National Taiwan Normal University
CSIE Computer Programming I

Instructor: Po-Wen Chi
Due Date: Oct 19, 2021, PM 11:59

Assignment 1

Policies:

- Zero tolerance for late submission.
- Please pack all your submissions in one zip file. **RAR is not allowed!!**
- For convenience, your executable programs must be named following the rule hwXXYY, where the red part is the homework number and the blue part is the problem number. For example, hw0102 is the executable program for homework #1 problem 2.
- I only accept **PDF**. MS Word is not allowed.
- Do not forget your Makefile. For convenience, each assignment needs only one Makefile.

1.1 Print (20 pts)

Please write a program to show the following message on the screen. Do not care about colors.

```
$ ./hw0101
THE LAST BUG

"But you're out of your mind,"
They said with a shrug.
"The customer's happy;
What's one little bug?"

But he was determined.
The others went home.
He spread out the program,
Deserted, alone.

The cleaning men came,
The whole room was cluttered
With memory-dumps, punch cards.
"I'm close," he muttered.

The mumbling got louder,
```

```
Simple deduction,
"I've got it, it's right,
Just change one instruction."

It still wasn't perfect,
As year followed year,
And strangers would comment,
"Is that guy still here?"

He died at the console,
Of hunger and thirst.
Next day he was buried,
Face down, nine-edge first.

And the last bug in sight,
An ant passing by,
Saluted his tombstone,
And whispered, "Nice try."
```

1.2 Addition (20 pts)

Please write a program for a user to input two **three-digits non-negative integers** and print the calculation process.

```
$ ./hw0102
Please enter the first  number: 123
Please enter the second number: 456
   1 2 3
+) 4 5 6
--------
   5 7 9
```

Currently, you do not need to consider the case that the input is not a **three-digits non-negative integer**. The space in your output is mandatory.

1.3 Flip a Hex Number (20 pts)

Please write a program for a user to input an unsigned 16-bits integer and flip the number's hex form.

```
$ ./hw0103
Please enter an unsigned 16-bits number: 4660
Before Flip:
4660_10 = 1234_16
After  Flip:
17185_10 = 4321_16
```

Currently, you do not need to consider the case that the input is not an **unsigned 16-bits integer**.

Hint: maybe reading the **printf** manual can help you.

1.4 Acceleration (20 pts)

I believe that you all know the following equation.

$$s = v_0 t + \frac{1}{2} a t^2,$$

where

- s: shift.
- v_0: initial velocity.
- t: time.
- a: acceleration rate.

With given parameters, please write a program to calculate the shift.

```
$ ./hw0104
v_0: 1
a: 2
t: 1
--> s = 2
```

For convenience, you do not to care about the unit. All variables should be **float**.

1.5 Where is the header file? (20 pts)

In this class, I have told you why we use <stdio.h> in your codes. This implies that there is a file called <stdio.h> in your computer. Please find its location and write down how you find it. Please remove this file and re-make your code and see what happens. For your own good, I suggest you to move the file to another directory so that you can push the file back.

This is a writing assignment.

1.6 Bonus: Manual (5 pts)

In this class, I have used the following command to show the manual of **printf**.

```
$ man 3 printf
```

What does **3** mean? Is there any other number can be used in this command? If yes, please give some example.

This is a writing assignment.