

Introduction to C++

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of



Introduction

This section introduces students to the C++ programming language and equips them with the skills to develop efficient, structured, and object-oriented programs.

Students will learn:

- ❖ **Programming concepts**
- ❖ **Problem-solving techniques**
- ❖ **Program design**
- ❖ **Writing C++ programs**
- ❖ **Debugging**
- ❖ **Building real-world applications**

Objectives

At the end of this course students should be able to

- ❖ Design algorithms
- ❖ Write C++ programs
- ❖ Solve programming problems
- ❖ Build software applications

Learning Outcomes

By the end of this course students should be able to:

- ❖ Explain programming concepts
- ❖ Explain Object-Oriented Programming
- ❖ Explain variables and data types

- ❖ **Write C++ programs**
- ❖ **Debug errors**
- ❖ **Design algorithms**
- ❖ **Develop simple software**

Competencies

- ❖ **Solve real-life problems**
- ❖ **Think logically**
- ❖ **Work on software projects**
- ❖ **Collaborate with team members**

What is Programming?

Programming is the process of writing instructions that tell a computer how to perform a specific task.

- ❖ Think of Programming Like This
- ❖ A recipe tells a chef how to prepare food.

Everyday Examples

- ❖ **ATM Machine**
- ❖ **Mobile Banking**
- ❖ **WhatsApp**
- ❖ **Facebook**
- ❖ **Calculator**
- ❖ **POS System**
- ❖ **Hospital Management System**
- ❖ **School Management System**

All these applications were developed through programming.

What is a Programming Language?

A programming language is a formal language used by programmers to communicate with computers.

Examples

- ❖ C++
- ❖ Python
- ❖ Java
- ❖ JavaScript
- ❖ PHP
- ❖ C#
- ❖ Swift

Characteristics- Programming Language



- ❖ Easy to read
- ❖ Easy to write
- ❖ Easy to debug
- ❖ Supports problem solving

Diagram

1 Programmer



2 Writes Code



3 Programming Language



4 Compiler



5 Output

Generations of Programming Languages

1 First Generation (1GL)

Machine Language

2 Second Generation (2GL)

Assembly Language

3 Third Generation (3GL)

C++, Java, Python, Pascal, BASIC

4 Fourth Generation (4GL)

SQL, MATLAB, SAS

5 Fifth Generation (5GL)

Artificial Intelligence Languages: Prolog, Mercury

Introduction to C++



C++ is a powerful, high-performance programming language developed as an extension of the C programming language.

It supports:

- ❖ Procedural Programming
- ❖ Object-Oriented Programming
- ❖ Generic Programming

- ❖ Desktop Software
- ❖ Games
- ❖ Banking Systems
- ❖ Operating Systems
- ❖ Embedded Systems
- ❖ Robotics
- ❖ Artificial Intelligence

History of C++

- ❖ 1979 => Bjarne Stroustrup" began developing C++.
- ❖ 1983 => Language officially named C++.
- ❖ 1985 => First commercial release.
- ❖ 1998 => First international ISO standard.
- ❖ 2011 => Modern C++ (C++11)
- ❖ 2014 => C++14
- ❖ 2017 => C++17
- ❖ 2020 => C++20
- ❖ 2023 => C++23

Why Learn C++?

Reasons

- ❖ **High Demand**
- ❖ **Fast Execution**
- ❖ **Powerful**
- ❖ **Used in Game Development**
- ❖ **Used in Robotics**
- ❖ **Used in Banking**
- ❖ **Used in Embedded Systems**
- ❖ **Foundation for Learning Other Languages**

Career Opportunities



- ❖ **Software Developer**
- ❖ **Systems Programmer**
- ❖ **Game Developer**
- ❖ **Robotics Engineer**
- ❖ **AI Engineer**
- ❖ **Embedded Systems Developer**
- ❖ **Financial Software Developer**

Homework

1. What is programming?
2. Who developed C++?
3. What is the purpose of a compiler?
4. What is the difference between C and C++?
5. List three applications of C++.



END OF Introduction to C++



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