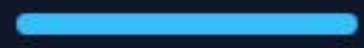


KARACHI EDU COACHING CENTER • COMPUTER SCIENCE CLASS X

# Chapter 3: Input / Output Handling in C++

Comprehensive Coaching Notes • Streams, cin, cout, Formatting & Escape Sequences



# Understanding I/O Streams in C++



## What is a Stream?

A sequence of bytes flowing from a source to a destination. C++ uses the library for stream management.



## Standard Streams

- **cin:** Standard input stream (Keyboard)
- **cout:** Standard output stream (Screen)
- **cerr / clog:** Error & log streams

# Displaying Output with cout

## Insertion Operator (<<)

Directs data to the standard output device (monitor).  
Multiple items can be chained together in a single statement.

```
cout << "Karachi Edu Score: " << 98;
```

## Key Output Rules

- Text literals must be enclosed in double quotes " ".
- Variables and numbers do not require quotes.
- Must be terminated with a semicolon (;).

# Accepting Input with `cin`

## Extraction Operator (>>)

Extracts typed data from the keyboard buffer and assigns it to a declared variable in memory.

```
int marks;  
cin >> marks;
```

## Important Notes on `cin`

- Variables must be declared before taking input.
- Multiple variables can be read in sequence: `cin >> a >> b;`
- Standard `cin` stops reading string input upon encountering a whitespace character (space/tab).

# Escape Sequences in C++

## **\n Newline**

Moves the cursor to the beginning of the next line on the screen.

## **\t Horizontal Tab**

Inserts a standard tab space, useful for creating columns or aligning data.

## **\a Alert / Bell**

Triggers an audible system alert beep sound through the computer speaker.

## **\\ / \"**

Allows printing literal backslashes or double quotes inside text strings.

# Using the endl Manipulator

## What does endl do?

Stands for "end line". It inserts a newline character into the output stream **and flushes the output buffer** immediately.

```
cout << "Hello Karachi Edu" << endl;
```

## \n vs endl

- \n is faster as it only inserts a newline character.
- endl forces a buffer flush, which can impact performance in intensive logging loops.

## Sample I/O Program in C++

```
#include
using namespace std;
int main() {
    int studentAge;
    cout << "Enter your age: ";
    cin >> studentAge;
    cout << "Karachi Edu Student Age is: " << studentAge << endl;
    return 0;
}
```

# Chapter 3 Review Complete

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