Exercise 01: Introduction to Python

INSTRUCTIONS: Create a Python program that will solve the problem below. Save the file as <Surname>_ex1.py (e.g. DelaCruz_ex1.py). Submit your work on Google Classroom and turn it in. Write your name, section, and code description on the upper part of your document. Do not forget to document your work.

Problem

Milk (or Bubble or Boba) tea has been a very popular drink in the last decade (or more). Within the Elbi vicinity, one can see this display of approval just by walking around the campus or along the Grove/Raymundo area. However, one cannot deny that THEY ARE EXPENSIVE. One order can cost even more than a regular lunch or dinner meal. The same can be said about coffee but we'll focus our attention on milk teas for now. Also, we will leave the discussion on how unhealthy they are out of this exercise.

Create a Python program that will show the financial impact of sustaining one's milk tea buying habit. Your program should:

1. **Allow the user to specify their milk tea buying frequency in a week.** In the example below, this would be 3 times a week.
2. **Allow the user to specify the price of their usual milk tea order.** In the example below, this would be Php 100.
3. **Show the user how much they will be spending on milk tea per year.** In the example below, the total cost per year is Php 15,600.
4. **Show the user the saving vs. spending impact of their habit using 1, 5, 10, 20, and 40 year timeframes.**

Assumptions:

1. Interest rate is 4.00% APY. As of this writing, this figure is on the conservative (non-promotional) side of published interest rates from digital banks in the Philippines . Most are even higher but only effective for a limited (promotional) time.
2. Deposits are made at the end of the periodic year.
3. Interest amounts are calculated/compounded at the end of the periodic year.

HINT:

Formula for Future Value (with Periodic Deposits and Annual Compounding):

$$FV = PMT\left[\frac{(1+r)^t - 1}{r}\right]$$

where

FV is the Future Value

PMT is the amount of periodic deposit

r is the interest rate or Annual Percentage Yield (APY) in decimal form

t is the number of years that compounding will happen

Example

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How many times in a week do you buy milk tea? 3
How much does your milk tea order typically cost? 100

The total amount you will spend on milk tea per year is Php 15600.

If you save this money every year in a high-yield bank account earning 4% APY,
you would have earned an extra
        Php 15600 in 1 year (vs. spending Php 15600),
        Php 84494 in 5 years (vs. spending Php 78000),
        Php 187295 in 10 years (vs. spending Php 156000),
        Php 464538 in 20 years (vs. spending Php 312000), and
        Php 1482398 in 40 years (vs. spending Php 624000).
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Reference:

Hazell, A. (2022, October 30). *Future Value Formula and Calculator*. https://www.thecalculatorsite.com/articles/finance/future-value-formula.phpe