Module 1 Programming Discussion

Topic Goes Here

Ashton Hellwig

February 11, 2020

Contents

List of Algorithms

1 Initial Post

1.1 Prompt:

Chapter 2 Programming Exercise 16 (Malik, 2015, §2-16c).

A milk carton can hold 3.78 L of milk. Each morning, a dairy farm ships cartons of milk to a local grocery store. The cost of producing one liter of milk is $0.38, and the profit of each carton of milk is $0.27. Write a program that does the following:

a. Prompts the user to enter the total amount of milk produced in the morning.

b. Outputs the number of milk cartons needed to hold milk. (Round your answer to the nearest integer.)

c. Outputs the cost of producing milk.

d. Outputs the profit for producing milk.

1.2 Initial Post

Below is the code snippet used to create the solution to *Chapter 2's Programming Exercise 16* (Malik, 2015, §2-16c). The snippet for `general_functions::pauseprompt();` is also included as an alternative to `system('pause');`. The source header file is attached and displayed below.

```
1  //===----------------------------------------------------------------------===//
2  ///
3  /// \file
4  /// This file contains the main function to run the program.
5  ///
6  //===----------------------------------------------------------------------===//
7
8  #include <iostream>
9
10 using namespace std;
11
12 /**
13  * \brief Prompts the user to press <RET> to continue running the
        program.
14  *
15  * \return int Exit code.
16  */
17 int pauseprompt(); // Prototype
18 int pauseprompt() {
19   std::cout << "Press enter to continue..." << '\n';
20   std::cin.ignore();
21
22   return 0;
23 }
24
25 int main() {
26   // Declaring Variables
27   double cartonMaxVolume =
28       0.00;                    /** Maximum amount of milk per carton
          in liters */
29   double cartonProfit = 0.00; /** Profit from one carton of milk */
30   double literCost = 0.00;    /** Cost of producing one liter of milk
        */
31   double totalMilkProduced = 0.00; /** Amount of liters of milk
       produced */
32   double totalCost = 0.00;         /** Cost of producing all of the
       milk */
33   double totalProfit = 0.00;       /** Total profit earned */
```

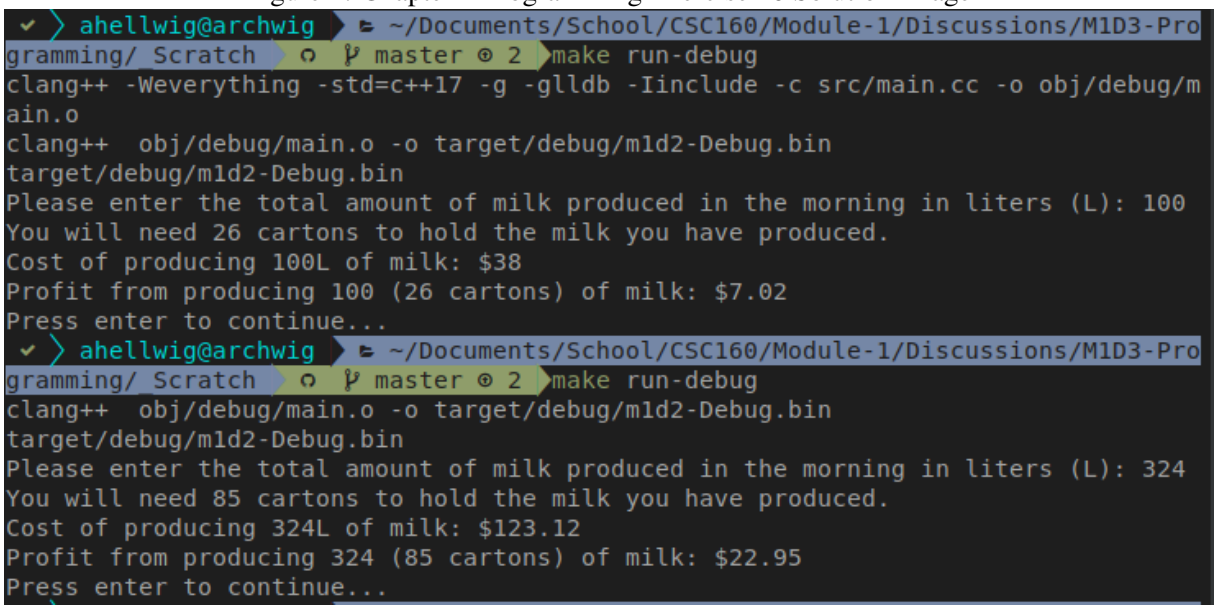
```
34    int numberOfCartonsNeeded =
35        0; // Cartons needed to hold amount of milk produced
36
37    // Assigning values to variables
38    cartonMaxVolume = 3.78000;
39    cartonProfit = 0.27000;
40    literCost = 0.38;
41
42    // Prompting user to enter amount of milk produced
43    cout << "Please enter the total amount of milk produced in the
          morning in "
44         "liters (L): ";
45    cin >> totalMilkProduced;
46
47    // Multiply the cost of milk with the number of cartons for total
          cost.
48    totalCost = literCost * totalMilkProduced;
49
50    // Calculating total cartons produced
51    numberOfCartonsNeeded = static_cast<int>(totalMilkProduced /
          cartonMaxVolume);
52
53    // Calculating total profit
54    totalProfit = static_cast<double>(cartonProfit *
          numberOfCartonsNeeded);
55
56    // Number of milk cartons needed to hold the milk
57    cout << "You will need " << numberOfCartonsNeeded
58         << " cartons to hold the milk you have produced." << '\n';
59
60    // Cost of production
61    cout << "Cost of producing " << totalMilkProduced << "L of milk: $"
62         << totalCost << '\n';
63
64    // Profit
65    cout << "Profit from producing " << totalMilkProduced << " ("
66         << numberOfCartonsNeeded << " cartons) of milk: $" <<
             totalProfit
67         << endl;
68
69    // "Press enter to continue"
70    pauseprompt(); // `system("pause")` does not work on Linux.
71
72    return 0;
73 }
```

Listing 1: main.cc

1.2.1 Image of Compilation & Running

An image is included below to show the program compiling and then running.

Figure 1: Chapter 2 Programming Exercise 16 Solution Image



Works Consulted

Malik, D. S. (2015). *C programming: Program design including data structures* (7th ed.). Cengage Learning.