 Member functions of a class can be defined either outside the class definition or inside the class definition

**Defining A Member function Inside the Class**

**Inside the Class**: A member function of a class can be defined inside the class. However, when a member function is defined inside the class, the class name and the scope resolution operator are not specified in the function header. when the member function is defined inside the class definition it can be defined directly.Moreover, the member functions defined inside a class definition are by default inline functions

Program to perform algebraic operations using a member function methods defined within the scope of the class definition

#include<iostream.h>

#include<conio.h>

 class sample

 {

 private:

 float x;

 float y;

 public:

 void get()

 {

 cout<<"enter any two number"<<endl;

 cin >>x>>y;

 }

void disp()

 {

 cout<<"First value = " <<x<<endl;

 cout<<"Second value = "<<y<<endl;

 cout<<"sum = "<<sum()<<endl;

 cout<<"sub = "<<sub()<<endl;

 cout<<"mul = "<<mul()<<endl;

 cout<<"div = "<<div()<<endl;

 }

 float sum()

 {

 return(x+y);

 }

 float sub()

 {

 return(x-y);

 }

 float mul()

 {

 return(x\*y);

 }

 float div()

 {

 return (x/y);

 }

 };

void main()

{

 clrscr();

 sample temp;

 temp.get();

 temp.disp();

 temp.sum();

 temp.sub();

 temp.mul();

 temp.div();

 getch();

}

**Outside the Class**: Defining a member function outside a class requires the function declaration (function prototype) to be provided inside the class definition. The member function is declared inside the class like a normal function. This declaration informs the compiler that the function is a member of the class and that it has been defined outside the class. After a member function is declared inside the class, it must be defined (outside the class) in the program.

The definition of member function outside the class differs from normal function definition, as the function name in the function header is preceded by the class name and the scope resolution operator (: :). The scope resolution operator informs the compiler what class the member belongs to. The syntax for defining a member function outside the class is

return\_type class\_name :: function\_name (parameter\_list) {  // body of the member function }

To understand the concept of defining a member function outside a class, consider this example.

#include<iostream.h>

#include<conio.h>

class sam

{

 private:

 float x;

 float y;

 public:

 void get();

 void disp();

 float sum();

 float diff();

 float mul();

 float div();

};  //End of the class

void sam::get()

{

 cout<<"Enter any two numbers"<<endl;

 cin>>x>>y;

}

void sam::disp()

{

 cout<<"First value="<<x<<endl;

 cout<<"Second value="<<y<<endl;

 cout<<"Sum="<<sum()<<endl;

 cout<<"Diff="<<diff()<<endl;

 cout<<"Mul="<<mul()<<endl;

 cout<<"Div="<<div()<<endl;

}

float sam::sum()

{

 return(x+y);

}

float sam::diff()

{

 return(x-y);

}

float sam::mul()

{

 return(x\*y);

}

float sam::div()

{

 return(x/y);

}

void main()

{

 clrscr();

 sam temp;

 temp.get();

 temp.disp();

 temp.sum();

 temp.diff();

 temp.mul();

 temp.div();

 getch();

}

**Access Specifiers:**

In C++, there are three access specifiers:

Public - The members declared as Public are accessible from outside the Class through an object of the class.

Protected - The members declared as Protected are accessible from outside the class but only in a class derived from it.

Private - These members are only accessible from within the class.

**Summary**

* In this lecture we have discussed how to define member function inside and outside the class.
* We have discussed about access specifiers.

**Frequently Asked Questions**

Some of the most frequently asked questions are:

**Q1 How to define member functions outside the class**?

Defining a member function outside a class requires the function declaration (function prototype) to be provided inside the class definition. The member function is declared inside the class like a normal function. The definition of member function outside the class differs from normal function definition, as the function name in the function header is preceded by the class name and the scope resolution operator (: :).

**Q2 How to define member functions inside the class**?

A member function of a class can be defined inside the class. However, when a member function is defined inside the class, the class name and the scope resolution operator are not specified in the function header. when the member function is defined inside the class definition it can be defined directly.

**Q3 What are access Specifiers?**

There are three access specifiers

Public - The members declared as Public are accessible from outside the Class through an object of the class.

Protected - The members declared as Protected are accessible from outside the class but only in a class derived from it.

Private - These members are only accessible from within the class.