**Practice Project 1: How to Create and Use Variables**

This practice project will help you to master how to create and use variables to solve real-world problems.

1. You want to calculate the profit that your company made this year. Assuming that the revenue for your company is $ 100,000 and the total cost incurred by your company is $45,000.
2. Create a variable called **revenue** and assign it a value of 100,000
3. Create a variable, **cost,** and assign it the value of 45000
4. Create a variable, **profit,** as the difference between the values of **revenue** and **cost.** That means **profit** is equal to **revenue** minus **cost**.
5. Print or display the value of the variable, **profit**

**Screenshot your code with output and paste it here**

1. Convert two days to minutes by converting days to minutes 2 to hours, then hours to minutes.
2. Create a variable called **days** and assign the value 2 to the variable.
3. Create a variable called **hours** where **hours** is **days** times 24.
4. Create a variable called **minutes** where **minutes** is **hours** times 60.
5. Print out the value of the **minutes**

**Screenshot your code with output and paste it here**

1. If the interest rate on your money for investing any amount for a year is 5%. If you invested $12000, how much interest will you get from this investment at the end of the year? How much balance will you have in your account after getting your interest given that you have not withdrawn the investment?
2. Create a variable called **interest\_rate** and assign it 5% (you need to convert 5% to fraction, that is use 5/100)
3. Create a variable called **starting\_investment** and assign it 12000
4. Create another variable called **interest** which is equal to interest rate times starting investment
5. Create another variable called **end\_of\_year\_balance** which is interest (already calculated) plus amount originally invested.
6. print the interest and the balance at the end of the year.

**Screenshot your code with output and paste it here**

1. You are traveling for vacation and filled your gas at the gas station. Your mileage at that time was 50,947. After arriving at your destination, the mileage on the odometer was 51,342. How many miles did you cover from the gas station to your destination? Assuming that the gas you consumed was 15 gallons. How many miles per gallon did you use on average?
2. Create a variable called starting\_mileage and assign it the value of the mileage at the gas station
3. Create a variable called **destination\_mileage** and assign it the final mileage value when you arrive at the destination
4. Create a variable called **miles\_travelled** and assign the value of the difference between destination mileage and starting mileage to the variable.
5. Create another variable called **gallons\_consumed** and assign the value of the gas you consumed.
6. Create another variable called **miles\_per\_gallon** and assign the value of **miles** divided by **gallons\_consumed.**

**Screenshot your code with output and paste it here**

1. Americans eat an average of 400 slices of pizza in one second. How many slices of pizza do they eat per day? Hint: you will need to create variables such as **slices\_per\_second, slices\_per\_minute, slices\_per\_hour, and slices\_per\_day**. For example, slices\_per\_minute = slices\_per\_second\*60. Slices per hour are equal to slices per minute times 60. Slices per day are equal to slices per hour times 24.

**Screenshot your code with output and paste it here**

1. A survey shows that Americans (including industries) use an average of 1700 gallons of water daily. If there are 365 days in a year, how many gallons of water do Americans use in a year?

Solve this problem using variables.

**Screenshot your code with output and paste it here**

1. The following steps calculate the balance after three years when $1000 is deposited in a savings account at 5% interest compounded annually.
2. Create a variable called **interest\_rate** and assign the value of the interest rate (5/100) to it.
3. Create a variable **balance** and assign it the value 1000
4. Create another variable called **interest** and assign the value of balance times interest rate.
5. Increase the value of the variable **balance** by 5% (use an augmented assignment). That means the new balance is the previous balance plus interest.

An example of an augmented statement is x = x + 1 or x +=1

1. Increase the value of the variable **balance** by 5% (use an augmented assignment)
2. Increase the value of the variable **balance** by 5% (use an augmented assignment)
3. Display the value of balance rounded to 2 decimal places. Hint: use the round (balance, 2) function to round it to two decimal places.

**Screenshot your code with output and paste it here**

1. Use this compounding formula to check if the amount you got after compounding interest for three years in question 7 is correct

*balance = original\_deposit\*(1 + interest\_rate)\*\*years*

*print(balance)*

Note that *original\_deposit = 1000, years = 3, interest\_rate = 0.05*

**Screenshot your code with output and paste it here**

1. The original price of your phone was 700 dollars, but it was sold to you at a discount of 20% off.

Use variables to calculate the final price of the phone, which is the **original price** minus the **discount** (where the **discount** is the original price times 20%).

**Screenshot your code with output and paste it here**

1. Now let’s repeat question 1. Instead of the programmer (you) manually assigning values to variables, you will use the input() function to collect values (of cost and revenue) from a user and assign the values to the variables. That way, you are creating a program that is more flexible in collecting any values for revenue and cost to calculate profit. For example:

revenue = input(“Please, enter the revenue: ”). Note that the input function returns a string value, so you need to convert the value to floats if you want to use the value for calculations later. So, your code may look like this:

*revenue = input(“Please, enter the revenue: ”)*

*revenue = float(revenue) #this line converts the string value you collected to a float value.*

*You could also do all of this in a single line of code, such as:*

*revenue = float(input(“Please, enter the revenue: ”)) # this works but is not a good practice as the code is difficult to read. It is better to break it into two steps as we have done above.*

Finally, your program should collect revenue and cost from a user, calculate profit as revenue minus cost, and print a statement to the user such as, “your profit is $500”. Remember to use f-string formatting in your print statement so you can plug in the values of the variable.

For example, *print (f “your profit is ${put profit variable here}”).*

**Screenshot your code with output and paste it here**