FACULTY OF ENGINEERING & TECHNOLOGY

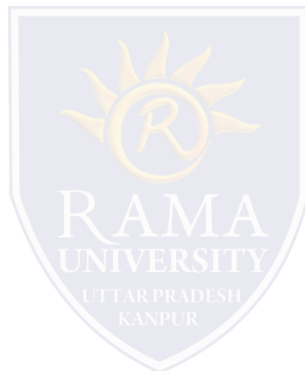# CSPS103: Object Oriented Programming

Lecture-13

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In this lecture, you will learn to:

❖**Constructor**

❖**Characteristics of constructor**

❖**Default constructor**

❖**Parameterized Constructor**

❑A constructor is a special member function whose task is to initialize the objects of its class.

❑It is special because its name is same as the class name.

❑The constructor is invoked whenever an object of its associated class is created.

❑It is called constructor because it construct the value data members of the class.

Types of constructors in C++

1) Default constructor
2) Parameterized constructor
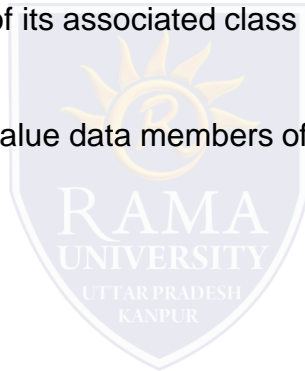
CHARACTERISTICS OF CONSTRUCTOR

The constructor functions have some special characteristics:

❑They should be declared in the public section.

❑They are invoked automatically when the objects are created.

❑They do not have return types, not even void and therefore, they cannot return values.

❑They cannot be inherited, though a derived class can call the base class constructor.
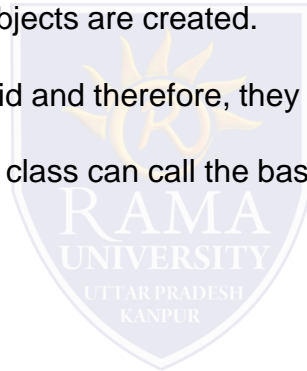
EXAMPLE

```
#include< iostream.h>

#include<conio.h>

class myclass { // class declaration

int a;

public:

myclass( ); //default constructor

void show( );

};

myclass :: myclass( ) {

cout <<"In constructor\n";

a=10;

}

myclass :: show( ) {

cout<< a;

}

int main( ) {

int ob; // automatic call to constructor

ob.show( );

return0;

}
```
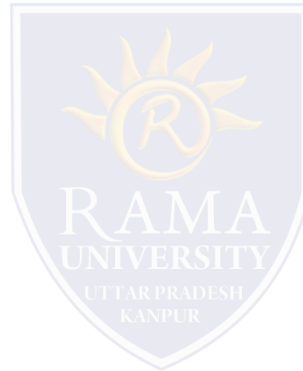
DEFAULT CONSTRUCTOR

❑The default constructor for any class is the constructor with no arguments.

❑When no arguments are passed, the constructor will assign the values specifically assigned in the body of the constructor.

❑It can be zero or any other value. The default constructor can be identified by the name of the class followed by empty parentheses.

❑If it is not defined explicitly, then it is automatically defined implicitly by the system.
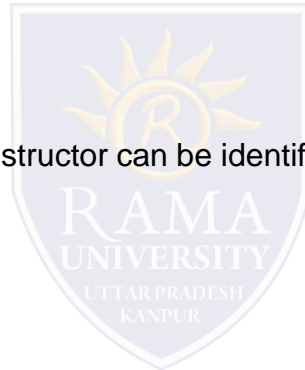
```cpp
#include <iostream.h>

class Employee

 {

   public:

      Employee()

      {

         cout<<"Default Constructor Invoked"<<endl;

      }

};

int main(void)

{

   Employee e1; //creating an object of Employee

   Employee e2;

   return 0;

}
```
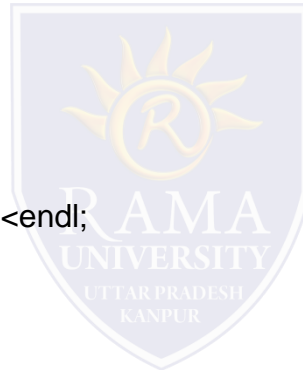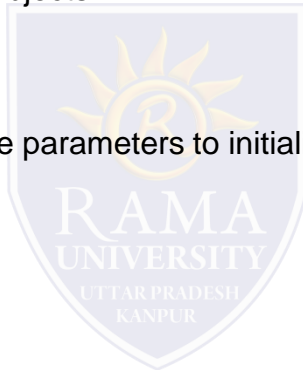
PARAMETERIZED CONSTRUCTOR

❑A constructor which has parameters is called parameterized constructor.

❑It is used to provide different values to distinct objects.

❑When you define the constructor's body, use the parameters to initialize the object.

```
#include <iostream.h>

#include<conio.h>

class myclass {

int a, b;

public:

myclass(int i, int j) //parameterized constructor

{a=i; b=j;}

void show() { cout << a << " " << b;}

};

int main() {

myclass ob(3, 5); //call to constructor

ob.show();

return 0;

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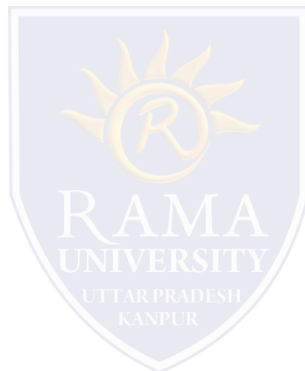
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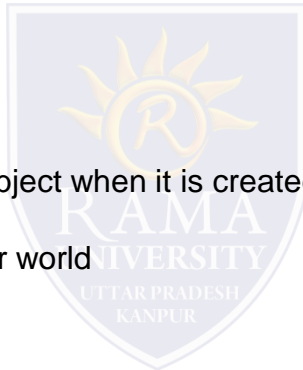- https://onlinecourses.nptel.ac.in/noc20_cs07/unit?unit=3&lesson=19
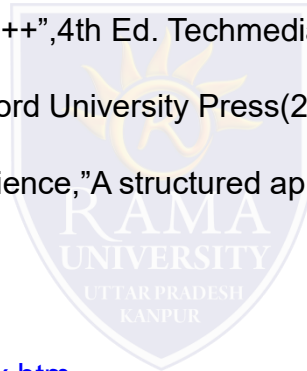
Multiple Choice Question:

Q1. What is the role of a constructor in classes?

    a) To modify the data whenever required

    b) To destroy an object

    c) To initialize the data members of an object when it is created

    d) To call private functions from the outer world
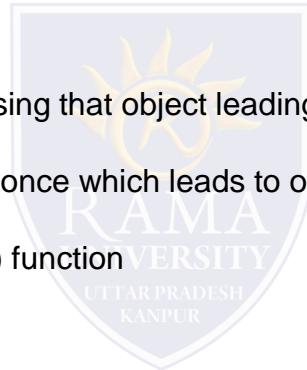
Multiple Choice Question:

Q2. Why constructors are efficient instead of a function init() defined by the user to initialize the data members of an object?

a) Because user may forget to call init() using that object leading segmentation fault

b) Because user may call init() more than once which leads to overwriting values

c) Because user may forget to define init() function

d) All of the mentioned

Multiple Choice Question:

Q3. What happens if a user forgets to define a constructor inside a class?

a) Error occurs

b) Segmentation fault

c) Objects are not created properly

d) Compiler provides a default constructor to avoid faults/errors

Multiple Choice Question:

Q4. How many parameters does a default constructor require?

    a) 1

    b) 2

    c) 0

    d) 3

Multiple Choice Question:

Q5. How constructors are different from other member functions of the class?

a) Constructor has the same name as the class itself

b) Constructors do not return anything

c) Constructors are automatically called when an object is created

d) All of the mentioned

In this lecture, you learned that:

➢ Constructor is a special method which is invoked automatically at the time of object creation.

➢ Types of constructor