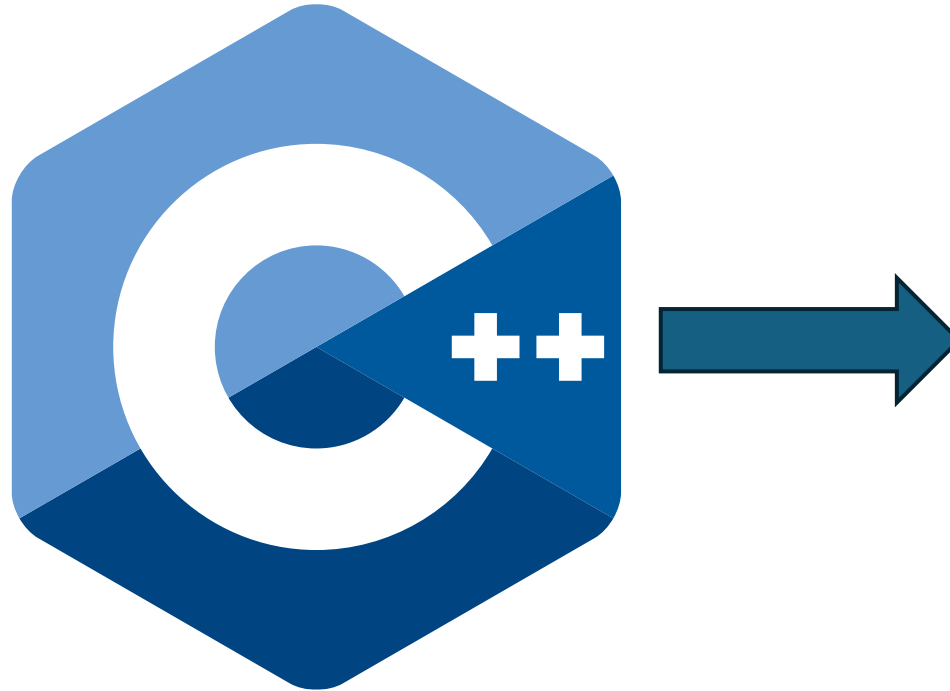# C++

introduction

what?, why? → Solution

freeCSIT

#1

What is C++?

Creator of **++**

Bjarne Stroustrup

History of C++

- **Inventor**: Bjarne Stroustrup.

- **Date**: C++ was created at Bell Laboratories (AT&T) in 1979.

- **Initial Name**: Originally called **"C with Classes"** because it extended the C programming language by adding features for object-oriented programming.

Why Learn C++?

High Performance

Game Development

Operating Systems

Embedded Systems

What is a Programming Language?

A **programming language** is a formal system of communication used to instruct a computer to perform specific tasks. It serves as a bridge between humans and computers, allowing developers to write code that machines can interpret and execute.

Why Do We Need Programming Languages?

•**Automation**: Execute repetitive and complex tasks efficiently.

•**Problem Solving**: Develop solutions for business, science, and technology challenges.

•**Communication**: Translate human logic into instructions that a computer can understand.

•**Innovation**: Enable the creation of advanced systems like AI, robotics, and data analysis tools.

Characteristics of Programming Languages

•**Syntax**: The set of rules that defines the structure of valid code

•**Semantics**: The meaning of the instructions or statements written in the language.

•**Abstraction**: Programming languages allow humans to write complex instructions without dealing directly with hardware-level details.
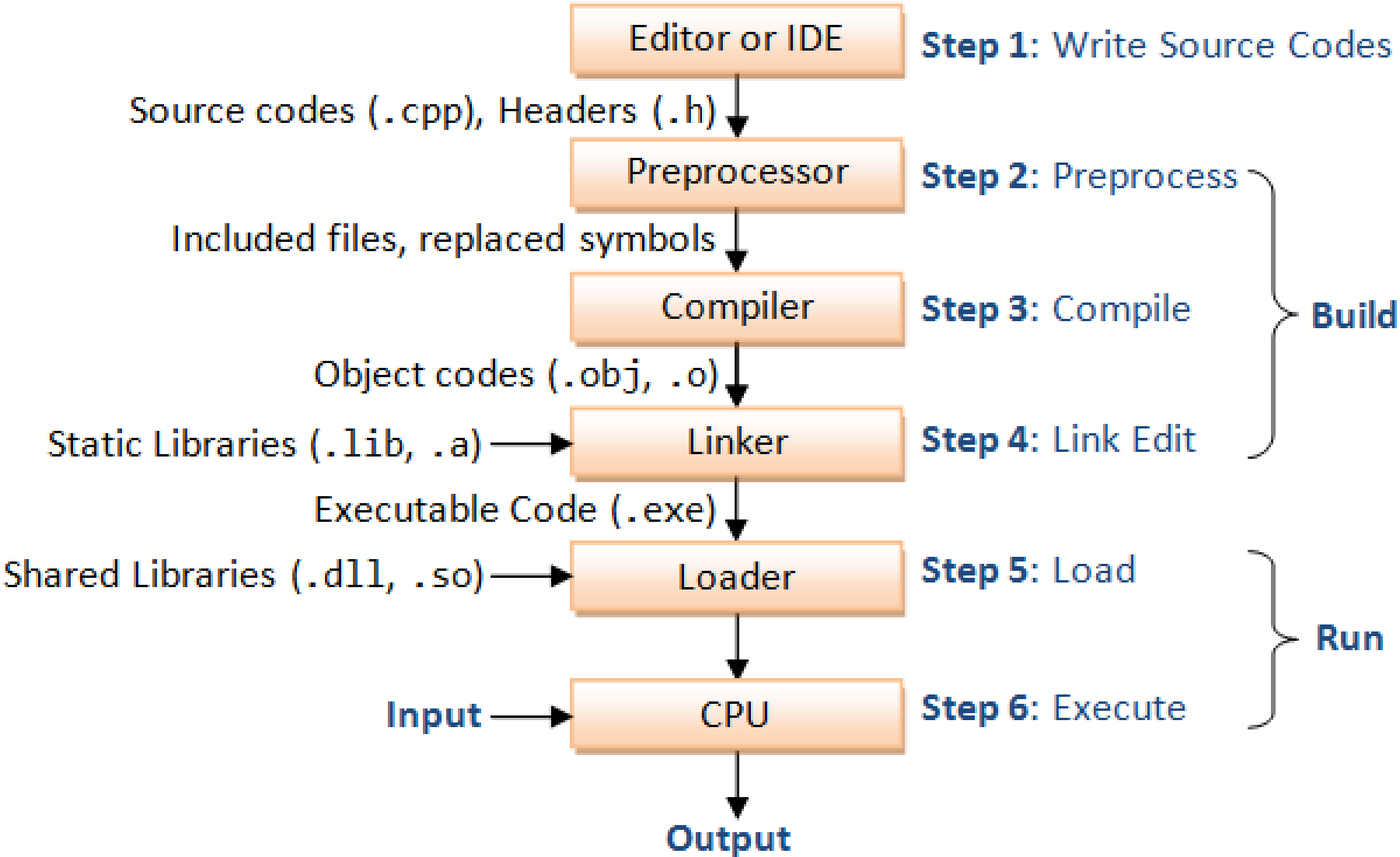
Purpose of Programming Languages

- To automate tasks and solve problems using computers.

- To create applications, systems, and tools for various domains.

- To provide a framework for expressing logic and algorithms in a way that machines can execute.

How Programming Languages Work

•**Source Code**: Developers write code in a programming language.

•**Translation**: The code is translated into machine language (binary) using a **compiler** or an **interpreter**:

•**Compiler**: Converts the entire code into machine code before execution

•**Interpreter**: Translates and executes code line by line

•**Execution**: The computer executes the machine code instructions.

How Programming Languages Work

Editor or IDE	**Step 1**: Write Source Codes

Source codes (.cpp), Headers (.h) ↓

Preprocessor	**Step 2**: Preprocess

Included files, replaced symbols ↓

Compiler	**Step 3**: Compile

Object codes (.obj, .o) ↓

Static Libraries (.lib, .a) →

Linker	**Step 4**: Link Edit

Build

Executable Code (.exe) ↓

Shared Libraries (.dll, .so) →

Loader	**Step 5**: Load

Input →

CPU	**Step 6**: Execute

Run

↓

Output

Hello, World! - Code Demonstration

```cpp
#include <iostream>
using namespace sd;

int main(){
    cout << "Hello, World!" << endl;
    return 0;
}
```

Thanks
for
Watching

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