Project 1 Design Document

Program requirements:

A local cinema must send 80% of their ticket receipts to the movie distributor. To make life easier for the manager, this program will print an invoice for weekly ticket income and profits for a given movie. The program will simply ask the user for the name of the movie, then will continue to ask how many adult and children tickets were sold. Once the user inserts their answers, the program gathers the inputs from the ticket sales to calculate the gross box office revenue, the distributor amount, and the net profit for the cinema. Finally, the program will layout the movie along with the income and profits for the movie. The price for adults’ tickets are $7.50 and the children are $4.75. We will now begin to code since we know our values.

Program Inputs:

* Name of the movie
  + Moviename
  + C-string ( data type – char)
  + Must insert any string of CHARACTERS for input
* Number of adult tickets sold
  + numAdultTicketS
  + data type-int
  + Must insert only positive integers for input
* Number of child tickets sold
  + numChildrensTicketS
  + data type-int
  + Must insert only positive integers for input

Program Outputs:

* Price of the adult ticket
  + Double Adultprice
  + Adultprice = 7.50
* Price of the children’s ticket
  + Double Childprice
  + Childprice = 4.75
* Gross box office revenue
  + Double greenboxrev
  + Output needs exactly two decimals with dollar symbol
  + Represents total amount of money collected from customers who bought tickets
  + greenboxrev= (AdultTicketS\* Adultprice) + (ChildrensTicketS \* Childprice)
  + Cannot surpass $99999.99
* Distributor amount
  + Double Distributoramount
  + Output needs exactly two decimals with dollar symbol
  + Represents the 80% of the gross box office revenue
  + Distributoramount = greenboxrev \* .8
* Net profit for cinema
  + Double NetProfit
  + Output needs exactly two decimals with dollar symbol
  + Represents the leftover money for the cinema after the distributor takes the 80%
  + NetProfit = greenboxrev\* .2

Test plan:

Each output (greenboxrev, Distributoramount, and NetProfit) must come out with exact two decimals places and dollar symbol. No case should have any variable with an output with more than two decimals. In that case, there are no cases where the Distributoramount came out to two decimal places. However, we should test to make sure all situations work out including extreme cases such as if no tickets were sold or if too many of the one kind of ticket is sold.

* CASE 1: greenboxrev has one decimal place, Distributoramount has one decimal place, and NetProfit has one decimal place.
  + Example : Input 55 adult tickets and 48 children’s tickets are sold.
  + The outputs should be:
    - greenboxrev=$640.50
    - Distributoramount = $512.40
    - NetProfit =$128.10
* CASE 2: greenboxrev has two decimal places, Distributoramount has NO decimal places, and NetProfit has two decimal places.
  + Example: Input 21 adult tickets and 25 chidrens tickets are sold.
  + The outputs should be:
    - greenboxrev = $276.25
    - Distributoramount = $271.00
    - NetProfit = $55.35
* CASE 3: greenboxrev has no decimal place, Distributoramount has no decimal place, and NetProfit has no decimal place.
  + Example: Input 22 adult tickets and 20 children’s tickets are sold.
  + The outputs should be:
    - greenboxrev=$260.00
    - Distributoramount =$208.00
    - NetProfit =$52.00
* CASE 4: Same amount of tickets sold.
  + Example: 50 adult tickets and 50 children’s tickets
  + The outputs should be:
    - greenboxrev = $612.50
    - Distributoramount = $490.00
    - NetProfit =$122.50
* CASE 5: No adult tickets are sold.
  + Example: Input 0 adult tickets and 40 children’s tickets are sold.
  + The outputs should be:
    - greenboxrev = $190.00
    - Distributoramount = $ 152.00
    - NetProfit =$30.40
* CASE 6: No children tickets are sold.
  + Example: Input 40 adult tickets and 0 children’s tickets are sold.
  + The outputs should be:
    - greenboxrev = $300.00
    - Distributoramount = $240.00
    - NetProfit = $60.00
* CASE 7: Greater amount of adult tickets and no children’s tickets are sold.
  + Example: input 900 adult tickets and 0 children’s tickets are sold.
  + The outputs should be:
    - greenboxrev=$6750.00
    - Distributoramount = $5400.00
    - NetProfit = $1080.00
* CASE 8: No amount of adult tickets and greater amount of children’s tickets are sold.
  + Example: input 0 adult tickets and 900 children’s tickets are sold.
  + The outputs should be:
    - greenboxrev=$4275.00
    - Distributoramount =$3420.00
    - NetProfit =$684.00

Solution Overview

To establish the project, first make sure we are using the correct program language which is C++. Once C++ is open, enter iostream, namespace std, and the main function which are the correct files from the standard C++ library.

Next, create the variable that is needed from the user and the variables that are needed to compute. The variables needed from the user are the two integers and the one string. The two integers are the number of adult tickets sold and the number of the children’s tickets sold. The string will be the movie title. The three variables that will be computed have decimals. One variable should represent the gross box office revenue, another for the distributor amount, and the last variable is for the net profit. There also needs to be two more variables for the cost of the tickets. One represents the adult ticket and the other represents children ticket. The values of these tickets will remain the same in this program.

Finally, to receive our expected solutions, the program should aske the user for the name of the movie by sending a output string. The name of the movie should be stored in a variable. The stored variable should be able to hold enough characters for any movie name. The program should then send a output asking for the number of adult tickets and children tickets sold. The number of adult tickets will be stored in a variable and the number of children’s tickets sold will be stored in another variable. Once these input variables are stored, then the variables that the computer outputs will be defined. To define the variable for the gross box office revenue is by getting the sum of the product of the number of children’s tickets sold and the price of an child ticket added to the product of the number of adults tickets and the price of an adult ticket. The variable for the distributor amount is the defined by taking the amount of the gross box office revenue times 0.8. The variable for the nets profit which is the amount left for the cinema is the gross box revenue times 0.2. This information is put in the program using the output function.

Another function is needed for each of the outputs to be guaranteed with each number carried out to exactly two decimal points. A function is also needed so that the correct numbers line up with the correct spacing and one is needed to align the cost values with the correct output sting. There need to space after the colons in each output string to make the dollar signs are in order.

Lastly, the program will end by putting the return value as zero and closing the function successfully.

A screenshot of a cell phone

Description automatically generated