Programming with Python Assignment 1

Part a. Running Time

Build a simple calculator for runners to determine how long it will take to run a distance in miles. First, ask the user how far they will run. Next, ask the user to enter the desired pace in minutes per mile. Then, calculate how long it will take the user to complete the run, then print the results. For time, use minutes in decimal, for example 7 minutes and 30 seconds would be entered (and displayed) as 7.5. Start your program with the comment # <Firstname> <Lastname> Assignment <#><part>, for example:

John Smith Assignment 1A

and save your script with a filename like: LastnameFirstnameAsn1a.py

Your program should look similar to the example shown below.

How far will you run (in miles)? 13.1

How fast will you run (in minutes/mile; enter decimal, like 7.5 for 7:30 pace)? 7.25

It will take you 94.975 minutes to run 13.1 miles

Part b. Compound Interest Calculator

In order to calculate the future value of an investment, assuming a certain rate of interest, the following equation can be used:

$$\mathrm{E} = \mathrm{B}\left(1 + \frac{r}{f}\right)^{ft}$$

Where E is the future (ending) balance,

B is the beginning amount

r is the annual rate of interest (in decimal, e.g., 5% is .05)

f is the number of times the interest rate compounds (times per year)

t is the term of the investment (in years)

Write a program that will ask the user to input the values for the variables above, perform the calculation, and display a result to the user of the form:

An initial investment of [B], in [t] years, at an interest rate of [r]%, compounded at [f] times per year, will be worth [E]. For example: An initial investment of 1000.0, in 3 years, at an interest rate of 5.0%, compounded at 1 times per year, will be worth 1157.6250000000002.

Note that the output above has too many decimals; the formatting is not important for this assignment.

Compare your program's results to an online future value calculator, like the one here:

http://www.moneychimp.com/calculator/compound_interest_calculator.htm

For the calculator at that site, leave the annual addition amount at 0 and select ‘start’ as the ‘Make additions at’ option.

Start your program with the comment # <Firstname> <Lastname> Assignment 1B, for example:

John Smith Assignment 1B

and save your script with a filename like: LastnameFirstnameAsn1b.py

Your program should look similar to the example shown below.

Please enter the starting balance ($): 1000

Enter the term (years): 3

Enter the interest rate (%): 5

Enter the compounding frequency (times/year): 1

An initial investment of 1000.0, in 3 years, at an interest rate of 5.0% , compounded at 1 times per year,

will be worth 1157.6250000000002