<h1 style="text-align:center">DATA STRUCTURES I</h1>

Arrays are many variables of the same data type grouped together under the same name. Structures are like arrays except that they allow many variables of different data types to be grouped together under the same name. For example you can create a structure called student which is made up of a string for the name and an integer for the age.

struct

This allows us to build a data structure of variables. A struct is a record which comprises several fields.

Format:

struct Name of Structure

{

  data type variable1;

   data type variable2;

}

Example:

struct studentRec

{

  char name[10];

  int age;

};

NB. The above is just a declaration of a type. You must still create a variable of that type to be able to use it.

Creating a Variable of type struct

Format:

struct struct name variable name;

Example: struct studentRec StudentRecord;

Placing data into a variable of a struct and Accessing data from a variable in a struct

To access the data in the structure you must use a dot between the structure name and the variable name.

Format:

struct variable name.field name

Example 1: Placing 15 into the age field of StudentRecord

StudentRecord.age=15;

Example 2: Placing the data from the age field of StudentRecord into a variable

myage= StudentRecord.age;

Example 3: Placing John Best into the name field of StudentRecord

strcpy(StudentRecord.name,"John Best")

Arrays of Data Structures

You declare the array in the same format. The only difference is that the data type is a structure and not the basic data types such as float or int.

Example: Creating an array variable called team which has 4 data structures.

struct player

{

  char name[10];

  int age;

};

//Creating an array variable of type struct

struct player team[3];

Placing data into an array of records and Accessing data from an array of records

Format:

stuct array variable name[index].variable name

Example 1: Placing 15 into the age field of location three of an array called team which has 4 data structures.

team[3].age=15;

Example 2: Placing the data from the age field of location three of the StudentsRecord array of data structures into a variable

myage= team[3].age;

<center>**Dr. Gill's Data Structure I Notes**</center>