Technical Report on C and C++

# Table of Contents

Introduction to C/C++

History and Overview

Key Features and Differences

General Concepts

Data Types

Variables

Operators

Keywords in C and C++

List and Usage of Common Keywords

Example Programs

Control Statements

Conditional Statements (if, else, switch)

Loop Control (for, while, do-while)

Examples and Flowcharts

Functions

Definition and Syntax

Parameter Passing

Return Types

Examples

Container Types in C

Arrays

Structures

Example Programs

Container Types in C++

Classes and Objects

Standard Template Library (STL)

Examples

Pointers and References

Definition and Usage

Pointer Arithmetic

References in C++

Examples

Exception Handling

Try, Catch, and Throw

Custom Exceptions

Examples

Advanced Topics

Inheritance and Polymorphism

Templates in C++

Example Programs

Practical Applications

Real-world Examples

Projects and Case Studies

Conclusion

Summary of Key Points

Future Directions in C/C++

# Introduction to C/C++

## History and Overview

## Key Features and Differences

# General Concepts

## Data Types

## Variables

## Operators

# Keywords in C and C++

## List and Usage of Common Keywords

## Example Programs

# Control Statements

## Conditional Statements (if, else, switch)

## Loop Control (for, while, do-while)

## Examples and Flowcharts

# Functions

## Definition and Syntax

## Parameter Passing

## Return Types

## Examples

# Container Types in C

## Arrays

## Structures

## Example Programs

# Container Types in C++

## Classes and Objects

## Standard Template Library (STL)

## Examples

# Pointers and References

## Definition and Usage

## Pointer Arithmetic

## References in C++

## Examples

# Exception Handling

## Try, Catch, and Throw

## Custom Exceptions

## Examples

# Advanced Topics

## Inheritance and Polymorphism

## Templates in C++

## Example Programs

# Practical Applications

## Real-world Examples

## Projects and Case Studies

# Conclusion

## Summary of Key Points

## Future Directions in C/C++