and actual output are same.
	room number=201 Service Type=S Cost=200	Total should be \$240	Charges for room: 201, booking: 1092019201 Arrival date: 10-10-2019, Staylength: 2 Guest: Dushan, Address: 339, Spring, Phone: 450739793 Charges: Restaurant : \$40.00 Room Service: \$200.00 Total: \$240.00	

Tried with test after fixed bug02

Test ID	Pre-Condition	Test Data	Expected Output	Actual Output	Remarks
Test2A	Room 201 is checked in and successfully checked out	Room Id= 201	Display there is no active booking for the given room number.	No active booking for room id: 201	Expected output and actual output are same.
	Room 101 is checked in and successfully checked out	Room Id= 101	Display there is no active booking for the given room number	No active booking for room id: 101	

URL for the Repository

- <https://github.com/codetesters1/Assignment4>

URL for My Individual Branch Repository

- <https://github.com/codetesters1/Assignment4/tree/Dushan>