CHS – Spring 2022
Computers for Engineers
(GENN004)

Faculty of Engineering

Cairo University

Lab08 – Algorithms_II

1. What is wrong in the following function implementation? Suggest a fix for it.

```
function s = myfun(x)
    y=0;
    for i=1:10
        y = y + x(i);
    end
end
```

2. What will be the value of func(func(10000)) given the following function definition?

```
function y=func(x)
    y=sqrt(x);
end
```

3. What will be the value of func1(5) given the following function definitions?

```
function y=func1(x)
    y=func2(x+5);
end
function y=func2(x)
    y= x*2;
end
```

4. Using only functions in the main script, write a program that reads customers IDs and waiting time from user and checking if all numbers are positive. The program first calculates the average waiting time. Then it prints the following data on the screen
   o The average waiting time
   o Customer ID for customers who waits for a time less than the average waiting time

   Your main script should look like:
   Wait=GetPositiveArray('Enter Waiting Time:')
   Id=GetPositiveArray('Enter ID:');
   Avg=ComputeAverage(Wait);
   fprintf('Average Waiting time = %.2f\n',Avg);
   IdLessWait=GetIDLessWait(Id,Wait,Avg); printID(IdLessWait);

   I/O Example

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Enter Waiting Time: [15 2 24 32 13 -8]
Error! Enter Waiting Time: [15 2 24 32 13 8]
Enter ID: [34 12 21 35 78 18]
Average Waiting time = 15.67
Customers who waited less than average:
34 12 78 18

5. Using only functions in the main script, write a program that reads the arrival time and the trip time of n trains as two 2D array and calculate the departure time of each train (assume no trip spans over two days). Your program should check that entered data are within valid ranges, i.e., HH is between 0 and 23, MM is between 0 and 59. Your main script should look like:

at = GetTimeArray('Enter Departure Time:');
tt= GetTimeArray('Enter Trip Time:');
dt=SubTimeArray(at,tt);
DisplayTimeArray(dt);

I/O Example

Enter Arrival Time: [5 20; 8 -10]
Error! Enter Arrival Time: [5 20; 50 10]
Error! Enter Arrival Time: [5 20; 8 10]
Enter Trip Time: [4 10; 1 66]
Error! Enter Trip Time: [-4 10; 1 55]
Error! Enter Trip Time: [4 10; 1 55]

Depart Time:
01:10
06:15