

## Problem #1

Code:

```
/*
 * Branches Assignment
 *
 * Calculates total price of hotel stay given:
 * Room price
 * Amount of rooms booked
 * Days booked
 * Sales tax
 *
 * Applies discounts based on amount of rooms booked:
 * 10+ : 10% off
 * 20+ : 20% off
 * 30+ : 30% off
 *
 * If rooms are booked for 3+ days, 5% off.
 */

#include <iostream>
#include <iomanip>

int main(void)
{
    const double TEN_ROOM_DISCOUNT = 0.10;
    const double TWENTY_ROOM_DISCOUNT = 0.20;
    const double THIRTY_ROOM_DISCOUNT = 0.30;
    const double THREE_DAY_DISCOUNT = 0.05;

    double totalCostPreTax = 0.0;
    double totalCostPostTax = 0.0;
    double totalDiscount = 0.0;
    double finalTax = 0.0;

    double roomPrice = 0.0;
    double salesTax = 0.0;
    int daysBooked = 0;
    int roomsBooked = 0;
```

```

// Take user input

std::cout << "Please enter room price: $" << std::flush;
std::cin >> roomPrice;

std::cout << "Please enter number of rooms to book: " << std::flush;
std::cin >> roomsBooked;

std::cout << "Please enter duration of stay in days: " << std::flush;
std::cin >> daysBooked;

std::cout << "Please enter sales tax (percent): " << std::flush;
std::cin >> salesTax;
salesTax /= 100.0; // Convert from percent to decimal

std::cout << std::endl << std::endl; // Spacing to make it look nicer

// Calculate price
totalCostPreTax = roomPrice * roomsBooked * daysBooked;

// Calculate discount
if (daysBooked >= 3)
{
    totalDiscount += THREE_DAY_DISCOUNT;
}

if (roomsBooked >= 30)
{
    totalDiscount += THIRTY_ROOM_DISCOUNT;
}
else if (roomsBooked >= 20)
{
    totalDiscount += TWENTY_ROOM_DISCOUNT;
}
else if (roomsBooked >= 10)
{
    totalDiscount += TEN_ROOM_DISCOUNT;
}

// Apply discount
totalCostPreTax -= totalCostPreTax * totalDiscount;

// Calculate and apply tax
finalTax = totalCostPreTax * salesTax;

```

```

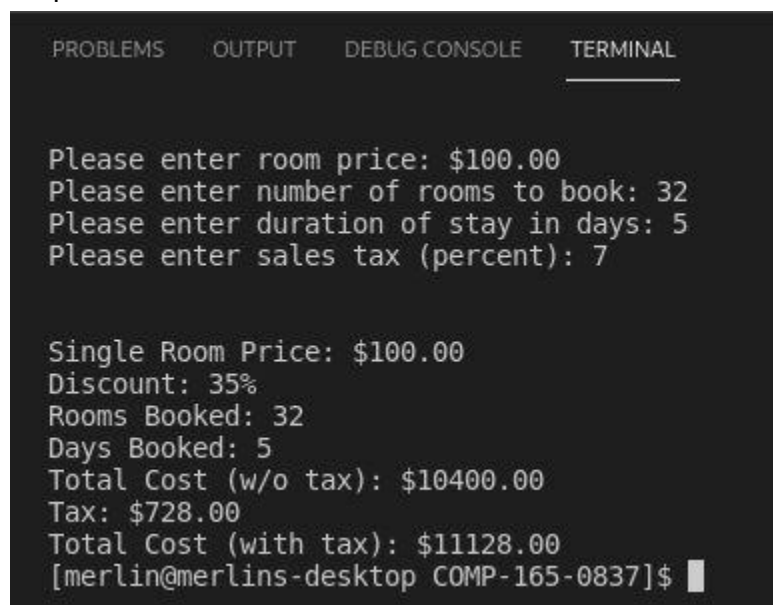
    totalCostPostTax = totalCostPreTax + finalTax;

    // Display info and final price
    std::cout << std::setprecision(2) << std::fixed; // Make sure prices are being completely
printed
    std::cout << "Single Room Price: $" << roomPrice << std::endl;
    std::cout << std::setprecision(6) << std::defaultfloat; // Not these values, back to defaults
    std::cout << "Discount: " << (totalDiscount * 100.0) << "%" << std::endl;
    std::cout << "Rooms Booked: " << roomsBooked << std::endl;
    std::cout << "Days Booked: " << daysBooked << std::endl;
    std::cout << std::setprecision(2) << std::fixed; // Back to prices
    std::cout << "Total Cost (w/o tax): $" << totalCostPreTax << std::endl;
    std::cout << "Tax: $" << finalTax << std::endl;
    std::cout << "Total Cost (with tax): $" << totalCostPostTax << std::endl;

    return 0;
}

```

Output:



The screenshot shows a terminal window with four tabs: PROBLEMS, OUTPUT, DEBUG CONSOLE, and TERMINAL. The TERMINAL tab is active. The program prompts the user for four inputs: room price, number of rooms, duration of stay, and sales tax. The user enters \$100.00, 32, 5, and 7 respectively. The program then outputs the calculated values: Single Room Price (\$100.00), Discount (35%), Rooms Booked (32), Days Booked (5), Total Cost (w/o tax) (\$10400.00), Tax (\$728.00), and Total Cost (with tax) (\$11128.00). The prompt [merlin@merlins-desktop COMP-165-0837]\$ is visible at the bottom.

```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

Please enter room price: $100.00
Please enter number of rooms to book: 32
Please enter duration of stay in days: 5
Please enter sales tax (percent): 7

Single Room Price: $100.00
Discount: 35%
Rooms Booked: 32
Days Booked: 5
Total Cost (w/o tax): $10400.00
Tax: $728.00
Total Cost (with tax): $11128.00
[merlin@merlins-desktop COMP-165-0837]$

```