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FACULTY OF ENGINEERING & TECHNOLOGY

CSPS103: Object Oriented Programming

Lecture-20

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OBJECTIVES

In this lecture, you will learn to:

❖ **Single Inheritance**

❖ **Program**

❖ **Ambiguity in single Inheritance**

❖ **Single Level Inheritance Example: Inheriting Fields**



SINGLE INHERITANCE

- ❑ The process in which a derived class inherits traits from only one base class, is called single inheritance.
- ❑ In single inheritance, there is only one base class and one derived class.
- ❑ The derived class inherits the behavior and attributes of the base class.
- ❑ The derived class can add its own properties i.e. data members (variables) and functions.
- ❑ It can extend or use properties of the base class without any modification to the base class.
- ❑ We declare the base class and derived class as given below:

```
class base_class
```

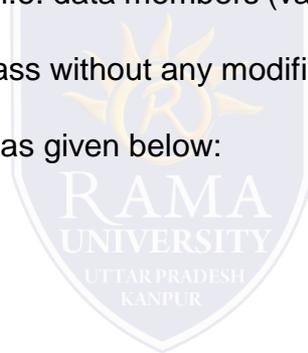
```
{
```

```
};
```

```
class derived_class : visibility-mode base_class
```

```
{
```

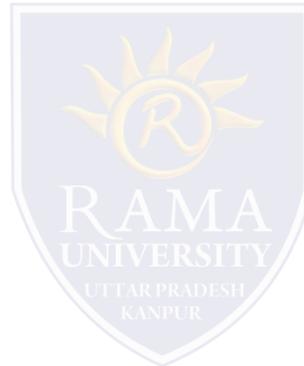
```
};
```



PROGRAM

Program to illustrate concept of single 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;
}
```



AMBIGUITY IN SINGLE INHERITANCE

❑ Whenever a data member and member functions are defined with the same name in both the base and derived class, ambiguity occurs.

❑ The scope resolution operator must be used to refer to particular class as:

object name.class name :: class member



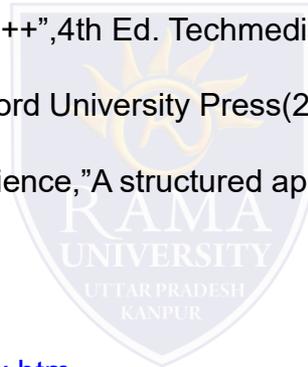
SINGLE LEVEL INHERITANCE EXAMPLE: INHERITING FIELDS

```
#include <iostream.h>
class Account {
    public:
    float salary = 60000;
};
class Programmer: public Account {
    public:
    float bonus = 5000;
};
int main(void) {
    Programmer p1;
    cout<<"Salary: "<<p1.salary<<endl;
    cout<<"Bonus: "<<p1.bonus<<endl;
    return 0;
}
```



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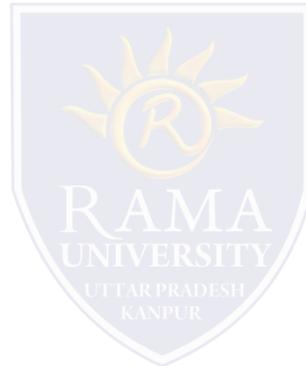


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q1. Members which are not intended to be inherited are declared as _____

- a) Public members
- b) Protected members
- c) Private members
- d) Private or Protected members



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q2. While inheriting a class, if no access mode is specified, then which among the following is true? (in

C++)

- a) It gets inherited publicly by default
- b) It gets inherited protected by default
- c) It gets inherited privately by default
- d) It is not possible



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q3. If a derived class object is created, which constructor is called first?

- a) Base class constructor
- b) Derived class constructor
- c) Depends on how we call the object
- d) Not possible

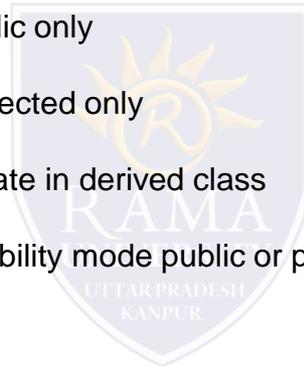


MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q4. How can you make the private members inheritable?

- a) By making their visibility mode as public only
- b) By making their visibility mode as protected only
- c) By making their visibility mode as private in derived class
- d) It can be done both by making the visibility mode public or protected



MULTIPLE CHOICE QUESTION

Multiple Choice Question:

Q5. How many types of inheritance are possible in C++?

- a) 2
- b) 3
- c) 4
- d) 5



Summary

In this lecture, you learned that:

- When one class inherits another class, it is known as single level inheritance

