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*CS 155*

*Project 1*

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Project 1 Design Document

In this program, we are trying to create a solution to calculate gratuity between a certain amount of people. In this case, the gratuity will be 22% of the bill. The program will take an input from the user; the inputs will include the amount of the bill, and then how many people will be splitting the bill. The program will then output the tip amount (22%), the new total of the bill with the included tip, and how much each person owes. Keep in mind that the minimum input for the amount of people splitting the bill is 1.

**Program Inputs**

* Bill amount
  + billAmount
  + Positive “Double” value is only acceptable type of input
* Number of people splitting the bill
  + numPeople
  + Positive integer value is only acceptable type of input

**Program Outputs**

* Amount of the tip
  + tipAmount
  + Note: This value will be set as a “double” due to the possibility of the output being a decimal. The output should only contain up to 2 decimal points.
* New bill total
  + newTotal
  + Note: This value will be set as a “double” due to the possibility of the output being a decimal. The output should only contain up to 2 decimal points.
* How much each person owes
  + splitAmount
  + Note: This value will be set as a “double” due to the possibility of the output being a decimal. The output should only contain up to 2 decimal points.

**Test Plan**

Make sure that all outputs (tipAmount, newTotal, splitAmount) all turn out with only up to 2 decimal points. Also make sure that all outputs (including the prompts) are in the correct order and allow an input after they are displayed. Make sure that all calculations are correct as well.

**Solution Overview**

First, include all needed libraries (in this case it will be “iostream” and “iomanip”). Then include the std namespace to save time while writing inputs and outputs.

To start the actual program, make sure you include a main function. You will then include all variables (billAmount, numPeople, timAmount, newTotal, splitAmout) with the correct classification. You will then start with an output function to ask for the amount of the bill followed by an input going to the “billAmount” variable. Then you will give another output asking for the number of people splitting the bill followed by an input going to the “numPeople” variable. This is where you will then start making your calculations for each upcoming output. For the “tipAmount”, make sure you add on 22% of the original bill. Then you will display the 22% of the bill, AND the new total in separate inputs. You will then make a calculation to split the bill into the amount of people prompted by the user. Then you will display this new split total.

**Algorithm Flowchart**

Diagram

Description automatically generated