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FACULTY OF ENGINEERING & TECHNOLOGY

CSPS103: Object Oriented Programming

Lecture-11

Preeti Singh

Department of Computer Science & Engineering
Rama University, Kanpur
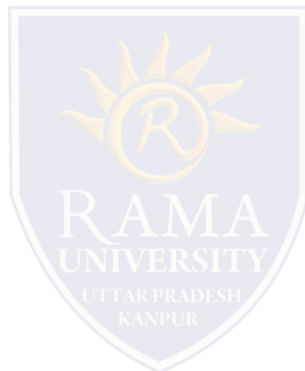
preeti.ru@ramauniversity.ac.in

In this lecture, you will learn to:

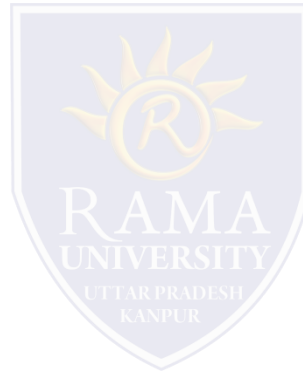❖**Class**

❖**Object**

❖**Accessing Class Members**

CLASS

❑A class is a user defined data type.

❑A class is a logical abstraction.

❑It is a template that defines the form of an object.

❑A class specifies both code and data.

❑It is not until an object of that class has been created that a physical representation of that class exists in memory.

❑When you define a class, you declare the data that it contains and the code that operates on that data.

❑Data is contained in instance variables defined by the class known as data members, and code is contained in functions known as member functions.

❑The code and data that constitute a class are called members of the class.

The general form of class declaration is:

```
class class-name {
access-specifier:
data and functions
access-specifier:
data and functions
// ...
access-specifier:
data and functions
} object-list;
```

The object-list is optional.

If present, it declares objects of the class.

Here, access-specifier is one of these three C++ keywords:

1. public
2. private
3. protected

❑ By default, functions and data declared within a class are private to that class and may be accessed only by other members of the class.

❑ The public access_specifier allows functions or data to be accessible to other parts of your program.

❑ The protected access_specifier is needed only when inheritance is involved.

Example:

```
#include<iostream.h>
#include<conio.h>
Class myclass { // class declaration
// private members to myclass
int a;
public:
// public members to myclass
void set_a(intnum);
int get_a( );
};
```

❑An object is an identifiable entity with specific characteristics and behavior.

❑An object is said to be an instance of a class.

❑Defining an object is similar to defining a variable of any data type.

❑Defining objects in this way means creating them. This is also called instantiating them.

❑Once a Class has been declared, we can create objects of that Class by using the class Name like any other built-in type variable as shown:

className objectName

Example

```
void main( ) {
myclass ob1, ob2; //these are object of type myclass
// ... program code
}
```
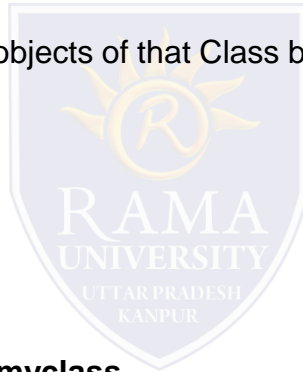
ACCESSING CLASS MEMBERS

❑The main() cannot contain statements that access class members directly.

❑Class members can be accessed only by an object of that class.

❑To access class members, use the dot (.) operator.

❑The dot operator links the name of an object with the name of a member.

❑The general form of the dot operator is shown here:

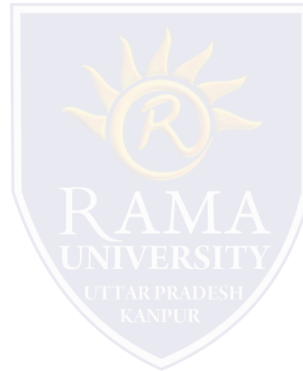**object.member**
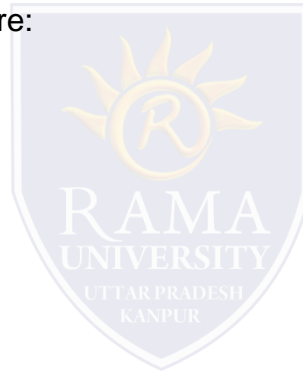
# EXAMPLE

C++ program to find sum of two numbers using classes

```cpp
#include<iostream.h>
#include<conio.h>
class A{
int a,b,c;
public:
void sum(){
cout<<"enter two numbers";
cin>>a>>b;
c=a+b;
cout<<"sum="<<c;
}
};
int main(){
A u;
u.sum();
getch();
return(0);
}
```

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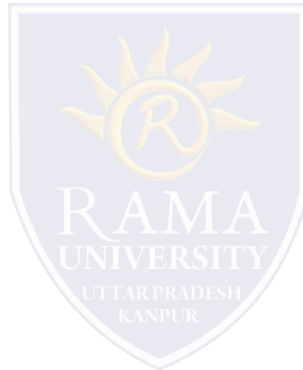- https://onlinecourses.nptel.ac.in/noc20_cs07/unit?unit=3&lesson=19
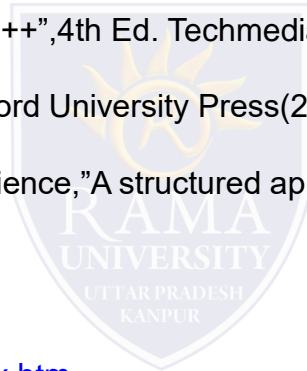
Multiple Choice Question:

Q1. Which category of data type a class belongs to?

a) Fundamental data type

b) Derived data type
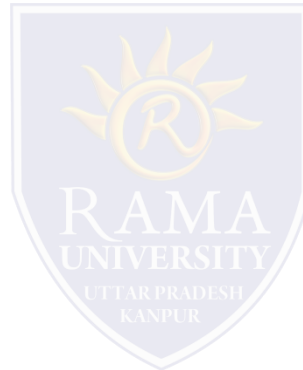
c) User defined derived data type

d) Atomic data type

Multiple Choice Question:

Q2. Which operator a pointer object of a class uses to access its data members and member functions?

   a) .

   b) ->

   c) :

   d) ::

Multiple Choice Question:

Q3. How the objects are self-referenced in a member function of that class.

a) Using a special keyword object

b) Using this pointer

c) Using * with the name of that object

d) By passing self as a parameter in the member function

Multiple Choice Question:

Q4. What is the correct syntax of accessing a static member of a Class?

```
---------------------------
Example class:
class A
{
            public:
                        static int value;
}
-------------------------
```
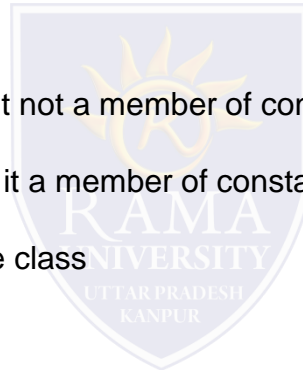
a) A.value

b) A::value

c) A->value

d) A^value

Multiple Choice Question:

Q5. What does a mutable member of a class mean?

a) A member that can never be changed

b) A member that can be updated only if it not a member of constant object

c) A member that can be updated even if it a member of constant object

d) A member that is global throughout the class

In this lecture, you learned that:

➢ Class is a template from which objects are created.

➢ Object is a real world entity.