Department of Statistics & Computer Science, University of Kelaniya

ACADEMIC YEAR – 2022/2023

BECS 11223 – Fundamentals of Programming

Lab Session 10

Throughout this lab, you will learn about call by reference function calls, pointers and string in C.

1. Complete the following program to fill an array with random numbers.

```
/***************************************
Include your header comment here
***************************************/

#include <stdio.h>
#include <stdlib.h>
#include <time.h>

//include the function prototypes here

int main (){
	int values[10];
	//call the function to fill the array with random numbers
	//call the display array function to display the array

	return 0;
}

/********************
Pre-Condition: int array and size of the array
Post-Condition: None
Purpose: Fill the array with random numbers
*******************/

void fill_array(int ar[], int size){
	//setting the seed to generate random numbers
	srand(time(NULL));
	for(int i = 0; i < size; i++)
	{
	   ar[i] = rand() % 1000;
	}
}

/********************
Pre-Condition: int array and size of the array
Post-Condition: None
Purpose: Display the array values
*******************/

void display_array(int ar[], int size){
	//write a code to display the array elements
}
```

Upload your completed C program into the Lab 10 – Program 01 submission folder.

2. What will be the output of the following program?

```
#include <stdio.h>

int main()
{
    int *ptr;
    int x;
    ptr = &x;
    *ptr = 0;
    printf(" x = %d\n", x);
    printf(" *ptr = %d\n", *ptr);
    *ptr += 5;
    printf(" x = %d\n", x);
    printf(" *ptr = %d\n", *ptr);
    (*ptr)++;
    printf(" x = %d\n", x);
    printf(" *ptr = %d\n", *ptr);
    return 0;
}
```

Upload the output of the program into the Lab 10 – Program 02 submission folder.

3. Write a program in C to add two numbers using pointers. (Do not assign values directly to the variables. Use pointers to access the values in the variable. Use the above program as an example.)

Upload your completed C program into the Lab 10 – Program 03 submission folder.

4. Create a C function called *doubled* that accepts three integer pointers as input and update those original integer values by multiplying its current value by 2.

Upload your completed C program into the Lab 10 – Program 04 submission folder.

5. Write a program in C to input a string and print it.

```
Test Data :
Input the string : Welcome, UoK

Expected Output :

The string you entered is : Welcome, UoK
```

Upload your completed C program into the Lab 10 – Program 05 submission folder.

6. Write a program in C to find the length of a string using library functions. (Hint: use *strlen* library function which defined in the <*string.h*> library file.)

```
Test Data :
Input the string : kelaniya

Expected Output :

Length of the string is : 8
```

Upload your completed C program into the Lab 10 – Program 06 submission folder.

7. Write a program in C to compare two strings using string library functions. (Hint: use *strcmp* library function which defined in the <*string.h*> library file.)

```
Test Data :
Check the length of two strings:
-------------------------------
Input the first string : aabbcc
Input the second string : abcdef
String1: aabbcc
String2: abcdef
Expected Output : Strings are not equal.

Check the length of two strings:
-------------------------------
Input the first string : aabbcc
Input the second string : aabbcc
String1: aabbcc
String2: aabbcc
Expected Output : Strings are equal.
```

Upload your completed C program into the Lab 10 – Program 07 submission folder.

8. Write a program in C to combine two strings using the *strcat* library function.

```
Test Data :
Input the first string : this is string one
Input the second string : this is string two

Expected Output :

After concatenation the string is :
this is string onethis is string two
```

Upload your completed C program into the Lab 10 – Program 08 submission folder.