Mahidol University

ITCS 201 – Fundamentals of Programming
Week 12: Lab Assignments

Name: _____ **ID:** _____

Due: today or in a lab session next week

Instructions:

- Marking lab assignments will be done in the lab
- **Compile** and **Run** your program
- **Show** and **Explain** the output and your code to the lecturer or the lab assistance.

---------- **Lab Assignments** ----------

Lab 1: Write a C program to create a mini game called Monster Hunter as the following requirement.

- Generate HP of three monsters named `boneHP`, `snotHP` and `plagueHP` with HP 50, 100 and 70 respectively.
- Ask user to input **first character** of the name of monster and *attack power* (ATK).
- Create a pointer variable name `current_monsterHP` and use it to deduct the ATK power from HP of the selected monster. (**Note:** you are not allowed to deduct the ATK power from `boneHP`, `snotHP` and `plagueHP`. You must deduct from the pointer `current_monsterHP`)

Note: if the ATK > HP, the remaining HP will be 0.

Expected Output

```
Enter the 1st character of Monster's name: b
Enter the attack power from 1 to 100: 20
Current HP: 50
Attack power: 20
Remaining HP: 30
Enter the 1st character of Monster's name: b
Enter the attack power from 1 to 100: 40
Current HP: 30
Attack power: 40
Remaining HP: 0
Enter the 1st character of Monster's name: b
Enter the attack power from 1 to 100: 20
Current HP: 0
Attack power: 20
Remaining HP: 0
Enter the 1st character of Monster's name: s
Enter the attack power from 1 to 100: 30
Current HP: 100
Attack power: 30
Remaining HP: 70
Enter the 1st character of Monster's name:
```

Lab 2: Write a C program to get THREE integer numbers as input, and then **sort these THREE integers in descending order**. You must write the following function:

```
void sort_nums(int *a, int *b, int *c)
```

that takes three pointer parameters and sorts them. At the end of the function call, the pointer `a` and `c` will store the maximum and the minimum values, respectively.

Hint: you may find the function

```
void swap(int *a, int *b)
```

that we discuss in the class useful in this exercise.

Expected Output:

```
Enter 3 integers: 2 2 3
Sorted integers: 3 2 2

Enter 3 integers: 1 3 2
Sorted integers: 3 2 1
```

Lab 3: Write a C program to compute the **mean** and the **minimum** of the input array. In particular, the `main()` function should perform as follows:

1) Read in 5 integers which will be stored in the array `num[5]`,
2) Call the function `findMean` and `findMin` to compute the mean and the minimum value of the array `num`.
3) Display the results.

You must write **two functions**: `findMean` to compute the mean and `findMin` to determine the minimum value in the array. Each function **must accept an array as one of its input arguments**.

Expected Output

```
Enter 5 integers: 39 100 -8 7 66
Mean: 40.800 and Min: -8
```

Bonus lab: Extend **Lab 3** by writing another function that determines the range (i.e., max – min) of the data in the `num` array.