Department of ICT
Faculty of Technology
University of Ruhuna

Programming Practicum – ICT1142 **Level 1- Semester 1**

Lab Sheet 12 **| 2022**

Objective:

The purpose of this lab session is to familiarize with *structures* in C

Exercise 01

Type and run the following program to familiar with structures.

```
#include <stdio.h>
#include <string.h>

 struct Books {
   char  title[50];
   char  author[50];
   char  subject[100];
   int   book_id;
};

int main( ) {
 /* Declare Book1 of type Book */
   struct Books Book1;                                    // Line A

   /* Book 1 specification */
   strcpy( Book1.title, "C Programming");                 //Line B
   strcpy( Book1.author, "Nuha Ali");                     //Line C
   strcpy( Book1.subject, "C Programming Tutorial");      //Line D
   Book1.book_id = 6495407;                               //Line E

      /* print Book1 info */
   printf( "Book 1 title : %s\n", Book1.title);
   printf( "Book 1 author : %s\n", Book1.author);
   printf( "Book 1 subject : %s\n", Book1.subject);
   printf( "Book 1 book_id : %d\n", Book1.book_id);

   return 0;}
```

a. Modify **Line A** to initialize the Book1 with values as follows.
   struct Books Book1={"How to C program","Deitel", "Programming Basic", 6589508};
b. Comment **Line B,C,D and E** and compile and run the program.
c. Modify the above program to read Book1's data from the keyboard and display the output.
d. Modify your program to add another different book of Books type.

Exercise 02

Define a student structure as follows;

```
struct student{
        int stdno;
        char name[20];
        char address[25];
        int age;
        char degree[25];
};
```

a. Write a C program to handle the new student with suitable data.
b. Relevant data must be read from the keyboard.
c. Output the data with the suitable headings.

Exercise 03

Type and run the given program to understand the usage of structures with **typedef** keyword.

```
#include <stdio.h>
typedef struct employee {
  char  name[50];
  char  position[50];
  char  gender;
  int   empno;
  float salary;
} emp;

void main()
{
    emp emp_data={"Sanath kumara","Clerk", 'M', 1028,55000.00};
    printf ("Employee details");
    printf("\n Name : %s\n Position : %s\n Gender : %c\n Employee No : %d\n Salary%0.2f",
emp_data.name, emp_data.position, emp_data.gender, emp_data.empno, emp_data.salary);
}
```

Modify above program to do the following

a. Declare an array called **details[ ]** to store the details of five employees.

    emp details[5];

b. Display the name of employees whose salary is greater than 25000.00.

c. Count how many employees are having clerk positions.

Exercise 04

Write a C program to do the followings;

a. Create a structure called ***Docinfo*** to store the following details of doctors in a hospital.

docNo	integer
docName	char[]
charge	double

b. In main create a structure variable called “doc” of type Docinfo

    struct Docinfo doc;

c. Create a function to store values into members of structure variable “doc”

    void store (struct Docinfo doc)

d. Create a function to display the information about doc.

    void display (struct Docinfo doc)

e. Call above functions in main and observe the output. Make any changes if necessary

f. Now modify the program to create Docinfo type array and store 3 variables of Docinfo type.

    struct Docinfo doc[3];

Use the above created two functions to store and display values of three variables in the array. Make necessary changes to functions