COSC 1336
Spring 2023
<div align="center">Assignment 2: Assignment Statement</div>

[1] **Objectives**: This assignment aims to ensure everyone understands Python's basic syntax, including the Assignment Statements and related topics. The [program will help you understand the following:
- Assignment statement
- Expression (operator, precedence)
- Floating-point number, precision, rounding
- Casting and coercion
- Printing values with simple formatting
- The greedy algorithm, optimal algorithm

There is no need to use an if-statement.

[2] **Requirements**: You will write a program to simulate a cash register at a grocery store. Dealing with change in coins is a time-consuming effort, so some grocery stores have installed coin dispensers to reduce the time.

Your program should have the following statements:
- Initialization of a fixed tax rate of 8.5% (8.5 in float),
- Prompt the user for the price of purchase (a float),
- Prompt the user for cash rendered (a float),
- Calculate the price, including the tax,
- Calculate the change assuming the user entered a large enough number,
- Calculate the changes in coins (it should be <= 99 cents),
- Calculate the number of quarters, dimes, nickels, and pennies to return to the customer.
- Print all numbers along the way.

Obviously, there are many ways to give out changes. I would like you to implement the optimal solution with the least number of coins. It turns out that for this problem, a simple greedy algorithm is optimal. Here is the greedy strategy: give out the coin in decreasing values of the coins, quarters, dimes, nickels, and pennies.

I have mentioned that floating point numbers are not stored precisely in computers. You have to correct the problem of minor differences caused by imprecision. When debugging the code, I recommend you first print floating-point numbers with five digits of precision. Hint: round the numbers. The rounding of numbers will be demonstrated in class.

[3] **Output**: A sample output is given below. Your program should work for all input subject to the restriction stated. The TA will test for multiple cases with your code.

```
Price of purchase: 66.44
Price =   66.44, Total with Tax =   72.09
Total cash paid: 100.00
Total Change =   27.91
Change in Coin = 91 cents
Changes given out:
    Quarters = 3
    Dimes    = 1
    Nickels  = 1
    Pennies  = 1
```

[4] **Submission**: Submit your Python program file via the Blackboard, named "`<last name>-prog2.py`". Submissions through other forms will not be accepted. The system will continue to take the submission after the deadline. You can always resubmit up to ten times.

[5] **Deadline**: 11:59 pm, Wednesday, February 15, 2023