

CSCI 105 Programming Assignment #1

Currency conversion task: Assuming that one US dollar can exchange for 33 Taiwanese dollars right now, your program will help people figure out the currency conversion task described below. The task is to ask the user to tell you the numbers of pennies, nickels, dimes, and quarters the user has respectively in terms of US currency, and then reports the following information to the user:

- (i) the total amount of money entirely in terms of US cents only,
- (ii) the total amount of money in terms of US dollars and cents in the standard format,
- (iii) the equivalent total entirely in terms of Taiwanese cents only, and
- (iv) the equivalent total in terms of Taiwanese dollars and cents in the standard format.

Example 1: If the user tells the program that he/she has 3 pennies, 2 nickels, 3 dimes, and 4 quarters. The program should calculate and report that

- (i) the total is 143 US cents,
- (ii) it equals 1 US dollar and 43 US cents,
- (iii) it can exchange for 4719 Taiwanese cents, and
- (iv) it equals 47 Taiwanese dollars and 19 Taiwanese cents.

Integer variables to declare, integer division, and integer modulus operation:

In your program, you should declare several variables of *int* type at least for storing and processing the information of (i) the numbers of different kinds of coins respectively, and (ii) the total amount of money entirely in terms of US cents and the equivalent amount entirely in Taiwanese cents. We use integer variables because the information involves integers only. It also allows us to conveniently determine amounts in the standard format by using the division operator `/` and the integer modulus operator `%` as shown below.

You can first calculate the total amount of money entirely in terms of US cents based on the numbers of different kinds of coins the user has, store the result in a corresponding variable you have declared, and then use `/` and `%`, (the division operator and the integer modulus operator) to help you determine the amount in the standard format of dollars and cents in US currency as shown in the following example.

Example 2: Consider what we have in *Example 1*. It is easy to calculate that all together we have 143 US cents in total. The integer arithmetic expression $(143 / 100)$ gives you 1. The integer arithmetic expression $(143 \% 100)$ gives you 43. Therefore, we know the amount of money in the standard format is 1 US dollar (the result of the integer division $143 / 100$) and 43 US cents (the result of the modulus operation $143 \% 100$).

You can also multiply the total amount entirely in US cents by 33 to get the equivalent of the total amount entirely in Taiwanese cents and then proceed in a similar fashion mentioned above to figure the amount in the standard format of dollars and cents in Taiwanese currency.

Example 3: Consider what we have in *Example 2*. All together we have 143 US cents in total. Multiply 143 by 33 and you get 4719. The integer arithmetic expression $(4719 / 100)$ gives you 47. The integer arithmetic expression $(4719 \% 100)$ gives you 19. Therefore, we know it equals 47 Taiwanese dollars (the result of the integer division $4719 / 100$) and 19 Taiwanese cents (the result of the modulus operation $4719 \% 100$).