Dr. D. Y. Patil Pratishthan's

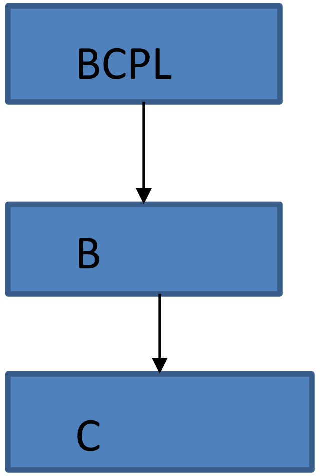
Institute for Advanced Computing and Software Development

Day1

Sub- c++

What is c

- Most commonly-used language for embedded systems
- Developed in the 1970s – in conjunction with development of UNIX operating system
- In 1972, Invented by Dennies Ritchie at Bell Laboratories.
- Most of the programs of UNIX are written and run with the help of 'C'.
- Many of the important ideas of ‘C' stem are from BCPL by Martin Richards.
- Designed for systems programming
  a. Operating systems
  b. Utility programs
  c. Compilers
  d. Filters



- C Language evolved from B, and B language evolved from BCPL(Basic Combined Programming Language)

What is C++

- Object-Oriented Programming (OOP).
- Enhanced version of the C language.
- Adds support for OOP without sacrificing any of C’s power, elegance, or flexibility.
- C++ is a statically typed(data type of variables knows at compiled time), compiled, general-purpose, case-sensitive, free-form programming language that supports procedural, object-oriented, and generic programming.
- C++ is regarded as a middle-level language, as it comprises a combination of both high-level and low-level language features.

C++ was developed by Bjarne Stroustrup starting in 1979 at Bell Labs in Murray Hill, New Jersey, as an enhancement to the C language and originally named C with Classes but later it was renamed C++ in 1983.

C++ is a superset of C, and that virtually any legal C program is a legal C++ program.

Facilitates a disciplined approach to program development

Diff between C and C++

- As we know both C and C++ are programming languages and used for application development.
- The main difference between both these languages is C is a procedural programming language and does not support classes and objects, while C++ is a combination of both procedural and object-oriented programming languages.
- In procedural programming, program is divided into small parts called ***functions***.
- In object oriented programming, program is divided into small parts called ***objects***.

- Procedural programming follows ***top down approach***.
- Object oriented programming follows ***bottom up approach***.
- ---------------------------------------
- In top down approach, main() function is written first and all sub functions are called from main function. Then, sub functions are written based on the requirement.
- Whereas, in bottom up approach, code is developed for modules and then these modules are integrated with main() function.

- Procedural programming does not have any proper way for hiding data so it is ***less secure***.
- Object oriented programming provides data hiding so it is ***more secure***.

- In procedural programming, function is more important than data.
- In object oriented programming, data is more important than function.

- Procedural programming is based on ***unreal world***.
- Object oriented programming is based on ***real world***.

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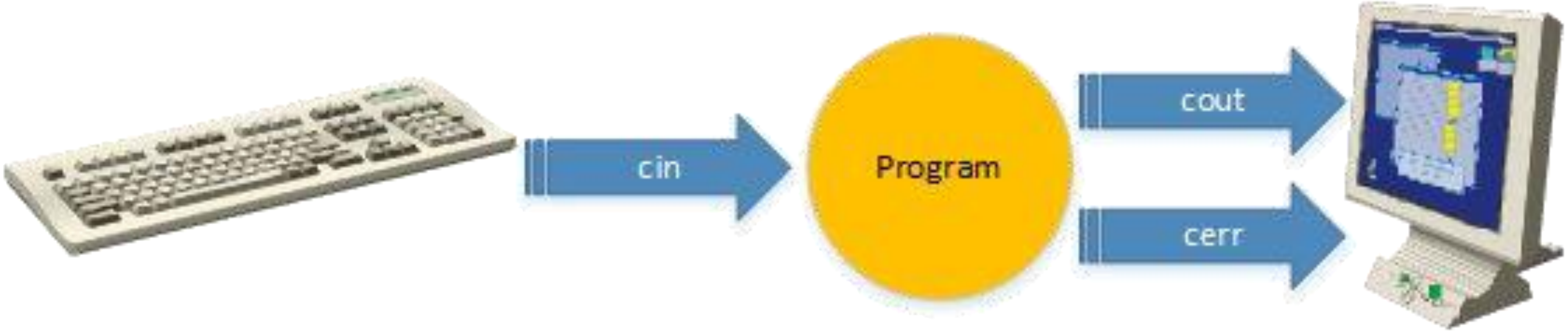
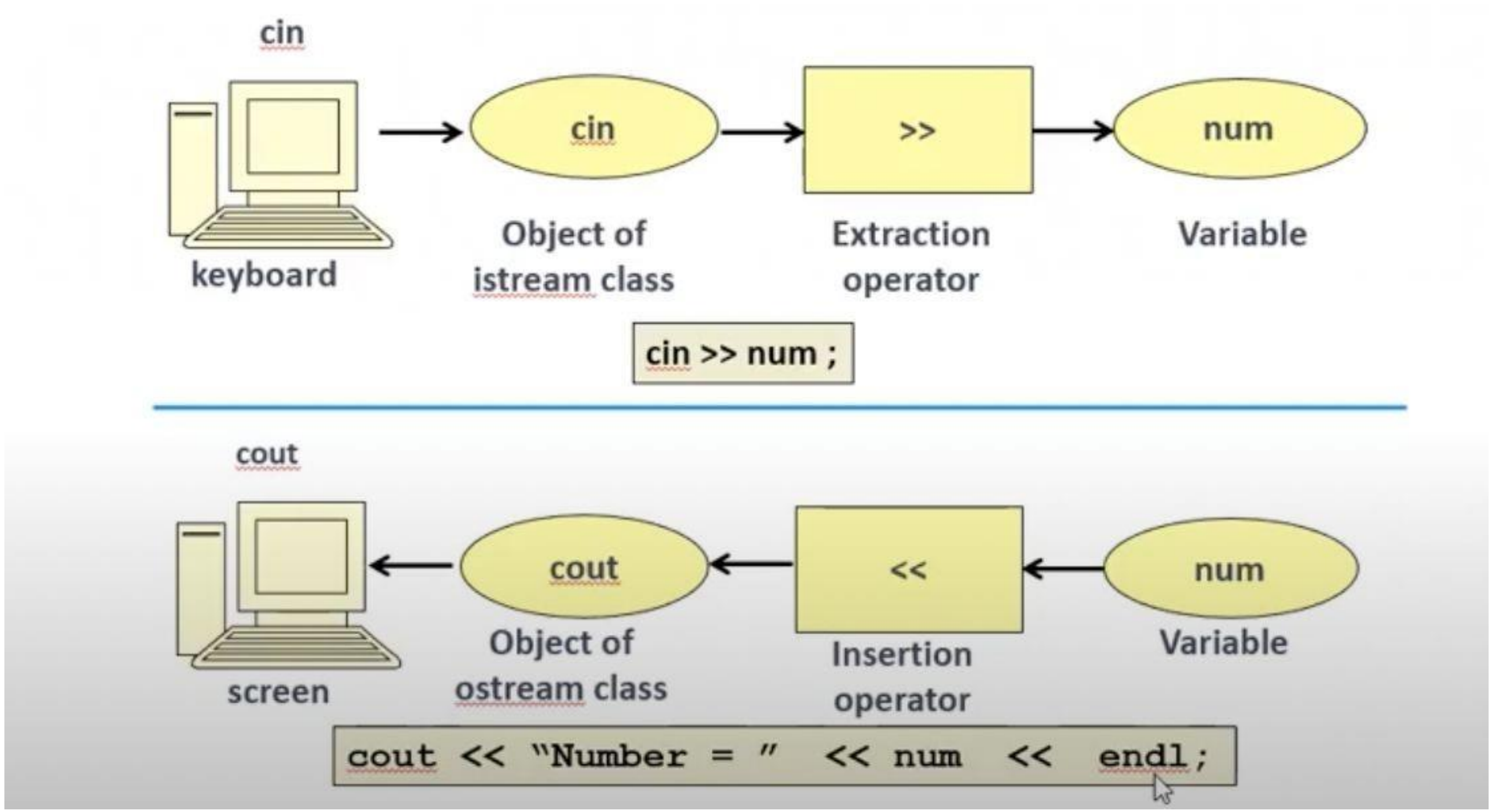
Object-oriented Approach

- Key concepts of object-oriented programming are:
  - Abstraction:
  - Encapsulation:
  - Inheritance:
  - Polymorphism:

cin & cout





```
cin >> num ;
```

```
cout << “Number = ”  << num  <<  endl;
```

- cin is an object of the input stream and is used to take input from input streams like files, Keyboard, etc.
- cout is an object of the output stream that is used to show output.
- Basically, cin is an input statement while cout is an output statement.

how to write Cpp Program

```
#include<iostream>
using namespace std;

int main()
{
    int n;
    cout<<"Hello"<<endl;
    cout<<”Enter a number”;
    cin>>n;
    cout<<”n=”<<n;
    return 0;
}
```

- “using namespace std” means we use the namespace named std.
- “std” is an abbreviation for standard.
- So that means we use all the things within “std” namespace.
- If we don’t want to use this line of code, we can use the things in this namespace like this. std::cout, std::endl.
- Namespace is grouping of related functionality

- // Code written in the iostream.h file
-
- namespace std {
- ostream cout;
- istream cin;
- // and some more code
- }