19CSE201 :Advanced Programming

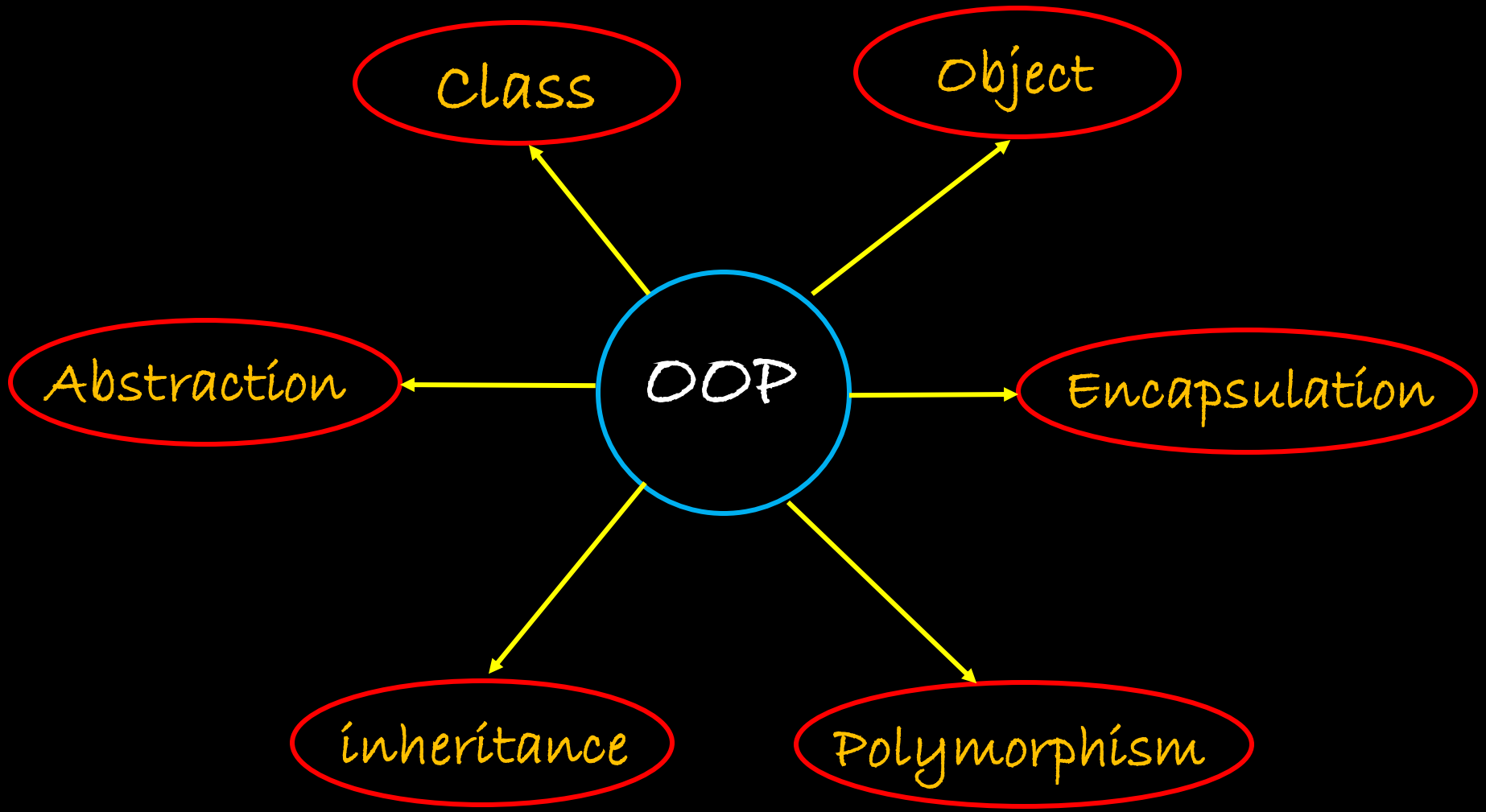
Lecture 8
OOP in C++

By
Ritwik M
Assistant Professor(SrGr)
Dept. Of Computer Science & Engg
Amrita Vishwa Vidyapeetham - Coimbatore

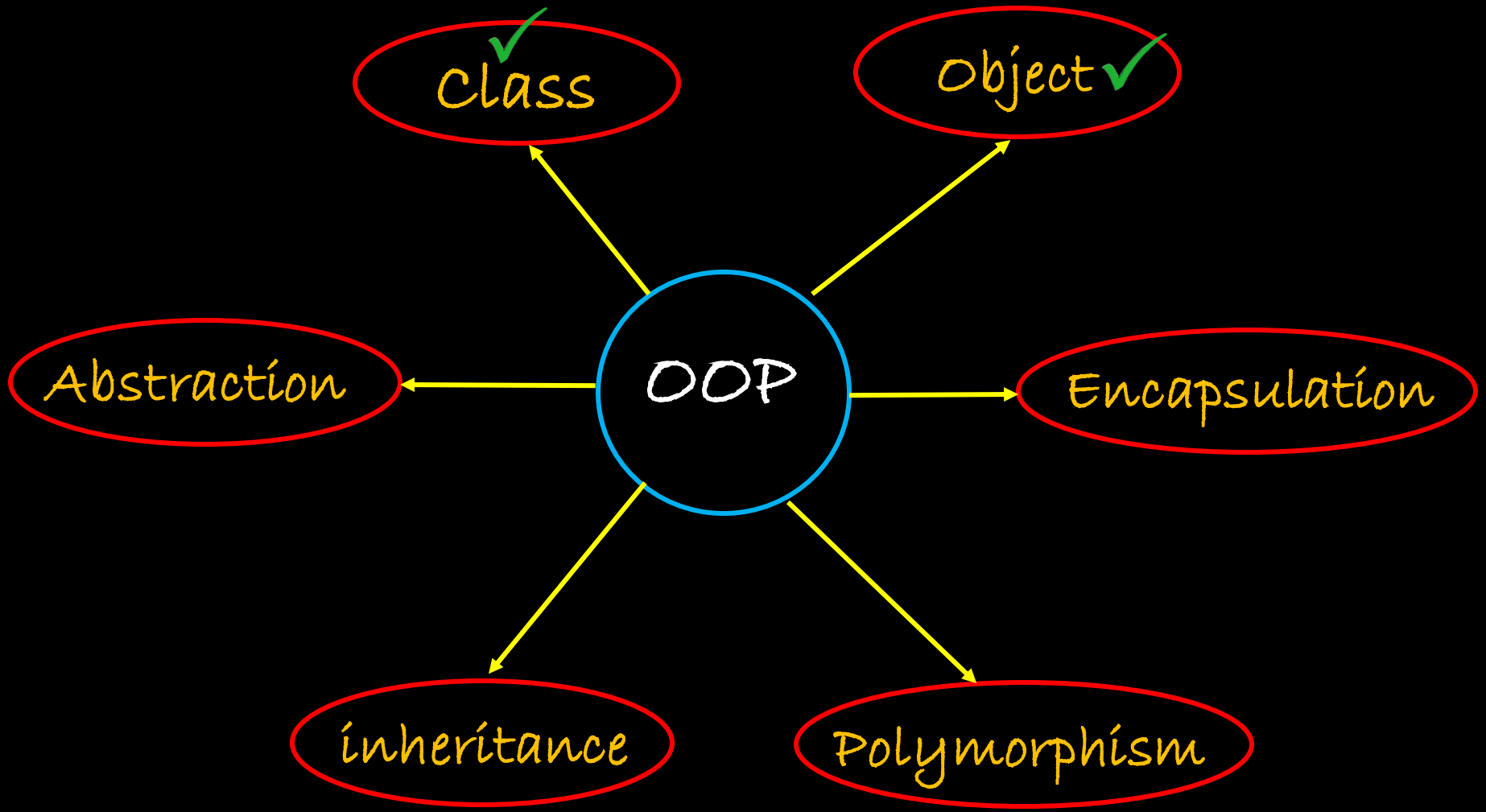
A Quick Recap

- Constructor and Destructor
- Types of Constructor
- Destructors
- Examples

OOP overview



OOP overview



Abstraction and Encapsulation

- Abstraction
  - Abstraction is an OOP concept that focuses only on relevant data of an object.
  - It hides the background details and emphasizes the essential data points for reducing the complexity and increase efficiency.
  - It generally retains only information which is most relevant for that specific process - focus on the idea instead of actual functioning.
- Encapsulation
  - Encapsulation is a process of wrapping the data and the code, that operate on the data into a single entity.
  - Assume it is a protective wrapper that stops random access of code defined outside that wrapper.

Example - Abstraction

```
class Summation {
private:
    // private variables
    int a, b, c;
public:
    void sum(int x, int y)
    {
        a = x;
        b = y;
        c = a + b;
   cout<<"Sum of the two number is : "<<c<<endl;
    }
};
```

```
int main()
{
    Summation s;
    s.sum(5, 4);
    return 0;
}
```

Example - Encapsulation

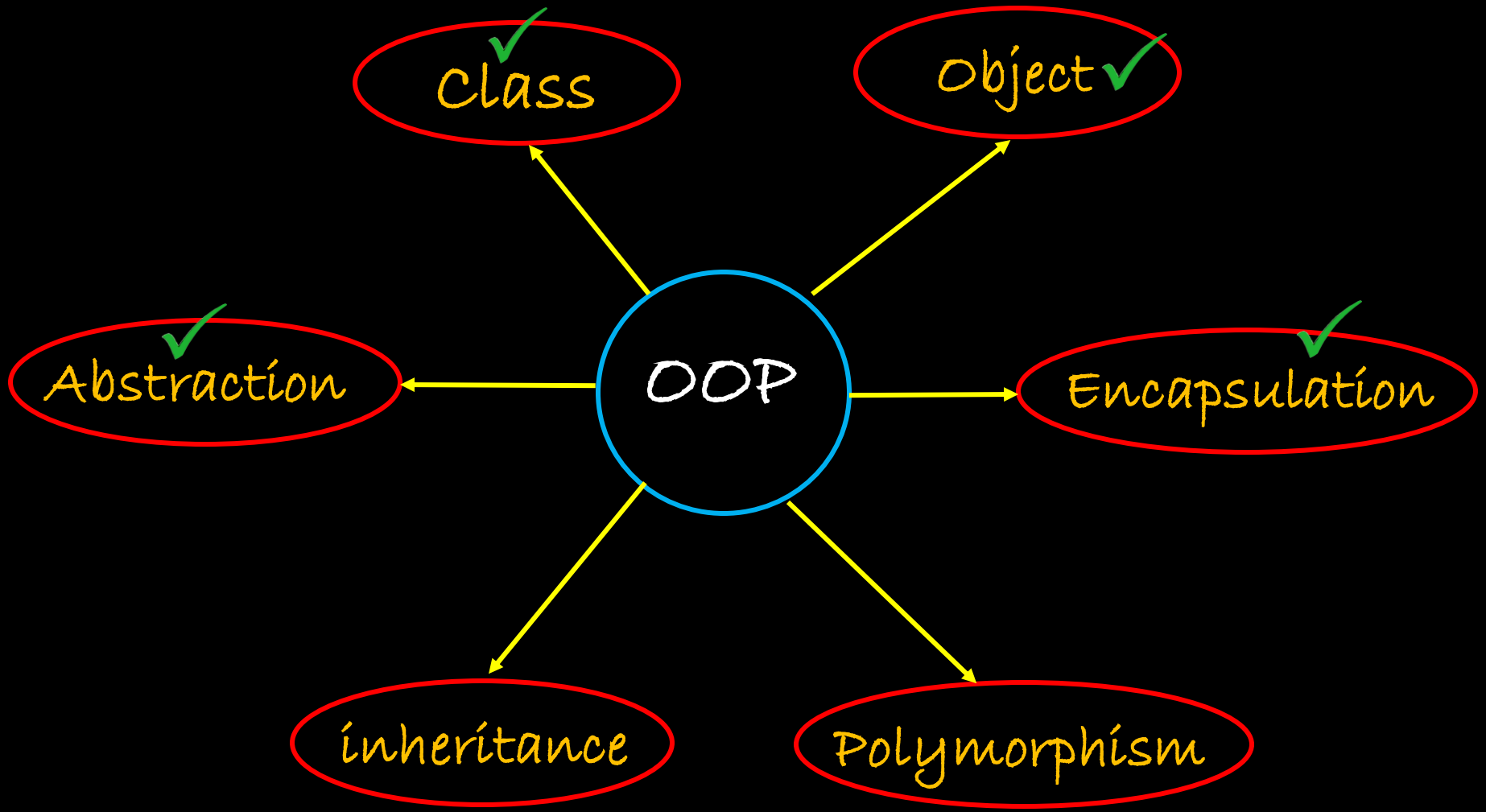
```
class Summation {
private:
    // private variables
    int a, b, c;
public:
    void set(int x, int y){
        a = x;
        b = y;
        sum(a, b);
    }

    void sum(int p, int q){
        c=p+q;
    }
    void get(){
     cout<<"Sumis : "<<c<<endl;
    }
};
int main()
{
    Summation s;
    s.set(5, 4);
    s.get();
    return 0;
}
```

Abstraction Vs Encapsulation

- Abstraction is the method of hiding the unwanted information.
- Implemented using abstract class and interfaces
- implementation complexities are hidden
- objects that help to perform abstraction are encapsulated.

- Encapsulation is a method to hide the data in a single entity or unit along with a method to protect information from outside.
- implemented using access specifier
  - i.e. private, protected and public.
- the data is hidden using methods of getters and setters.
- objects that result in encapsulation need not be abstracted

OOP overview



Quick Summary

- OOP Overview
- Abstraction
- Encapsulation
- Examples & Exercises

Up Next

Inheritance in C++