assignment Requirements for Make change program

Personal Software Process for Engineers

# Program Requirements

Use PSP2.1 to write Program 10F to calculate bills and coins necessary to supply change.

Your program should take as initial input the quantity of bills and coins available.

Your program should calculate change, based on

* a purchase price
* an amount tendered
* a supply list of bills and coins

Your program should calculate change by using the largest available bills and coins.

After each transaction, your program should update the supply list of bills and coins, based on the bills and coins tendered and the change provided.

Your program should reject any transaction in which is it not possible to supply the correct change and should leave the supply list of bills and coins unaltered.

When the program terminates, it should print the final money supply.

Thoroughly test the program. At a minimum, test your program with the following three test cases. Assume each test case starts with the supply of bills and coins in the table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Description | | | Value | | Quantity |
| $100 bill | | | $100 | | 0 |
| $50 bill | | | $50 | | 0 |
| $20 bill | | | $20 | | 0 |
| $10 bill | | | $10 | | 1 |
| $5 bill | | | $5 | | 2 |
| $1 bill | | | $1 | | 6 |
| quarter | | | $0.25 | | 2 |
| dime | | | $0.10 | | 6 |
| nickel | | | $0.05 | | 0 |
| penny | | | $0.01 | | 10 |
| **Test Case 1** | Use the information in the table below as input for Test Case 1. | | | | | | | | |
| Purchase Price | | Amount Tendered | | |
| $9.36 | | $20 bill | | |
| $6.95 | | $20 bill | | |
| $1.79 | | $10 bill | | |
| $1.79 | | $5 bill | | |
| **Test Case 1 – Expected Results** | | For Test Case 1, your program should produce the results below in any similar format. | | | | | | | |
| Purchase is $9.36 Tendered is $20.00 Change is $10.64  1 $10 bill  2 quarters  1 dime  4 pennies | | | | | |
| Purchase is $6.95 Tendered is $20.00 Change is $13.05  2 $5 bills  3 $1 bills  5 pennies | | | | | |
| No change available | | | | | |
| Purchase is $1.79 Tendered is $5.00 Change is $3.21  3 $1 bills  2 dimes  1 penny | | | | | |
| Money Supply  2 $20 bills  1 $5 bill  3 dimes | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Test Case 2** | | Use the information in the table below as input for Test Case 2. | | | | | |
| Purchase Price | Amount Tendered |
| $20.25 | $20 bill |
| $20.25 | $20 bill, quarter |
| $9.01 | $50 bill |
| **Test Case 2 – Expected Results** | For Test Case 2, your program should produce the results below in any similar format. | | | | | |
| Not enough money tendered | | |
| Purchase is $20.25 Tendered is $20.25 Change is $0.00 | | |
| Purchase is $9.01 Tendered is $50.00 Change is $40.99  1 $20 bill  1 $10 bill  2 $5 bills  3 quarters  2 dimes  4 pennies | | |
| Money Supply  1 $50 bill  6 $1 bills  4 dimes  6 pennies | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test Case 3** | Use the information in the table below as input for Test Case 3. | | | | |
| Purchase Price | Amount Tendered |
| $9.49 | $10 bill |
| $63.31 | Two $50 bills |
| $0.36 | quarter, two nickels, penny |
| $19.95 | $20 bill |
| **Test Case 3 – Expected Results** | For Test Case 3, your program should produce the results below in any similar format. | | | | |
| Purchase is $9.49 Tendered is $10.00 Change is $0.51  2 quarters  1 penny | | |
| Purchase is $63.31 Tendered is $100.00 Change is $36.69  2 $10 bills  2 $5 bills  6 $1 bills  6 dimes  9 pennies | | |
| Purchase is $0.36 Tendered is $0.36 Change is $0.00 | | |
| Purchase is $19.95 Tendered is $20.00 Change is $0.05  1 nickel | | |
| Money Supply  2 $50 bills  1 $20 bill  1 quarter  1 nickel  1 penny | | |

Document Markings

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