CSE108 – Computer Programming Laboratory

Lab #9

Date: Monday April 08, 2019

Handin: A student with number 20180000001 should hand in three separate files named 20180000001_part1.c, 20180000001_part2.c, 20180000001_part3.c, etc. for this lab.

Part 1. [40pts] Write a program that calculates the living costs per student as well as for the entire school. You are expected to create a struct type (named COST). It must have fields for rent, bill and food. Take those values from the user along with the number of students in the school. Your program should generate the following input and output when you run the program.

Example input:

```
Enter the cost of rent, bill and foods: 700 200 250
Enter the number of people: 5
```

Example Output:

```
Total cost: 1150
Cost per student: 230
```

Part 2. [30pts] Write a complete program to add and subtract two complex numbers. The program should implement and use the following functions:

```
struct CN add_complex(struct CN a, struct CN b);
struct CN sub_complex(struct CN a, struct CN b)
```

First function adds to complex numbers while the second subtracts them. CN is a struct with two fields representing the real and imaginary part of the complex number. The input and output of your program should be as the following:

Example input:

```
Enter 1st complex number: 5 6
Enter 2nd complex number: 4 9
```

Example Output:

```
Addition: 9.0 + 15.0 i
Substraction: 1.0 - 3.0i
```

Part 3. [30] Write a program that calculates the elapsed time for a given period. The start and end time for the period are given as three numbers (hour, minute, second). For this implementation, you are expected to create a struct (name it TIME). It has three fields: seconds, minutes and hours. You should take values from the user as shown below. You must write the function:

```
difference_time(struct TIME start, struct TIME stop, struct TIME * diff)
```

and use it your implementation.

Example input:

```
Start time (h m s): 12 34 55
```

```
        Stop time (h m s): 8 12 15
```

Example Output:

```
        Time elapsed: 12:34:55 - 8:12:15 = 4:22:40
```