CSE115   Final   Date: 18 September 2021

Write your solutions on paper. scan and submit.

1) Write a C program that finds the largest number in an array of integers. The number of elements in the array is 10. The program then swaps the largest element of the array with the third element of the array.

2) Write a C program to read elements of a matrix in a 2D array and then swap the elements of the diagonal with the last row. The dimension of the matrix is 5 x 5.

3)   a) Write a function that takes as input 4 integers and returns the maximum integer. For example: If the input is 3, 4, 6, 2 the output is 6. **[5 points]**

        b) Write a function that takes as input the radius of a circle and then returns the area. Make sure to use the correct data types. **[5 points]**

4) Write a C program that prints the following pattern of n lines. For example, for n = 5, the pattern looks like this:

```
        *
       ***
      *****
     *******
    *********
```

5)   Write a structure called **HotelGuest** that has 3 members: a character array **Name** of length 100, an integer **Age**, a float **RoomPrice**. Declare 2 variables of structure type HotelGuest and initialize them with the following data: **[5 points]**
        1) Name: Tanvir, Age: 20, Room Price: 200.25
        2) Name: Shaila, Age: 21, Room Price: 320.75

6) Suppose you are hired by a software company to create a student registry of 100 students.

        a) Write a structure called **Student** that has 4 members: an integer **StudentID**, a character array **Name** of length 50, a float **CGPA** and a character array **Major** of length 20. **[5 points]**

        b) Write a function called **LowestGPA** that takes an array of structures as an input parameter. The function then prints the information of the student(s) with lowest CGPA. **[5 points]**

7) Write the output of the following commands: **[7 points]**

```
char s1[80] = "Don't think there are no solutions to the math";
char s2[80] = "there are no crocodiles";
char s3[80] = "because I saw them";
char s4[80] = "the water is calm";
char s5[80];
char s6[80] = "";
strcpy(s5,"");
strncpy(s5,s1,12);
strcat(s5, s2);
strcat(s5, " ");
strncat(s6, s3, 8);
 strcat(s6,s4);
strcat(s5,s6);
printf("%s",s5);
```

8) Write a C program that takes a string input from the user and replaces all the vowels in that string with '$'.

Sample input/output:
Please enter string: CSE115 is difficult.
Modified String: S115 $s d$ff$c$lt.