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## FACULTY OF ENGINEERING & TECHNOLOGY

### CSPS103: Object Oriented Programming

#### Lecture-19

Preeti Singh

Department of Computer Science & Engineering  
Rama University, Kanpur

[preeti.ru@ramauniversity.ac.in](mailto:preeti.ru@ramauniversity.ac.in)

# OBJECTIVES

In this lecture, you will learn to:

- ❖ **Derived Classes**
- ❖ **Visibility modes**
- ❖ **Visibility of Inherited Members**



# DERIVED CLASSES

A Derived class is defined as the class derived from the base class.

## The Syntax of Derived class:

```
class derived_class_name :: visibility-mode base_class_name
{
    // body of the derived class.
}
```

Where,

**derived\_class\_name:** It is the name of the derived class.

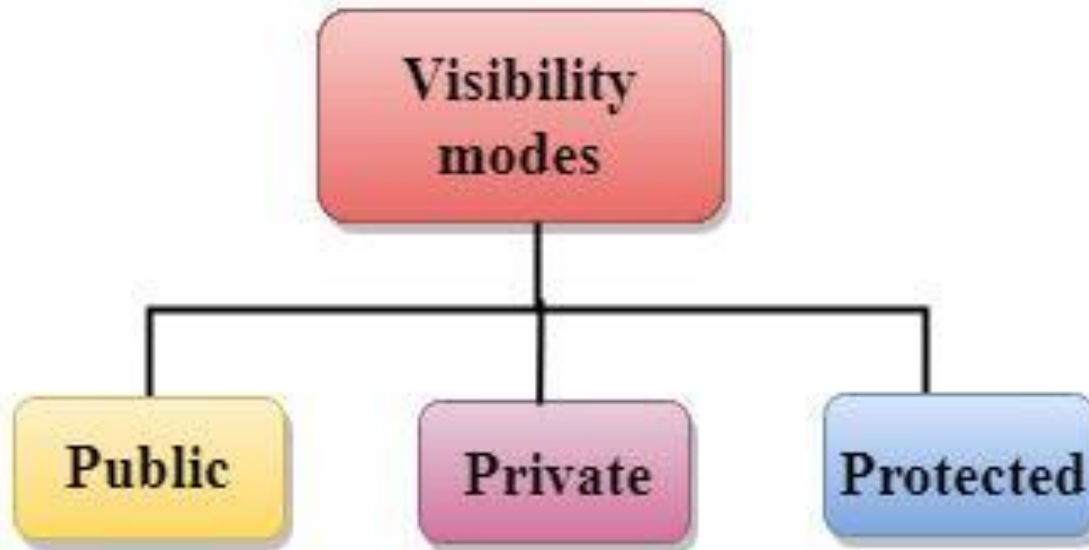
**visibility mode:** The visibility mode specifies whether the features of the base class are publicly inherited or privately inherited. It can be public or private.

**base\_class\_name:** It is the name of the base class.



# VISIBILITY MODES

Visibility modes can be classified into three categories:

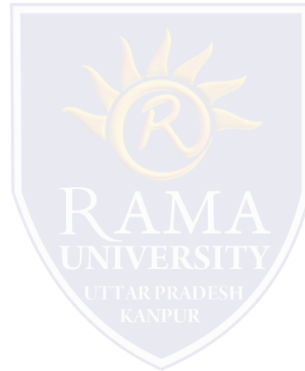


## VISIBILITY MODES (Contd.)

**Public:** When the member is declared as public, it is accessible to all the functions of the program.

**Private:** When the member is declared as private, it is accessible within the class only.

**Protected:** When the member is declared as protected, it is accessible within its own class as well as the class immediately derived from it.

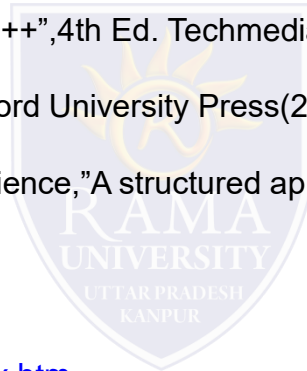


## VISIBILITY OF INHERITED MEMBERS

| Base class visibility | Derived class visibility |               |               |
|-----------------------|--------------------------|---------------|---------------|
|                       | Public                   | Private       | Protected     |
| Private               | Not Inherited            | Not Inherited | Not Inherited |
| Protected             | Protected                | Private       | Protected     |
| Public                | Public                   | Private       | Protected     |

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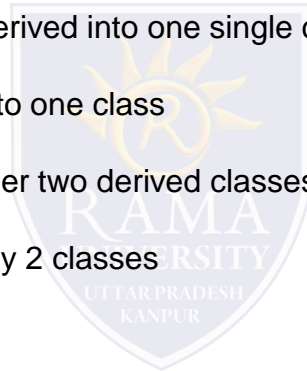


# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q1. Which among the following is correct for a hierarchical inheritance?**

- a) Two base classes can be used to be derived into one single class
- b) Two or more classes can be derived into one class
- c) One base class can be derived into other two derived classes or more
- d) One base class can be derived into only 2 classes



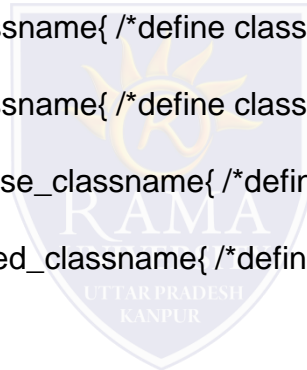


# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q2. Which is the correct syntax of inheritance?**

- a) `class derived_classname : base_classname{ /*define class body*/ };`
- b) `class base_classname : derived_classname{ /*define class body*/ };`
- c) `class derived_classname : access base_classname{ /*define class body*/ };`
- d) `class base_classname :access derived_classname{ /*define class body*/ };`



# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q3. Which type of inheritance leads to diamond problem?**

- a) Single level
- b) Multi-level
- c) Multiple
- d) Hierarchical



# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q4. Which access type data gets derived as private member in derived class?**

- a) Private
- b) Public
- c) Protected
- d) Protected and Private

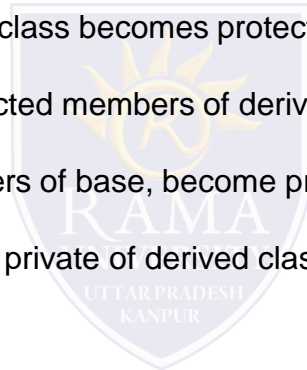


# MULTIPLE CHOICE QUESTION

## Multiple Choice Question:

**Q5. If a base class is inherited in protected access mode then which among the following is true?**

- a) Public and Protected members of base class becomes protected members of derived class
- b) Only protected members become protected members of derived class
- c) Private, Protected and Public all members of base, become private of derived class
- d) Only private members of base, become private of derived class



# Summary

## In this lecture, you learned that:

- Derived class is defined as the class derived from the base class.
- In C++, the default mode of visibility is private.
- The private members of the base class are never inherited.

