CMPS 150
Fall 2021
Programming Assignment #1

Date Assigned: Thursday, September 9, 2021
Due Date: 11:55 PM, Tuesday, September 14, 2021

Objectives:
- use the Python IDLE environment, input/processing/output method, numeric operators

1) Include the following information as comments at the beginning of your source code. Name it **`pa1.py`**
BE SURE it ***lines up*** nicely as you see it below.

```
# Author:           Type-Your-Name
# ULID:             Type-Your-ULID
# Course/Section:   CMPS 150 – Lecture Section # ___
# Assignment:       pa1
# Date Assigned:    Thursday, September 9, 2021
# Date/Time Due:    Tuesday, September 14, 2021 -- 11:55 pm
#
# Description:      This program uses basic numeric operators to calculate the number of
#                   times a tire rotates over a given distance. It also computes the
#                   travel time for the specified distance. The needed input is provided
#                   by the user.
#
# Certification of Authenticity:
# I certify that this assignment is entirely my own work.


# Ask the user for the needed input:
#     - vehicle make and model
#     - tire diameter in inches
#     - distance traveled in miles
#     - average driving speed in mph

# Calculate the tire circumference.

# Convert the distance traveled from miles to inches (5,280 feet = 1 mile).

# Compute the number of exact and approximate tire rotations

# Compute the travel time as a real (floating point) value.

# Display the results (see sample run)
```

2) Program Description

This program calculates the number of times a tire rotates over a given distance. Additionally, it also computes the amount of time it will take for the car to travel that distance. The code prompts the user to enter the following data:

- Make and model of the car being driven
- Diameter of the vehicle's tire (inches)
- Total distance the vehicle traveled (miles)
- Average driving speed (miles per hour).

Using this information, the program then computes:

- Tire's circumference
- Number of times the tire rotated over the given distance (exact and approximate values)
- Time it takes to travel this distance – displayed as a decimal value

The calculations required are determined by these equations:

- $Tire\ circumference\ in\ inches = 3.1416 \times tire\ diameter\ in\ inches$
- $Exact\ number\ of\ tire\ rotations = (distance\ traveled\ \boldsymbol{in\ inches}) \div (tire\ circumference\ in\ inches)$

  (To find the approximate number of rotations, use this equation with integer division.)
- $Travel\ time\ in\ hours = (distance\ in\ miles) \div (speed\ in\ mph)$

See sample run for all data that should be output.

3) Sample Runs

Sample Run #1:

```
Enter the make and model of the vehicle: Toyota Camry
Enter the tire diameter (inches): 17
Enter the distance traveled (miles): 150
Enter average driving speed in mph: 55


Summary of travel information for Toyota Camry :
-------------------------------------------------
Tire size: 17 inches
Tire circumference: 53.407199999999996 inches
Distance traveled: 150 miles  ( 9504000 inches )
Speed traveled: 55 mph


Number of Tire Rotations:
-------------------------------------------------
   Exact:  177953.53435491846
   Approx: 177953.0

It will take 2.727272727272727 hours to travel 150 miles
```

Input by the user is indicated by text that is ***bold, underlined & italicized***. NOTE: It will not be bold, underlined, and italicized when YOU run your program.

HINT: To align the data in your output, add spaces to the front of the text inside the quotation marks.

Sample Run #2:

```
Enter the make and model of the vehicle: Ford Expedition
Enter the tire diameter (inches): 22
Enter the distance traveled (miles): 350
Enter average driving speed in mph: 70


Summary of travel information for  Ford Expedition :
-------------------------------------------------
Tire size: 22 inches
Tire circumference: 69.1152 inches
```

```
Distance traveled: 350 miles  ( 22176000 inches )
Speed traveled: 70 mph


Number of Tire Rotations:
-------------------------------------------------
   Exact:  320855.614973262
   Approx: 320855.0

It will take 5.0 hours to travel 350 miles
```

Sample Run #3:

```
Enter the make and model of the vehicle: Volkswagen Beetle
Enter the tire diameter (inches): 17
Enter the distance traveled (miles): 25
Enter average driving speed in mph: 40


Summary of travel information for Volkswagen Beetle :
-------------------------------------------------
Tire size: 17 inches
Tire circumference: 53.407199999999996 inches
Distance traveled: 25 miles  ( 1584000 inches )
Speed traveled: 40 mph


Number of Tire Rotations:
-------------------------------------------------
   Exact:  29658.92239248641
   Approx: 29658.0

It will take 0.625 hours to travel 25 miles
```

4) *Upload to Moodle*

Get in a browser and login to Moodle.

Go to your Lecture section on the Moodle site.

Click on the link for submission of Programming Assignment #1.

Select to "Add a Submission" then "Upload a File"
Select to "Choose a File" and go about the process of browsing/finding "**`pa1.py`**" on the computer.
Select to "Upload this File"

When returned to the Upload screen, MAKE SURE to click on the "Save Changes" button.

You will be returned to the "Programming Assignment #1" screen.
This time you should see your source code file listed on it.

4. Logout of Moodle

You can turn in programs
up to 24 hours late for a maximum of 75% credit
or up to 48 hours late for a maximum of 50% credit