

# ESC101 - QUIZ 3 Session 1

Total points **14/15** ?

The quiz will be conducted in two sessions of 20 minutes each with a gap of 10 minutes in between two sessions.

Read all instructions mentioned in the problem statement carefully before attempting it and try to keep your answers precise. Make sure to submit your response on time. Auto-submission is not available and if you fail to submit on time, you will get zero marks. If there are any issues like internet/power outage contact your Tutor ASAP.

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0 of 0 points

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## Problem 1

5 of 5 points

You are required to solve the following problem-

Given an array of numbers you have to find the largest possible sum of any contiguous subarray (possibly empty) of a given array i.e. if  $a = [2, 4, 1, -6, 5, 1]$  the value returned should be 7 ( $a[0] + a[1] + a[2]$ ). Observe that output is always greater than or equal to 0.



Fill (1),to(5) blanks to complete the code so that it does the required task correctly.

```
int largestContSubArraySum(int A[], int n){
    // Hint: try to infer from the name of variables defined below.
    int max_till_now = -1e9, max_right_now = 0;

    for (int i = 0; i < n; i++){
        max_right_now = ____ (1) ____ + A[i];
        if ( ____ (2) ____ < max_right_now)
            max_till_now = ____ (3) ____;
        if (max_right_now < 0)
            ____ (4) ____ = 0;
    }
    return ____ (5) ____;
}
```

✓ (1)

1/1

max\_right\_now



✓ (2)

1/1

max\_till\_now



✓ (3)

1/1

max\_right\_now



✓ (4)

1/1

max\_right\_now



✓ (5)

1/1

max\_till\_now



## Problem 2

7 of 7 points

We are given a function  $f(x)$  which is unimodal on an interval  $[l, r]$ . By unimodal function, we mean : The function strictly increases first, reaches a maximum (at a single point or over an interval), and then strictly decreases. We need to find the maximum of function  $f(x)$  on the interval  $[l, r]$ . For this we use something known as ternary search (where 2 points in a range are chosen and range is modified accordingly), complete the following code (in an efficient manner) which implements this



Fill (1),to(7) blanks to complete the code so that it does the required task correctly.

```
double ternary_search(double l, double r) {  
    double eps = 1e-9;  
    while (____(1)____) {  
        double m1 = ____ (2) ____;  
        double m2 = ____ (3) ____;  
        double f1 = f(m1);  
        double f2 = f(m2);  
        if (____ (4) ____)  
            ____ (5) ____;  
        else  
            ____ (6) ____;  
    }  
    return ____ (7) ____;  
}
```

✓ (1)

1/1

r - l > eps

✗

Correct answers

r - l > eps

r-l>eps

r-l > eps

(r-l)>eps

(r - l)>eps

(r - l) > eps



✓ (2)

1/1

$l + (r - l) / 3$



✓ (3)

1/1

$r - (r - l) / 3$



Correct answers

$r - (r - l) / 3$

$r - (r - l) / 3$

✓ (4)

1/1

$f_1 < f_2$



✓ (5)

1/1

$l = m_1$



✓ (6)

1/1

$r = m_2$



✓ (7)

1/1

f(l)



### Problem 3

1 of 1 points

What will be the output of following code

Provide the output

```
#include<stdio.h>
int main(void) {
    int a[2][3] = {1, 2, 3, 4, 5};
    int i = 0, j = 0;
    for (i = 0; i < 2; i++){
        for (j = 0; j < 3; j++){
            printf("%d", a[i][j]);
        }
    }
    return 0;
}
```

✓ Output:

1/1

123450



Choose if the following claims are true or false.

✗ 4.a. The preprocessor can trap simple errors like missing declarations, nested comments or mismatch of braces in a Macro. 0/1

☒ True



☐ False

Correct answer

☒ False

✓ 4.b. If user creates a local file `stdio.h` and uses `#include "stdio.h"` in the C program then the user-defined library file will be not selected (and only the predefined library file) 1/1

☐ True

☒ False



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