515 HOMEWORK 1:
STOCK MARKET RANDOM WALK

Your assignment is to create a Python program that performs a "random walk" stock market simulation. The random walk hypothesis argues that the stock prices randomly increase or decrease each day relative to their prices the previous day, and these changes in price cannot be predicted.

To perform the simulation, first ask the user for (1) the initial price of the stock and (2) how many days they would like to simulate. Then, each day, assume that the change in stock price will be random and range from a 2 percent increase to a 2 percent decrease relative to the previous day. Ensure that your program captures the daily change in stock price. In addition, also keep track of how many days the stock price increased and how many days the stock price decreased. At the end of the simulation, report (print) the new stock price and the number of days that the stock price increased and decreased.

Each time you make an adjustment to the stock price, ensure that the new price reflects an appropriate percentage change relative to the previous day. For example, suppose that your stock has an initial price of $10.00. If the stock price increases by 2 percent the first day, the new stock price is calculated as $10.00 x 1.02 = $10.20. If the stock price decreases by 2 percent the second day, then the new stock price is calculated as $10.20 x 0.98 = $9.996. In other words, ensure that the change in stock price each day is calculated based on the stock price from the previous day.

To generate a random number, first import the `random` module. Then, you can use `random.uniform(lower_bound, upper_bound)` to generate a random number for use in your analysis. For example, `random.uniform(0.95, 1.05)` would generate a random value between 0.95 and 1.05.

Once a simulation is complete, the program should ask the user if they would like to run the simulation again and allow the user to run the simulation an unlimited number of times.

Each time the user runs a simulation, also write the results of that simulation to an output CSV file called **randomwalk.csv**. Each time a simulation is run, create a new row in your CSV file containing the initial price, number of days simulated, and final price for that simulation. Your CSV file does not need to contain the data for the number of days that the stock price increased or decreased.

When submitting your assignment, please upload a Python file (.py) to Canvas. If working in Google Colab, you can export your work as a Python file under File > Download .py.

Please use the following as a template for the tool's expected functionality:

```
What is the initial price of the stock? 10
How many days would you like to simulate? 50
After 50 days, 8.83280353362247 is the new stock price.
The stock price increased 21 time(s) and decreased 29 time(s).
Would you like to perform another simulation (yes/no)? yes
What is the initial price of the stock? 20
How many days would you like to simulate? 10
After 10 days, 21.2198304752784 is the new stock price.
The stock price increased 7 time(s) and decreased 3 time(s).
Would you like to perform another simulation (yes/no)? no
```

An output file called **randomwalk.csv** should be created and resemble the following:

10	50	8.83280353
20	10	21.2198305

Some considerations as you write your code:

- You may assume that the user indicates both the initial stock price and the number of days to simulate as well-formatted numeric values.
- Ensure that your prompts and output are crisp, professional, and well-formatted. For example, ensure that you have used spaces appropriately and checked your spelling.
- Adding comments in your code is encouraged. You may decide how best to comment your code. At minimum, please use a comment at the start of your code to describe its basic functionality.