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FACULTY OF ENGINEERING & TECHNOLOGY

CSPS103: Object Oriented Programming

Lecture-18

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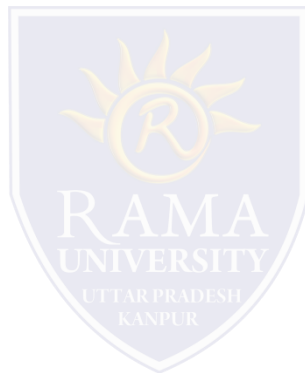
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OBJECTIVES

In this lecture, you will learn to:

- ❖ Inheritance
- ❖ Advantage of Inheritance
- ❖ Program
- ❖ Types Of Inheritance



INHERITANCE

What is Inheritance

- ❑ Inheritance is the mechanism by which one class can inherit the properties of another.
- ❑ It allows a hierarchy of classes to be build, moving from the most general to the most specific.
- ❑ When one class is inherited by another, the class that is inherited is called the base class.
- ❑ The inheriting class is called the derived class.
- ❑ In general, the process of inheritance begins with the definition of a base class.
- ❑ The base class defines all qualities that will be common to any derived class.
- ❑ In essence, the base class represent the most general description of a set of traits.
- ❑ The derived class inherits those general traits and adds properties that are specific to that class.

Syntax

```
class derived-class-name : access base-class-name{  
// ...  
}
```

ADVANTAGE OF INHERITANCE

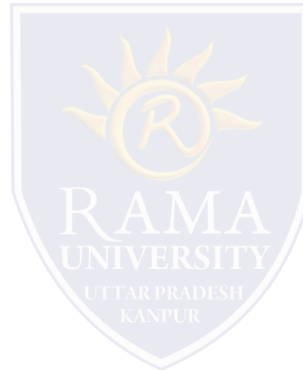
- ❑ You can reuse the members of your parent class.
- ❑ There is no need to define the member again.
- ❑ So less code is required in the class.



PROGRAM

Program to illustrate concept of inheritance

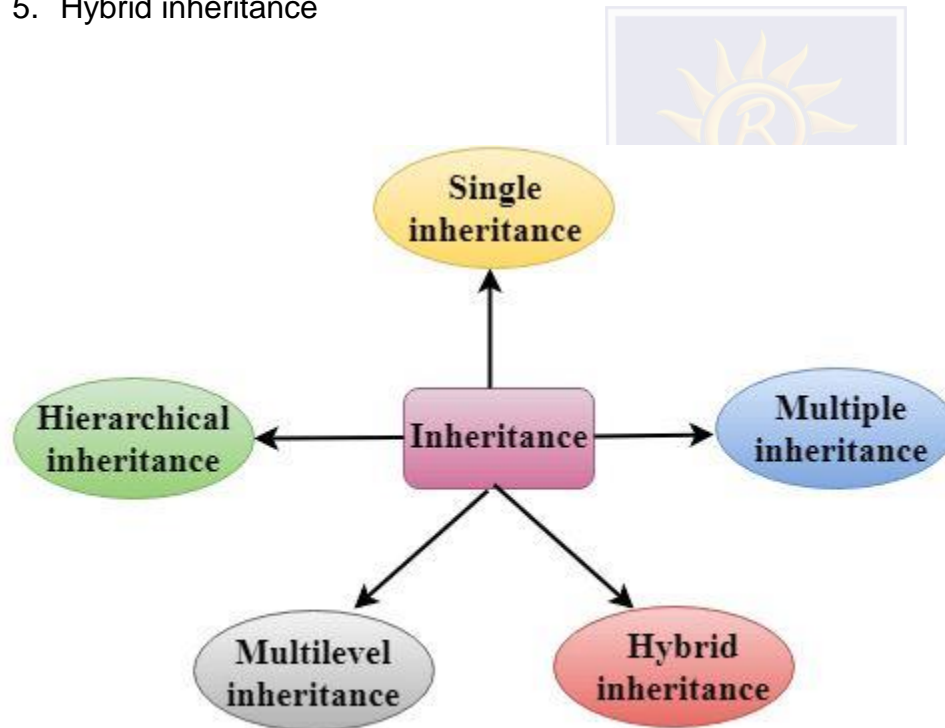
```
#include<iostream.h>
#include<conio.h>
class base //base class
{
int x,y;
public:
void show() {
cout<<"In base class";
}
};
class derived : public base //derived class
{
int a,b;
public:
void show2() {
cout<<"\nIn derived class";
}
};
int main() {
derived d;
d.show(); //uses base class's show() function
d.show2(); //uses derived class's show2() function
getch();
return 0;
}
```



TYPES OF INHERITANCE

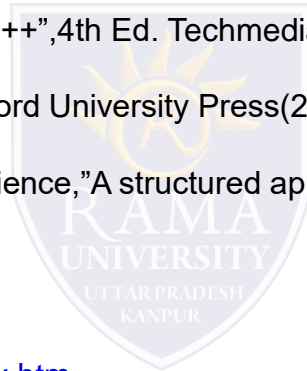
C++ supports five types of inheritance:

1. Single inheritance
2. Multiple inheritance
3. Hierarchical inheritance
4. Multilevel inheritance
5. Hybrid inheritance



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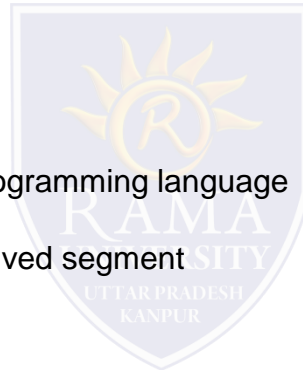


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q1. Which among the following best describes the Inheritance?

- a) Copying the code already written
- b) Using the code already written once
- c) Using already defined functions in programming language
- d) Using the data and functions into derived segment

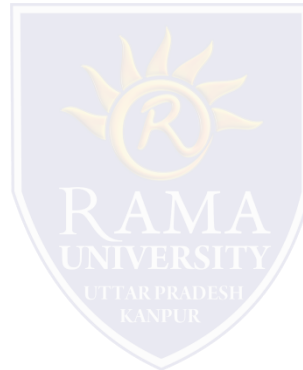


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q2. How many basic types of inheritance are provided as OOP feature?

- a) 4
- b) 3
- c) 2
- d) 1



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q3. Which among the following best defines single level inheritance?

- a) A class inheriting a derived class
- b) A class inheriting a base class
- c) A class inheriting a nested class
- d) A class which gets inherited by 2 classes

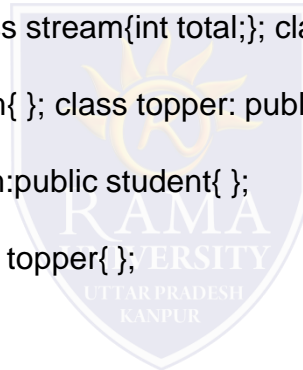


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q4. Which among the following is correct for multiple inheritance?

- a) `class student{public: int marks;}; class stream{int total;}; class topper:public student, public stream{ };`
- b) `class student{int marks;}; class stream{ }; class topper: public student{ };`
- c) `class student{int marks;}; class stream:public student{ };`
- d) `class student{ }; class stream{ }; class topper{ };`

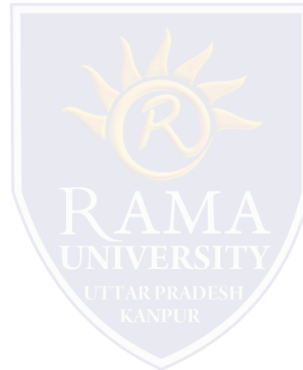


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q5. Which programming language doesn't support multiple inheritance?

- a) C++ and Java
- b) C and C++
- c) Java and SmallTalk
- d) Java



In this lecture, you learned that:

- Inheritance is a process in which one object acquires all the properties and behaviors of its parent object automatically.
- You can reuse, extend or modify the attributes and behaviors which are defined in other class.

