भारतीय सूचना प्रौद्योगिकी संस्थान गुवाहाटी
Indian Institute of Information Technology Guwahati
COMPUTER PROGRAMMING LAB (CS110)
ASSIGNMENTS–11

1. Create a structure `student` in C to store the following information about a student:

   - `name`, a string (an array) of 11 characters.
   - `roll`, an integer.
   - `gpa`, i.e., grade point average, a real (`double`) value.

   Now, perform the following:

   i. Write a function to print an instance of the structure. You need to pass an instance of `student` to the function. You need to use the "`.`" operator to access the member variables.

   ii. Declare a variable of `student`. Print the address of the instance. Now, print the address of each of its member variables. Print the size of the structure using the `sizeof()` operator.

   iii. Declare a array of five `student` s taking user inputs. Print the details of each student. Print the address of each of the five structure variables.

   iv. Write a function to print an instance of the structure. You need to pass the pointer of an instance of `student` to the function. You need to use the "`->`" operator to access the member variables.

2. Define a structure *point* with two integer members x and y representing x and y-coordinates. Write a function that accepts two points as parameter and returns the distance.

3. Define a structure `S` that has two members: (i) a member of type `int` and (ii) a member that is of a nested-structure, `P`. P has two member variables: (i) a member variable of type `char`, and (ii) a member variable of -`float`. Declare a variable of this structure `S`. Scan each of these member variables from the keyboard. Print each of these member variables.

4. Write a program in C to dynamically allocate an array of type `int` using `malloc` function. The size of the array is a user input. Use the `scanf` function to take user inputs initializing the array. Then, print the elements of the array.