THE OPEN UNIVERSITY OF SRI LANKA

Faculty of Engineering Technology

Department of Electrical and Computer Engineering

Diploma in Information Systems & Technology

ECX3265 – Programming Fundamentals

Final Examination – 2016/2017   Time Allowed: 3 hours

DATE: **29th July 2017**   TIME : **09.30 a.m – 12.30 p.m**

Instructions to Candidates

1. This is a **CLOSED BOOK** examination.
2. This question paper contains five (05) questions. (SECTION A - 1 Question and SECTION B - 4 Questions)
3. The question 01 in SECTION A is **COMPULSORY** and select **any THREE (03)** questions from SECTION B.

SECTION A

Question 01 *(Compulsory)*

a) In the array `Value` below, the maximum value is 17 and the minimum value is 4 so the range is 13 (17 - 4).

index	0	1	2	3	4	5	6	7	8	9
Value	10	9	17	7	12	8	5	15	4	6

   i. Write a function `minValue()` to find the minimum value in an array `Value`

[7 marks]

  ii. Write a function `maxValue()` to find the maximum value in an array `Value`

[8 marks]

  iii. Write a function `range()` to calculate the range of `Value` (the difference between the max and min values) using `minValue()` and `maxValue()`   **[10 marks]**

b) Write a complete C program to calculate the volume of cube. Get height, width, and length as inputs and use the function `volume` to calculate the volume of cube.   **[15 marks]**

SECTION B

Answer any THREE (03) questions

Question 02

a) Consider the code below and rewrite it in a more human readable form.

```
int a(int b){int c,d;d=0;for(c=10;c>b;c--)d=d+1; return(d);}
```

[8 marks]

b) An array num containing 50 different numbers and a variable Search containing a single number, write a complete C program to find out if the number in Search appears in the array num. **[12 marks]**

Question 03

a) Explain the structure of the following statements in C language with a suitable example.

i) Conditional statement

ii) Loop statement **[8 Marks]**

b) Write a complete C programme with a function palindrom to check whether the input word is a palindrome or not.

If the array contains a palindrome then return *"This is a palindrome"* otherwise returns, *"This is NOT a palindrome"*.

Hint:

A palindrome is a word that reads characters the same backwards as forwards, such as *madam* or *radar* **[12 marks]**

Question 04

a) The following data is stored for cricketers

First Name (20 characters), Last names (50 characters), Nationality (10 characters), Batting average (number), Bowling average (number)

Write a structure in C language named player to hold this data. **[8 Marks]**

b) Consider the following program and answer the questions below.

```c
#define H 1
char a; float b;
char c(int d, int e){
        float f;
        f = d / e;
        if( f < H ){
                b = b + f;
                return( 'y' );
        }
        else
                return( 'n' );
}
int main(){
        b = 0;
        a = 'y';
        printf( "%c", g );
        printf( "%c", c( 2, 3 ) );
}
```

In the program above write down ALL the,

     i. Integer constants

    ii. Global variables

   iii. Local variables

   iv. Relational operators

    v. Parameters

   vi. Arithmetic operators   **[12Marks]**

Question 05

a) Write C statement/s for each of the following

    i. Subtract the value of X by 1 and then subtract value of Y from X. finally assign the result to Z.

    ii. Assign the remainder of A divided by B to C and decrease the value of X.

    iii. Increase the value of X by 1 and find the remainder of X divided by Y. Assign the result to Z.   **[8 Marks]**

b) Consider the following program

```
void Function1(int num1,int num2){

    int J;

    for(J=0; J<=5; J++){

        if(num1 < Val[J] || Val[J] < num2)

            Val[J]= 1;

        else

            Val[J]= 0;

    }

}
```

Index	0	1	2	3	4	5
Val	7	6	5	4	3	2

a) Array V having values as shown in the diagram, trace the call of Function1(3,5)

[12 Marks]

--- **End** ---