BASIS AND PRACTICE IN C PROGRAMMING
SPRING SEMESTER 2022

INSTRUCTOR: Prof. TAMER ABUHMED
COLLEGE OF SOFTWARE

Assignment 4

This assignment consists of 3 tasks. Guidelines for submission format are given at the end of the assignment file.

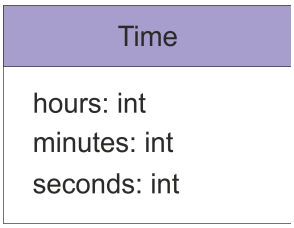
Note: Texts in green color should be inserted by the keyboard. Follow the submission, example output formats, and task description in order to get a full score.

Task 1. Write a program that adds two matrices. Calculate the matrix addition in a separate **function**. For the addition process, you are required to use **pointers**.

Example input from keyboard:

```
Enter number of rows:  3
Enter number of columns:  3
Enter the first matrix elements:
1  1  1
2  2  2
3  3  3
Enter the second matrix elements:
1  1  1
2  2  2
3  3  3
Addition of the matrices:
2  2  2
4  4  4
6  6  6
```

Task 2. Write a program that calculates the difference between two time periods using **struct** type. In the program, a user is asked to enter two time periods and you should store those time periods in structure and print the difference between those two time periods in seconds. Write the logic in a **separate** function. The structure is given below.



First example input from keyboard:

```
Enter starting time:
hours: 5
minutes: 40
seconds: 3

Enter ending time:
hours: 6
minutes: 40
seconds: 5
```

Example output 1:

```
Time difference: 5:40:3 - 6:40:5 = 3602 seconds
```

Second example input from keyboard:

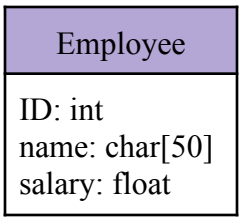
```
Enter starting time:
hours: 10
minutes: 40
seconds: 5

Enter ending time:
hours: 13
minutes: 50
seconds: 34
```

Example output 2:

```
Time difference: 10:40:5 - 13:50:34 = 11429 seconds
```

Task 3. Write a program that shows the statistics of the employee salary. Using the **struct**, declare the variables of each employee. The struct contains an employee's ID, name, and salary. You can consider that there are **4** employees in the company. In the program, the user is asked to enter the info for each employee one by one. The structure is given below.



Example input from keyboard:

```
ID: 1
Name: Frank
Salary: 1000000

ID: 2
Name: James
Salary: 1500000

ID: 3
Name: Robert
Salary: 2500000

ID: 4
Name: John
Salary: 250000
```

Example output:

```
Statistics

Total amount of money for employees:  5250000

Maximum Salary:
ID: 3
Name: Robert
Salary: 2500000

Minimum Salary:
ID: 4
Name: John
Salary: 250000
```

Submission format: Submit 3 separate C files. C files must include the implementation code of each task and comments for **important** lines of code to explain the purpose. All the files should be submitted as a **zip** file.

Name of zip file: {student ID}_{Student name}_assignment4.zip
Example: 2020712837_Frank_Thomas_assignment4.zip

Example for source code submission format in C files:

```
/*
 * Function: square_the_biggest
 * ----------------------------
 *   Returns the square of the largest of its two input values
 *
 *   n1: one real value
 *   n2: the other real value
 *
 *   returns: the square of the larger of n1 and n2
 */

double square_the_biggest (float n1, float n2) {
    if(n1 > n2) {          // check if the first number is bigger
       return n1*n1;   // if the first number is bigger, then return square of n1
    }
    return n2*n2;       // otherwise return square of n2
}
```