

Algorithm for the first programming assignment in CS 162

This algorithm will help a user calculate the total cost of their travel housing with the appropriate fees and discounts applied.

- 1) Welcome the user
 - a) Display a welcome message
 - b) "Hello! Welcome to the Travel Housing Cost Calculator!"
- 2) Introduce the user to the program
 - a) Display an explanation of how the program works
 - b) "This program will ask you to provide the nightly rate of your chosen residence, the number of days you plan to stay, and the number of days before your trip. It will then calculate the total cost of your stay after applying the appropriate discounts and fees."
 - c) Ask the user if they would like to continue
 - d) "Would you like to continue?"
 - i) If the answer is yes, go to step 3
 - ii) Else, quit the program
- 3) Get the nightly rate from the user
 - a) Ask the user
 - b) "What is the nightly rate of your housing?"
 - c) "\$: "
 - d) Take the number in as a float
- 4) Get the number of days the user plans to stay
 - a) Ask the user
 - b) "How many days will you be staying?"
 - c) "Number of days: "
 - d) Take the number in as an integer
- 5) Get the number of days until the user's trip
 - a) Ask the user
 - b) "How many days until your trip occurs?"
 - c) "Days til trip: "
 - d) Take the number in as an integer

- 6) Display their answers back to them
 - a) "Your input was nightly cost: __, days staying: __, and days until trip: __"
 - b) Check if the user is happy with what they answered
 - c) "Is this correct?"
 - i) If no, return to step 3
 - ii) Else, continue to step 7
- 7) Check for negative numbers in any of the answers
 - a) If there is, display a message and return to step 3
 - i) "One of the answers you entered contained a negative number."
 - ii) "Please try again."
 - iii) Return to step 3
 - b) Else, continue to step 8
- 8) Calculate the base cost of the user's trip
 - a) The total cost will be equal to the amount of nights staying times the length of the trip
 - b) $\text{totalCost} = \text{nightlyRate} * (\text{numDays} - 1)$
- 9) Calculate the total discount
 - a) The total discount will add 20% if the trip is more than 5 days out and add 10% if the trip is longer than 3 days
 - b) If the trip is more than 5 days out
 - i) $\text{discount} += 0.2$
 - c) If the trip is more than 3 days in length
 - i) $\text{discount} += 0.1$
- 10) Calculate the discounted cost of the trip
 - a) $\text{totalCost} *= (1 - \text{discount})$
- 11) Calculate the total fee
 - a) Calculate cleaning fee
 - i) If the stay is more than 3 days, add \$50
 - ii) $\text{totalFee} += 50.00$
 - iii) If not, there is nothing to add
 - b) Calculate the service fee (1% of the total cost)
 - c) $\text{totalFee} += \text{totalCost} * 0.01$
- 12) Calculate the result
 - a) $\text{totalCost} += \text{totalFee}$

13) Display the result to the user

a) "The total cost for your trip will be \$____"

14) Ask the user if they would like to repeat this process

a) "Would you like to start over?"

i) If the answer is yes, return to step 3

ii) If the answer is no, display a thank the user and quit

iii) "Thank you for using our application!"

iv) Terminate program