Faculty of Computer Science and Information Technology
Department of Business Information Technology
Sana'a - Yemen

Lab Manual # 1

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Student Name			
Department			
Roll #			
Section			
Lab Date			
Submission Date			
Lab Grade:	10	**Obtained Grade**	
Instructor's Signature:			

A. ***Title:*** ***C++ introduction***
B. ***Objectives of this lab:***

- learn about what is C++
- Learn about features of the C++ coding language
- Learn about what is C++ used for
- Why learning C++ in 2023

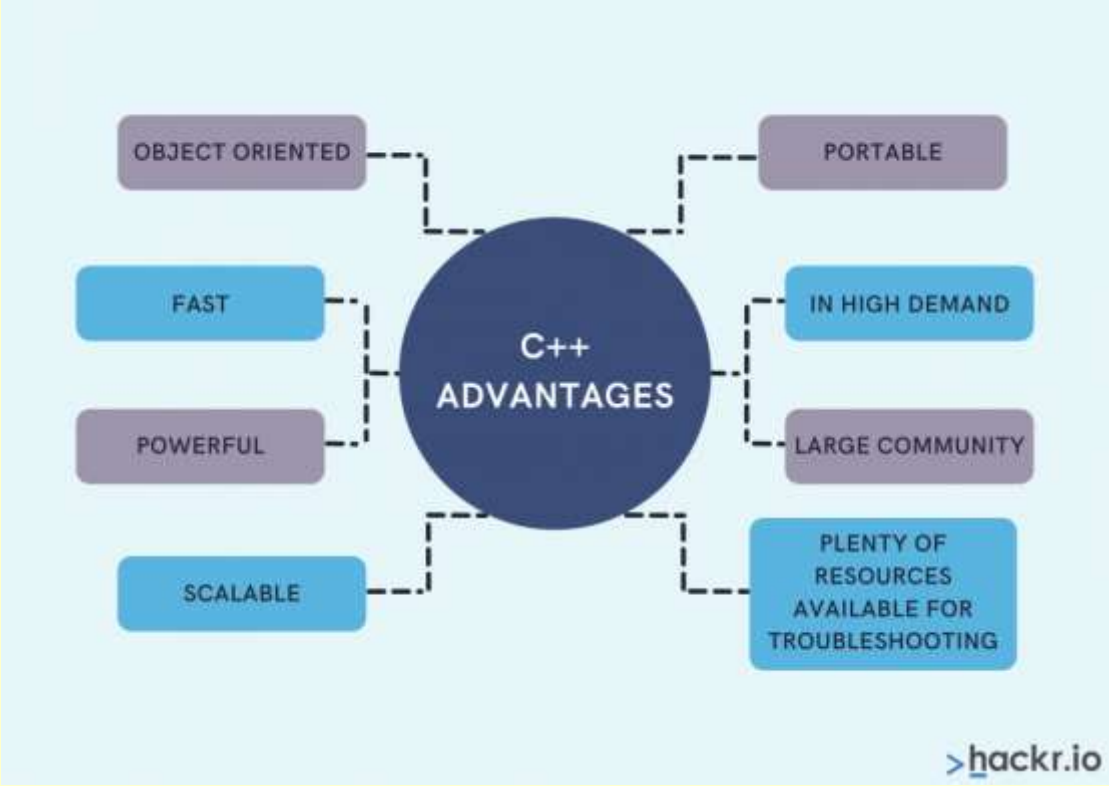
❖ What is C++:-

Fast approaching the age of 40, the C++ language remains one of the most popular, with more than 27% of developers surveyed in 2022 making it their language of choice

Sitting alongside Java and Python as one of the best general-purpose languages, C++ is well-supported, well-documented, and robust. As a result, many coders learn C++ as their first programming language, while others pick it up later to enhance their skill set.

C++ (sometimes called Cpp) was first released in 1985 as an evolution of C; ever notice the genius behind the name as we use '++' to increment variables in C languages? While C implements a procedural programming approach, the C++ programming language provides the added ability to write object-oriented programs

❖ Features of the C++ coding language:-



- **Object-oriented:** Uses classes and objects to reduce code repetition (D.R.Y principles), making code more flexible and extensible
- **Multi-paradigm:** Not only is C++ object-oriented, but like its older brother, C, it can be used as a procedural language
- **Mid-level language:** Offers low-level language features to interact with and manipulate hardware, along with high-level abstraction via object-oriented programming
- **Fast:** Compiles directly to machine code, meaning it's one of the fastest and most performant languages
- **Popular:** Widely used and documented, including extensive community support
- **Maintained & updated:** A fully-featured language with four significant updates in 2011, 2014, 2017, and 2020
- **Scalable:** Good for large, scalable applications due to discrete & direct memory management and low-level machine functions
- **Comparable to Java:** Similar in extensibility, portability, and scalability

❖ What is C++ used for:-

some of the world's most widely used software, games, operating systems, backend infrastructure, and more relies on C++.

1-Operating Systems (OS): Microsoft Windows, macOS
2-Software Applications: Adobe Photoshop, Illustrator, and others
3-Games: World of Warcraft, Counter-Strike, Unreal Engine, Playstation, Xbox, etc
4-Graphics: Digital image processing, computer-generated graphics, etc
5-Embedded Systems: Internet of Things (IoT), flight software, etc
6-Databases: MySQL, MongoDB
7-Web browsers: Google Chrome, Mozilla Firefox, Safari, Opera
8-Backend via CGI (Common Gateway Interface): Spotify, YouTube, Amazon
9-Machine Learning: TensorFlow, Google Search
10-Business Applications: Tools for finance, civil engineering, hospitality, etc

❖ Why learning C++ in 2023

If you're an aspiring software developer or a seasoned pro who is unsure about C++, consider these reasons to learn C++ in 2023.

1- High Salary & In-Demand: C++ developers are some of the most sought-after across various industries, with an average annual salary of $106,000

2- Built-in Libraries: The Standard Template Library (STL) provides algorithms, containers, functions, and iterators, helping to speed up and simplify development

3- Community: Vast number of users, from beginners to pros, available to help

4- Portable: Easily move C++ programs between platforms

5- Mid-Level Language: Can be optimized for hardware in embedded systems & IoT

6- Optimized for Backend: Fast, reliable, and can directly interact with hardware

7- Established: Relied upon to build popular browsers, applications, games, OS, and more