Lab 3 – Your First Python Program

Deadline: Sunday, Sep. 21th 2025 11:59 pm
Summission

- lab3_<your_name>_<SID>_q1.py
- lab3_<your_name>_<SID>_q2.py

1. (6 Pts) Lab CheckOff

Q1. (2 pts) Learn to manipulate strings

Fill the tables in the Word file of "Lab3_String_Manipulation", and submit pdf.

Q2. (2 Pts) Greeting Messages.
Write a Python program that collects a user's name and favorite hobby, then generates a personalized greeting message.

```
# Example
What is your name? Xiaohong
What is your hobby? Tennis
Hello Xiaohong! It's great to hear that you enjoy Tennis.
```

Q3. (2 Pts) Write a program to prompt the user for hours and rate per hour using input to compute gross pay.

You should use `input()` to read a string and `float()` to convert the string to a number.

For example, with 35 hours and a rate of 2.75 per hour, your program should print the pay of 96.25.

```
# Example
Enter work hours: 35
Enter rate: 2.75
Total pay: 96.25
```

2. (4 pts) Program Assignment (Submit on Canvas)

Q1. (2 pts) Mortgage calculator
You have just graduated from Westlake and have a great job! You start to consider buying a house. Houses are fairly expensive, so you might need to apply for mortage to purchase a house. In this question, we will implement a mortgate calculator for the monthly payment for your dream house.

Assume there is no interest rate for the loan. Then the monthly payment will be the total loan amount divides the loan term in month.

User Inputs. Ask the user to enter values of the following variables.
1. The cost of your dream home (*cost_of_home*)
2. The percentage of the total cost for a down payment (*portion_down_payment*)
3. The term of the loan mortgage (loan_term_year)

Notes.
o   You can assume all the input are valid floats
o   Be careful about values that represent years versus months.
o   The output should print with **four decimals**.

```
# Test Case
Enter the cost of your dream home: 1000000
Enter the percentage of the down payment: 0.25
Enter the term of the loan (in year): 30
Monthly payment: 2083.3333
```

Q2. (2 pts) Mortgage calculator v2
Let's face the fact that there is a fixed interest of loan. There are different formulas to calculate monthly payment given fixed interest rate. Here is the one that's most commonly used by banks.

$$\text{monthly\_payment} = \frac{rP}{1-(1+r)^{-N}}$$

o   P: loan principle
o   r: **monthly** interest (= yearly_interest/12)
o   N: the amount of loan term in **month** (eg. N=360 for 30 yrs loan)

User Inputs. Ask the user to enter values of the following variables.
1. The cost of your dream home (*cost_of_home*)
2. The percentage of the total cost for a down payment (*portion_down_payment*)
3. The term of the loan mortgage (*loan_term_year*)
4. The fixed yearly interet rate of the loan (*yearly_interest_rate*)

```
# Test Case
Enter the cost of your dream home: 1000000
Enter the percentage of the down payment: 0.25
Enter the term of the loan (in year): 30
Enter the yearly interested rate of the loan: 0.04
Monthly payment: 3580.6147
```