Department of Statistics & Computer Science, University of Kelaniya

ACADEMIC YEAR – 2022/2023

BECS 11223 – Fundamentals of Programming

Lab Session 03

Throughout this lab session, you will learn variables and primitive (basic) data types in C language.

1. Write a C program to perform the following operations. (Not: Add header comments and the program comments when necessary.)
    - Create an integer variable called as `age`.
    - Assign your age to the `age` integer variable.
    - Print the value of the `age` variable.

Upload your completed C program into the Lab 03 – Program 01 submission folder.

2. Write a C program perform the following tasks. (Not: Add header comments and the program comments when necessary.)
    - Create variables to store the following information:
        - Your birth year.
        - A/L Z-Score.
        - Your Letter grade for the A/L Physics (A, B, C).
    - Assign the values to each variable you have declared in the previous step.
    - Print the values of each variable in separate line.

Upload your completed C program into the Lab 03 – Program 02 submission folder.

3. Write a C program contains the following variable declarations and assignments:

```
int test1Score = 90;
int test2Score = 80;
int sumOfScores = test1Score + test2Score;
```

Write output statements that would produce the output below (notice that the values stored in the variables have been output):

```
Test Score 1 = 90
Test Score 2 = 80
The sum of the scores = 170
```

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

4. Write the following C program.

```
int main()
{
   int a = 25;
   float b = 45.0;
   char c = 'A';
   float sum;
   sum = a + b + c;
   printf("Result = %f\n", sum);
   return 0;
}
```

   As a multi-line comment in your program, write the answers to the following questions:
   - What is the output of the above program?
   - Explain reasons for the above output.

Upload your completed C program into the Lab 03 – Program 04 submission folder.

5. Write a C program to print the memory allocation of all the basic datatypes. Hint: Use the sizeof function to find the memory allocation of a give data type: Eg:

```
int intsize =  (int) sizeof(int);
```

Upload your completed C program into the Lab 03 – Program 05 submission folder.

6. Write a C program to find the following information:
   - Maximum and minimum number that can be stored in `int` data type.
   - Maximum and minimum number that can be stored in `float` data type.
   - Maximum and minimum number that can be stored in `double` data type.

   Hints:
   - To find the above information, you might need to include the following C standard libraries: `<limits.h>` and `<float.h>`.
   - Use the following constants to find the relevant maximum and minimum in each data types.
     `INT_MAX, INT_MIN, FLT_MAX, -FLT_MAX, DBL_MAX, DBL_MIN`

Upload your completed C program into the Lab 03 – Program 06 submission folder.