**Data Structures**

Structures

**What is a Structure:**

* A structure is a user defined data type which is a collection of variables of different data types under a single name.
* It becomes clumsy declaring different datatypes.
* Structures made easy.
* Represent Date
* Day
* Month
* Year
* Used to store details or records of students.

**Declaration of a Structure:**

* Struct is the keyword for declaring of a structure.

**struct** nameof\_tag {

data type member1;

data type member2;//you can declare as many member as you want

};

**struct** nameof\_tag {

data type member1;

data type member2;//you can declare as many member as you want

}variable name;//Global variable

* If you declare structure in this method you should use keyword struct when creating a struct variable .

#include<stdio.h>  
#include<string.h>  
  
**int** main() {  
 **int** day,year;  
 **char** month[50];  
 day=12;  
 strcpy(month,"june");  
 year=1999;  
 printf("%d %s %d",day,month,year);  
 **return** 0;  
}

12 june 1999

//declaring structure

**struct** date{  
 **int** day;  
 **char** month[50];  
 **int** year;  
};  
**int** main() {  
 **struct** dated1,d2;//creating structure variable  
 d1.day=12;  
 strcpy(d1.month,"june");  
 d1.year=1999;  
 printf("%d %s %d",d1.day,d1.month,d1.year);//Acessing structures  
 **return** 0;  
}

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* When you use typedef it is not necessary to use keyword struct when creating a structure variable.

#include<stdio.h>  
#include<string.h>  
  
//declaring structure  
**typedef struct** date{  
 **int** day;  
 **char** month[50];  
 **int** year;  
}date;  
**int** main() {  
 date d1,d2;//creating structure variable  
 d1.day=12;  
 strcpy(d1.month,"june");  
 d1.year=1999;  
 printf("%d %s %d",d1.day,d1.month,d1.year);//Acessing structures  
 **return** 0;  
}

**Structure with in a structure:**

**typedef struct** date{//declaring structure  
 **int** day;  
 **char** month[50];  
 **int** year;  
}date;  
**typedef struct** student{  
 **int** rollno;  
 **char** name[50];  
 **struct** date dob; //structure within a structure  
}student;  
  
**int** main() {  
 **int** i=0;  
 date d1;  
 student s1[100],s2[100];  
 **while**(i<5) {  
 s1[i].rollno=94;  
 strcpy(s1[i].name,"surya");  
 s1[i].dob.day=30;  
 strcpy(s1[i].dob.month,"June");  
 s1[i].dob.year=1999;  
 printf("%d %s %d %s %d\n",s1[i].rollno,s1[i].name,s1[i].dob.day,s1[i].dob.month,s1[i].dob.year);  
 i++;  
 }  
 **return** 0;  
}

**Pointers to structures:**

* for accessing pointer to structure we must use “->” this symbol instead of dot(.)

#include<stdio.h>  
#include<string.h>  
  
//declaring structure  
**typedef struct** date{  
 **int** day;  
 **char** month[50];  
 **int** year;  
}date;  
  
**void** printdetails(date \*details){//pointer to structure  
 printf("%d %s %d",details->day,details->month,details->year);//Acessing structures  
}  
**int** main() {  
 date d1,d2;//creating structure variable  
 d1.day=12;  
 strcpy(d1.month,"june");  
 d1.year=1999;  
 printdetails(&d1);  
 **return** 0;  
}