COM120

Sequential Algorithm Practice

3. A candy store wants to create a mixture of wrapped candies to sell by the pound. The sale price should be the average of the prices for three different candies in the mix. For example candy1 sells for 50 cents per pound, candy2 for $1.00 per pound and candy three for $1.50. If the mixture is equals parts of each, the average price would be $1.00 per pound of mixture. However, if the ratios vary, calculating the average price would be more complex. Using noun/verb analysis, IPO chart and pseudocode develop the algorithm. The application will ask the user for the input of three candy prices and the percentage of the total that should be found in the final mixture. All values should be displayed along with an explanation of what the values mean. Design five test cases and desk check the algorithm.

In the example above:

AveragePricePerPound = ((.33 \* .5) +(.33\*1.0) +(.34 \* 1.5))/3

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Candy1 Price  Candy2 Price  Candy3 Price  Candy1 Percent  Candy2 Percent  Candy3 Percent | Calculate “Average Price Per Pound”  Multiply each Candy Price by Candy Percentage. Add all values. Divide by three. | Candy1 Price, Candy 1 Percentage  Candy2 Price, Candy 2 Percentage  Candy3 Price, Candy 3 Percentage  Average Price per pound of mixture. |

Candy\_Calculator

PROMPT “Candy 1’s Price”

GET fCandy1D

PROMPT “Candy 1’s Final Percentage”

GET fCandy1P

SET fCandy1P/100

PROMPT “Candy 2’s Price”

GET fCandy2D

PROMPT “Candy 2’s Final Percentage”

GET fCandy2P

SET fCandy2P/100

PROMPT “Candy 3’s Price”

GET fCandy3D

PROMPT “Candy 3’s Final Percentage”

GET fCandy3P

SET fCandy3P/100

CALCULATE “Average Price Per Pound”

SET fAPPP = ((fCandy1D\*fCandy1P)(fCandy2D\*fCandy2P)(fCandy3D\*fCandy3P))/3

END

DISPLAY “Candy 1’s Price “+ fCandy1D + “ Candy 1’s Percentage ” + fCandy1P

DISPLAY “Candy 2’s Price “+ fCandy2D + “ Candy 2’s Percentage ” + fCandy2P

DISPLAY “Candy 3’s Price “+ fCandy3D + “ Candy 3’s Percentage ” + fCandy3P

DISPLAY “Average Price Per Pound: ” + fAPPP

END

Test Cases:

|  |  |  |  |
| --- | --- | --- | --- |
| Sample Data | Expected Output | Observed Output | Resolution |
| 2.50 @ 25%  5.00 @ 50%  3.33@ 25% | 1.319166666666666667 | 1.319166667 |  |
| 6.00 @ 33%  5.00 @ 33%  4.00 @ 33% | 1.65 | 1.65 |  |
| 0.50 @ 90%  9.00 @ 05%  8.00 @ 05% | 0.433333333333333333 | 0.433333333 |  |
| 0.50 @ 32%  0.80 @ 20%  0.10 @ 48% | 0.122666666666666666 | 0.122666667 |  |
| Invalid data @ inv% | Error | Error |  |