1. Simplification

2.1 Bug 1

Test Case Class	Bug2Test
Test Case url in git hub	https://github.com/greymattercsu/ASG4/blob/master/hotel/test/hotel/test/Bug2Test.java
Test Description	This automated test is carried out to test bug 2 which is the service can still be recorded, that has been checked out.
Pre-Conditions	To test the charge re-record service after checked out, the room must be booked first, then checked in and checkout. The service is re-recorded after checked out.
Notes:	When the guest checks out, it must not be possible to re-enter service for the room that is checked out.
Result (Pass/Fail/Warning/Incomplete)	

Test Code Implementation	

```java
public void testZeroServiceCharge() {
    System.out.println("Test All Service charges are reported as 0.00 when checking out.");
    Hotel hotel = new Hotel();
    /*------------ for booking -------------*/
    System.out.println("***********booking start***********");
    Guest guest = new Guest("name1", "address1", 1123456);
    Date arrivalDate = new Date();
    int stayLength = 2;
    int numberOfOccupants = 2;
    CreditCard creditCard = new CreditCard(CreditCardType.VISA, 1, 2);
    Room room = new Room(1, RoomType.SINGLE);
    Booking booking = room.book(guest, arrivalDate, stayLength, numberOfOccupants, creditCard);//method cal
    hotel.book(room, guest, arrivalDate, 2, 1, creditCard); //creates the confirmation number for bookings
    long confNumber = booking.getConfirmationNumber();
    System.out.println("***********booking end***********");
    /*------------ for booking end -------------*/
    /*------------ for checkin -------------*/
    System.out.println("***********checkin start***********");
    CheckinCTL checkin = new CheckinCTL(hotel);
    checkin.confirmationNumberEntered(confNumber);
    checkin.checkInConfirmed(true);
    System.out.println("***********checkin end***********");
    /*------------ check in end -------------*/
    /*------------ record service start -------------*/
    System.out.println("***********record service start***********");
    RecordServiceCTL recordServiceCTL = new RecordServiceCTL(hotel);
    recordServiceCTL.roomNumberEntered(room.getId());

    System.out.println("State before method call: " + recordServiceCTL.getState());
    ServiceType serviceType = ServiceType.ROOM_SERVICE;
    double cost = 20.0;
    recordServiceCTL.serviceDetailsEntered(serviceType, cost);
    System.out.println("State after method call: " + recordServiceCTL.getState());
    System.out.println("***********record service end***********");
    /*------------ record service END -------------*/
    /*------------ check out start -------------*/
    System.out.println("***********check out start***********");
    CheckoutCTL checkoutCTL = new CheckoutCTL(hotel);
    checkoutCTL.setState();
    checkoutCTL.roomIdEntered(room.getId());
    System.out.println("Actual Total cost for service: " + cost);
    double systemReturnedCost = checkoutCTL.getTotal();
    System.out.println("System returned cost for service: " + systemReturnedCost);
    checkoutCTL.completed();
    hotel.checkout(room.getId());
    System.out.println("***********check out finished***********");
    assertEquals(cost, systemReturnedCost, 0);
}
```

Test Result	
| | ```
Tests passed: 0.00 %
No test passed, 1 test failed. (0.068 s)
  hotel.test.Bug1Test  Failed
    testZeroServiceCharge  Failed: expected:<20.0> but was:<0.0>
      expected:<20.0> but was:<0.0>
      junit.framework.AssertionFailedError
      at hotel.test.Bug1Test.testZeroServiceCharge(Bug1Test.java:105)
``` |
| | ```
Check in confirmed
***********checkin end************
***********record service start************
State before method call: SERVICE

Room 1 charged $20.00 for Room Service

State after method call: COMPLETED
***********record service end************
***********check out start************
Charges for room: 1, booking: 14920181
Arrival date: 14-10-2018, Staylength: 1
Guest: name1, Address: address1, Phone: 1123456
Charges:
    Room Service:     $0.00
Total: $0.00

Actual Total cost for service: 20.0
System returned cost for service: 0.0
Checking out completed
***********check out finished************
``` |

1.2 Bug 2

2. Test Case Class	Bug1Test
Test Case url in git hub	https://github.com/greymattercsu/ASG4/blob/master/hotel/test/hotel/test/Bug1Test.java
Test Description	This automated test is carried out to test bug 1 which is the service charge during checking out.
Pre-Conditions	To test the charge result, the room must be booked first, the checked in, then service must be recorded and finally checkout. The service charge is displayed during checkout.
Notes:	When the guest checks out, the correct services used must be shown with correct cost.

Result (Pass/Fail/Warning/Incomplete)	

Test Code Implementation	

```java
@Test
public void testReEnterServiceAfterCheckedOut() {
    try {
        System.out.println("Test All Service charges are reported as 0.00 when checking out.");
        ServiceType serviceType = ServiceType.ROOM_SERVICE;
        double cost = 20.0;
        Hotel hotel = new Hotel();
        /*------------ for booking -------------*/
        System.out.println("************booking start*************");
        Guest guest = new Guest("name1", "address1", 1123456);
        Date arrivalDate = new Date();
        int stayLength = 2;
        int numberOfOccupants = 2;
        CreditCard creditCard = new CreditCard(CreditCardType.VISA, 1, 2);
        Room room = new Room(1, RoomType.SINGLE);
        Booking booking = room.book(guest, arrivalDate, stayLength, numberOfOccupants, creditCard);
        //booking.checkIn();
        hotel.book(room, guest, arrivalDate, 2, 1, creditCard); //creates the confirmation number for bookingss
        long confNumber = booking.getConfirmationNumber();
        System.out.println("************booking end*************");
        /*------------ for booking end -------------*/
        /*------------ for checkin -------------*/
        System.out.println("************checkin start*************");
        CheckinCTL checkin = new CheckinCTL(hotel);
        checkin.confirmationNumberEntered(confNumber);
        checkin.checkInConfirmed(true);
        System.out.println("************checkin end*************");
        /*------------ check in end -------------*/
        /*------------ check out start -------------*/
        System.out.println("************check out start*************");
        CheckoutCTL checkoutCTL = new CheckoutCTL(hotel);
        checkoutCTL.setState();
        checkoutCTL.roomIdEntered(room.getId());
        checkoutCTL.completed();
        hotel.checkout(room.getId());
        System.out.println("************check out finished*************");
        System.out.println("************record service after checkout start*************");
        RecordServiceCTL recordServiceCTL1 = new RecordServiceCTL(hotel);
        recordServiceCTL1.roomNumberEntered(room.getId());
        System.out.println("State before method call later: " + recordServiceCTL1.getState());
        ServiceType serviceType1 = ServiceType.BAR_FRIDGE;
        double cost1 = 40.0;
        recordServiceCTL1.serviceDetailsEntered(serviceType1, cost1);
        System.out.println("State after method call later: " + recordServiceCTL1.getState());
        System.out.println("************record service finished*************");
        fail("No active booking for room id: 1");
    } catch (RuntimeException ex) {
        String expectedMessage = "PayForServiceCTL: serviceDetailsEntered : bad state : ROOM";
        String systemMessage = ex.getMessage();
        assertEquals(expectedMessage, systemMessage);
    }
}
```

Test Result	Tests passed: 0.00 % No test passed, 1 test failed. (0.088 s) ⚠ hotel.test.Bug2Test Failed 　⚠ testReEnterServiceAfterCheckedOut Failed: No active booking for room id: 1 　　No active booking for room id: 1 　　junit.framework.AssertionFailedError 　　at hotel.test.Bug2Test.testReEnterServiceAfterCheckedOut(Bug2Test.java:101) Test All Service charges are reported as 0.00 when checking out. ***********booking start************* ***********booking end************ ***********checkin start************* Single room 1 is booked from 14-10-2018 for 1 nights by name1. Visa Credit card number: 1 Confirmation Number : 14920181 Check in confirmed ***********checkin end************ ***********check out start************* Charges for room: 1, booking: 14920181 Arrival date: 14-10-2018, Staylength: 1 Guest: name1, Address: address1, Phone: 1123456 Charges: Total: $0.00 Checking out completed ***********check out finished************* ***********record service after checkout start************* State before method call later: SERVICE Room 1 charged $40.00 for Bar Fridge State after method call later: COMPLETED ***********record service finished*************