

## Growing Change Project

You are to "grow" a change-making program, beginning simply, but adding to it in stages, ultimately ending with one larger program (not many smaller ones).

Begin with a program to make change for a dollar, when purchasing something of a given cost (input in cents, an integer). Output the change as the number of pennies, nickels, dimes, and quarters. Show a sufficient number of test runs.

Many ways are possible to do this. You can use a repeat loop for each denomination, or you can use divide (/) and mod (%) operations.

1. Make the program more **realistic**,  
by allowing the input of any amount tendered, not just a dollar.
2. Make the program more **general**,  
by allowing the output of half-dollars and dollar bills.
3. Make the program more **robust**,  
by having it check if the cost is less than the amount tendered.
4. Make the program more **informative**,  
by writing out the amount of change as:  
"The change is 28 cents" or "The change is 2 dollars and 13 cents".
5. Make the program more **convenient**,  
by putting it into a loop and having it continue making  
change until some negative value is input.
6. Make the program **grammatically correct**,  
by writing singular and plural counts such as  
"1 quarter 0 dimes 0 nickels 3 pennies".
7. Make the program output **shorter**,  
by not writing out the zero count as:  
"1 quarter 3 pennies".
8. Make the program output more **verbose**  
by writing out the count (for up to 4) in English as:  
"one quarter two dimes four pennies".
9. Make the program output more **complete**  
by writing out the connectives also as:  
"The change is one quarter and three pennies".
10. Make the program more **user friendly**,  
by allowing input as real numbers with decimal points, such as 1.50.  
Carefull!
11. Make the program more **productive**,  
by having it keep track of the numbers of coins of each type  
(not attempting to put out any quarters if it has none).
12. Make some other improvement of your own.