LECTURE NOTE 26

UNION

Union is a collection of variables of different data types, in case of union information can only be stored In one field at any one time. A **union** is a special data type available in C that enables you to store different data types in the same memory location. You can define a union with many members, but only one member can contain a value at any given time. Unions provide an efficient way of using the same memory location for multi-purpose.

Declaring Union

```
union union-name

{

data_type var-name;


data_type var-name;


};
```

The **union tag** is optional and each member definition is a normal variable definition, such as int i; or float f; or any other valid variable definition. At the end of the union's definition, before the final semicolon, you can specify one or more union variables but it is optional. Here is the way you would define a union type named Data which has the three members i, f, and str. Now, a variable of **Data** type can store an integer, a floating-point number, or a string of characters. This means that a single variable ie. same memory location can be used to store multiple types of data. You can use any built-in or user defined data types inside a union based on your requirement.

The memory occupied by a union will be large enough to hold the largest member of the union. For example, in above example Data type will occupy 20 bytes of memory space because this is the maximum space which can be occupied by character string. Following is the example which will display total memory size occupied by the above union:

Accessing a Member of a Union

```
#include <stdio.h>
#include <string.h>
union Data
{
```

```
   int i;
  float f;
   char  str[20];
};
  int main( )
{
   union Data data;
   data.i = 10;
   data.f = 220.5;
   strcpy( data.str, "C Programming");
  printf( "data.i : %d\n", data.i);
 printf( "data.f : %f\n", data.f);
printf( "data.str : %s\n", data.str);
return 0;
}
```

Dot operator can be used to access a member of the union . he member access operator is coded as a period between the union variable name and the union member that we wish to access. You would use **union** keyword to define variables of union type. Following is the example to explain usage of union:

Exercises:

1. Write a program to define a union and a structure both having exactly the same members. Using the sizeof operator, print the size of structure variable as well as union variable and comment on the result.
2. Write a program to define a structure for a hotel that has the member's mane, address, grade, number of rooms, and room charges. Write a function to print the names of the hotels in a particular grade. Also write a function to print names of a hotel that have room charges less than the specified value.