United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Final Exam:: Trimester: Summer 2022

Course Code: CSE 1111, Course Title: Structured Programming Language

Total Marks: **40** Duration: **2 hours**

[Any examinee found adopting unfair means will be expelled from the trimester/program as per UIU disciplinary rules.]

There are FIVE questions. Answer all the questions. Marks are indicated in the right margin.

Q.1 a) Write the **output** of the following code, if the **user inputs** are 1,2,3,4,5,6,7,8,9,10,.. sequentially. [4]

```
#include <stdio.h>
void main(){
    int i, j, data[5][5]={0};
    for(i=0; i<5; i++) {
        for(j=i+1; j<5; j++)
            scanf("%d", &data[i][j]);
    }
    for(i=0; i<5; i++)    {
        for(j=i; j<5; j++)
            printf("%d_", data[i][j]);
        printf("\n");
    }
}
```

b) Write a program that will take integer inputs into an **m x n** matrix, where **m** and **n** should be input by the user. Now **reverse the matrix** within itself. Reversal means **swap 1st column with the nth column, swap 2nd column with the (n-1)th column** and so on. [4]

Sample input 1	Sample output 1	Sample input 2	Sample output 2
1 2 3 4 5 6	3 2 1 6 5 4	1 2 3 4 5 6 9 8 7 6 5 4	6 5 4 3 2 1 4 5 6 7 8 9

Q.2 a) Find out the **output** of the following program. [4]

```
#include<stdio.h>
int func(int n){
    printf("%d\n", n);
    if(n%7==0) return 2;
    else if(n%2==0) func(n+2);
    else  func(n+1);
    printf("%d\n",n);
}
void main(){
    printf("%d", func(3));
}
```

b) **Mr. Y** is having a wonderful LaLiga season. He is scoring goals in almost each match. He has appointed you to calculate the statistics of this season. Now, **write a c program** based on the following requirements: [4]

i. Write a function **inputData(int goals[ ], int mins[ ], int n)**, where **n** is the number of matches played; **goals** and **mins** arrays store the number of goals scored and minutes played for all the matches.

ii. Write a function **countOfHattricks(int goals[ ], int n)**, which will find and return the number of hattricks (3 or more than 3 goals in a match) the player scored in n number of matches.

iii. In the **main()** function, **declare and initialize** the variables and arrays as needed. Also, **call** each function **at least once**.

Q.3 a) **Rahim** is suffering from stuttering. **Stuttering / stammering** is a speech disorder, which causes **involuntary repetitions of vowels, phrases, etc**. **Write a program** that will take a sentence said by Rahim and **store** that into a string. The program will also **correct the sentence** by removing the **repetitive vowels**. [4]

Sample input string	Sample output string
He is aaaa smaart boy.	He is a smart boy.
I will geeeeet great maarks.	I will get great marks.

Q.3 b) Show **manual tracing** (every change) of variables i, k, str1, and str2 of the following code segment. [4]

```
char str1[50]={'\0'}, str2[50]="BEST";
strcpy(str1, "HELLO FELLAS");
int i=strlen(str1) * 0.5;
for(int k=0; str2[k] != '\0'; ++k)
    str1[i+k]=str2[k];
strrev(str1);
strcat(str1, str2);
if(strcmp(str2, str1)>0){
    strcpy(str1, "CSE IS EASY");
}else{
    strcpy(str2, "UIU IS THE BEST");
}
```

Q.4 **Write a program** that will **store** the following information of international cricket bowlers. [8]

a) **Total wickets** taken, b) **Total matches** played, c) **Total runs** conceded, d) **Name & Country** of the bowler, e) **Average** of the bowler.

Use appropriate **data types and variable** names for all the features. The program will also have the **following functionalities**:

i. Take **input** for **100 bowlers** from the users. **Do not** take input for **average** of the bowlers.

ii. For each bowler, **calculate** the **average** and store it. The **average of a bowler** is the total runs conceded divided by the total wickets taken.

iii. **Find and print all the information** of the bowler ~~that~~ who has the **maximum average**.

Q.5 a) Show the **output** of the following program: [4]

```
void f1(int *arr, int n){
    for (int i = 0; i < n; i++)    {
        if (*(arr + i) % 2 != 0)       {
            printf("-%d-\n", *(arr + i)+i*2);
        }
    }
}
int main(){
    int arr[] = {2, 3, 6, 7, 11, 8};
    f1(arr, 6);
}
```

b) Write a program that **reads** the "**numbers.txt**" file (See the "**numbers.txt**" **file** below) that has integer numbers on separate lines in ascending order and computes the **median** of the numbers. [4]
The median of a number is defined by the **middle value** of a list of sorted numbers.

1
2
3
4
5
6
7
8
9
10

numbers.txt