1.

- A computer cannot understand English or Other Language Except 1 and 0. Therefore Programming languages are used to give a set of instructions that are required to the computer to perform a Specific Task. (Rilwan, 2022)

2.

a) **Source Code** – Source Code is a set of instructions written by an IT Professionals' using a programming Language. (Satyabrata_Jena, 2022)

Machine Code – Machine Code is a low-level code which can only Understandable by the Computer and it is a Combination of Binary Numbers and looks like a very long sequence as it consists of zeroes (0) and Ones (1) only. (Satyabrata_Jena, 2022)

Difference Between Source Code and Machine Code

Source Code	Machine Code
Source Codes are Written by a Human or an It Professional.	Machine Code is not Generated by a Human and it Can Only be Generated by translator like Compiler or another Translator.
It is a High-Level Code.	It is a Low-Level Code
Source Code are Written in High Level Programming Languages in a Plain Text.	Machine Code is in Binary Format as it Translates Source Code to Machine Readable Format.
It is Fully Understandable to IT Professionals and Partially for Humans.	It is not Human Understandable due to Sequence of Zeroes and Ones.
Machine Cannot Understand the Source Code directly.	Machine Can Understand the Machine Code and Easily Executable.
Easy to Modify	It Cannot be Modified.
Source Codes are Written in High-Level Programming Languages as Java, Python, C++, C, etc…	Machine Codes are Written in Machine Language (Ones and Zeroes) using Assembler, Compiler, Interpreter, etc.

b) **High-Level Language** – A high-level language is any programming language that allows programs to be developed in a more user-friendly programming context,

usually independent of the computer's hardware architecture. (byju's Exam Prep , 2022)

Low-Level Language – A low-level language is a type of programming language that hold basic instructions recognized by computers. (byju's Exam Prep , 2022)

Difference Between High-Level Language and Low-Level Language

High-Level Language	Low-Level Language
It is a very easy-to-use and understandable language for programmers, also anyone can have a miner understand.	It is a Machine Friendly Language and Hard to Understand.
It is Portable.	It is not Portable
Required Compiler, Interpreter, or Assembler for the translation.	Required an Assembler for Translation
It is Generally used for Programming.	Not so popular and not widely used in today's world.
It is Simple in Debugging.	It is Bit Complex in Debugging Comparatively.
Less memory efficient, uses more memory than low-level languages.	Less memory usage.

(byju's Exam Prep , 2022)

c) **Compiler** - A compiler is a special program that converts the source code of a programming language (High-Level Language) into machine code or another programming language (Low-Level Language). (Sheldon, 2022)

Interpreter - An interpreter is a computer program used to straightway execute program instructions written in one of numerous high-level programming languages. (Sheldon, 2022)

Difference Between Compiler and Interpreter

Compiler	Interpreter
The compiler has the ability to scans the entire program at once.	Translates Program Statements Statement by Statement.
Codes are Scanned in one Pass, so Errors (if any Present) are Grouped at the Very End.	Errors are Represented line by line as the Code is Scanned in the line by line.

The Main Advantage of the Compiler is Execution Time.	The interpreter is less Preferred Because it Executes object code Slower.
Converts Source Code to Object Code (Machine Code).	It scans the source code line by line rather of translating it into object code.
No source code mandatory for later execution	Source Code is Mandatory to run Later.
Machine Code is Stored on the Disk Storage.	Machine Code is not Stored Anywhere inside the Computer.

(BI INDIA BUREAU, 2019)

d) **Structured Language -** Structured programming is a paradigm intended to make programs easier to understand from the reader's point of view. (Rebus Community, n.d.)

Object-Oriented Language - An object-oriented language (OOL) is a high-level computer programming language that implements objects and their associated procedures within a programming context to create software programs.

Difference Between Structured Language Vs Object-Oriented Language

Structured Language	**Object-Oriented Language**
A fragment of procedural programming.	It relies on the concept of objects, which contain data and code.
Programs are divided into minor programs or functions.	Programs are fragmented into entities or objects.
To make it easier to write programs with readable code and reusable Components.	typically, it's about creating an object that contains both data & Functions.
Its main aim is to upgrade and accelerate the quality, clarity and development time of personal computer programs.	Its predominant purpose is to enhance and boom each the first-class and productiveness of device evaluation and design.
Usually only focused on the functions and processes that Process Data.	It focuses on describe both the structure and behavior of information systems in small or small modules, commonly combining data and processes.

(madhurihammad, 2022)

e) **C –** C is a very popular, easy-to-use, and flexible universal programming language. (techopedia, 2018)

   C ++ - C++ is an object-oriented programming language (OOP) and is considered by many to be the best language for building large-scale applications. (w3schools, n.d.)

Language C	**Language C ++**
C Was Developed by Mr Dennis Ritchie at Bell Labs in 1972.	C++ was developed by Mr Bjarne Stroustrup at Bell Laboratories in the early 1980s.
Is a Function Driven Language.	Object driven language.
C is a Procedure-oriented Language. Object- Oriented Programming (OOP) Feature such as polymorphism, encapsulation, and inheritance programming are not supported.	C++ is both a procedural and an object-oriented programming language. It supports his OOP features like polymorphism, encapsulation and inheritance.
C is a Subset of C++	C++ is a superset of C.
C has 32 Keywords only.	C++ has 63 keywords which is far more than Language C.
Support Built in data Types only.	Supports both built-in and user-defined data types which is a huge gap compared with Language C.
No Access Modifiers.	There is an access modifier.

 (tutorialspoint, n.d.)

f) **C++ -** It is an object-oriented programming language (OOP) and is deliberate by numerous to be the best language for building large-scale applications. (w3schools, n.d.)

   Java – Java is a Popular Language in the Present Software Development Market due to the demand of the Language.

Difference Between Language C and Language Java

Language C	Language Java
C was developed by Mr Dennis M. Ritchie between the years of 1969 and 1973.	Java was developed by Mr James Gosling in the year of 1995.
C is a procedural programming language.	Java is an object-oriented language and known as one of the best in the world of Programming.
C is more procedural.	Java is more data oriented.
C is an intermediate level language because it bridges the separation between machine language and high-level language.	Java is a high-stage language due to the fact code is translated into machine language with the use of a compiler or interpreter.
C is a compiled language. In different words, it interprets code into Machine language in order that it is able to be understood via way of means of machines and systems.	Java is Java's construed language. The code is first converted into bytecode and then this bytecode is implement by his JVM.
C is generally decomposed into functions.	Java is split into objects.

(javatpoint, n.d.)

g) **Syntax Error -** A computer science syntax error is an error in the coding or syntax of a programming language penetrate by a computer specialist. (javatpoint, n.d.)

Logical Error – A logic error is an error in the source code of a program that causes unexpected and incorrect behaviour. (techopedia, n.d.)

Difference Between Syntax Error and Logical Error

Syntax Error	Logical Error
A syntax error refers to an error in the way a set of characters or tokens meant to be written in a specific programming language should be structured.	A logic error is a programming flaw that prevents a program from running correctly but does not cause it to crash.

A syntax error may arise due to incorrect syntax in the computer program.	A logic error has arisen due to an algorithm error.
Languages that are Compiled, compilation shows syntax errors along with position and errors.	Programmer has to look and find the error by himself.
easier to spot syntax errors.	Logic errors are relatively difficult to identify.

(Golden, n.d.)

3.

    i.   **VIRTUSA** – Virtusa is the biggest software development firm in Sri Lanka in number of employees. It provides wide ranger of services for the following sectors such as Banking, Financial Services, Insurance, Healthcare, Telecommunications, Media, Technology Industry, etc. It has 2000 companies worldwide. Virtusa was Founded in 1996 and the Founders are Mr Kris Canekeratne, Mr Tushara Canekeratne, Mr John Gills and Mr Sandy Gills.

        Virtusa offers wide range of job opportunities and some of them are Software Engineer, Network Engineer, QA Analyst, QA Engineer, Cloud Engineer, Data Scientist, etc.

   ii.   **London Stock Exchange Group Sri Lanka - LSEG** is a Popular Software Development Firm in Sri Lanka and Globe with a staff of more than 25000. In Sri Lanka there is a big demand in getting a job offer from LSEG Due to its high Salary Scale. This Organization was founded in 2007 and offers wide range of services such as Stock Controls, Trading, etc. Mr David Schwimmer is the Present CEO of the Company.

        LSEG offers Many job opportunities compared to other Leading IT Companies in Sri Lanka with high Salary Margins. Few of these roles are Capital Market Analyst, Business Analyst, Cloud Architect, Software Developer, Senior Tech Lead, Java Lead, etc.

  iii.   **WSO2 -** In Sri Lanka, WSO2, a pioneer in open-source integrations, was launched in 2005. Future IT industry trends are rapidly advanced by the open-source integration services offered by WSO2, which permit for the quick and unlimited flow of information to potential customers. Among WSO2's well-known products are Identity Saver, Enterprise Integrator, and API Manager. WSO2 offers software solutions to respected firms like eBay, The Warehouse Group, Karnataka Bank Ltd, and Qantas. WSO2 has over fifteen years of experience in the healthcare, finance, retail, & telecommunications sectors, as well as a worldwide customer base.. (digitalokee, n.d.)

WSO2 Offers Jobs such as Program Developer, Software Engineer, Software Architect, Business Analyst, Data Scientist, Tech Lead, Java Lead, Project Managers, etc.

iv. **JOHN KEELS IT -** The main company's subsidiary is John Keels IT. Technology consulting is a specialty of John Keels Holdings PLC. With its headquartered in Colombo and more than decades of experience in the business, John Keels IT is one of Sri Lanka's largest providers of IT solutions, enabling driven businesses to create technology-enabled corporate strategies and solutions. We work with you to increase efficiency and productivity. The main IT services provided by John Keels include IT planning, consulting and technologies for digital advertising, program management, outsourced, and offshore. Over 500+ clients strong, John Keels takes pleasure in its inventive inclinations. options for configuration. Currently, Mr. Krishan Balendra serves as the company's CEO..

John Keels It offers same job roles as the above Companies that are listed as those are the most demanding jobs in the World of It.

v. **SYSCO LABS -** Sysco labs is a technology strategy developer for Sysco Cooperation, the world's largest foodservice company based in Sri Lanka and the United States. Sysco focuses on marketing, sales and distribution of food, equipment and consumables and worldwide he has a customer base of over 650,000. Working with a team of highly skilled individuals in Sri Lanka and the United States, Sysco labs aims to provide customers with a quality food service experience, from grocery sourcing to ordering to delivery to e-commerce services. Committed to innovative technological disruption. Software development, enterprise architecture, quality development, project management, UI/UX, data and analytics, cloud services, and application support are some of the services Sysco labs manages for Sysco Corporation. Mr shanil Fernando is the present CEO of the Company.

Business Analyst, Java, C, Jquery Developers, Back-end & Front-End Developers are some of the most available Vacancies that are present in this Organization with huge number of Vacancies.

I. **MICROSOFT CORPORATION -** Microso**t** Corporation is established in Redmond, Washington, and is certainly considered one among the biggest organizations withinside the global and leads a listing of Top 10 IT Companies. The business enterprise has been pulling massive numbers at some point of the years. Microsoft's economic stats display the business enterprise's annual sales surpassed $one hundred billion in 2018, reached $125.eighty-four billion in 2019, and noticed a 17% boom from 2020 to 2021.

The merchandise like Microsoft Windows, Microsoft Office, Internet Explorer and so forth is being utilized by nearly each expert withinside the global. Microsoft become based via way of means of Bill Gates and Paul Allen on 4, April, 1975, and it has improved its marketplace proportion via way of means of diversifying its offerings from the running gadget marketplace to different numerous software program merchandise. (alertify, n.d.)

In Microsoft Corporation there are almost every Job Role that are in the IT market due to the larger scale of Employee Base. But getting into this Company Is so hard since most of the IT Professionals have a dream to work for a Company like this. (alertify, n.d.)

II. **IBM -** International Business Machine (IBM) is an American MNC and is operational in greater than a hundred and fifty countries. The business enterprise became set up firstly as a computing recording business enterprise however became later renamed as IBM (International Business Machines) in the year of 1924. IBM headquarter is found in Armonk, New York, and it has a various portfolio of software program services and products which they're similarly increasing to cater to the modern-day developing wishes of current and new users. Major regions from which it earns its sales are cloud computing, cognitive computing, statistics analytics and the Internet of things, IT infrastructure and security. IBM's sales are developing at a double-digit rate.

Mr Arvind Krishna is the Present CEO of the IBM Company. There are plenty of Job Titles available at the IBM Careers and Mostly are Front-End and Back- End Developing jobs that mentioned on the above Organizations. (alertify, n.d.)

III. **ACCENTURE -** One of the most significant information technology companies is Accenture, which has been featured among the Fortune International 500 classifications. It is a global management consulting company that provides professional service in strategy, consulting, generation, and operations. In the origins, Accenture was an accounting firm called Arthur Andersen's business and technology consulting division. In the year 1989, it broken apart, and Andersen Consulting adopted the modern name Accenture, which denotes the accessories of the present. Over 699,000 people are employed by the company worldwide. Accenture has a wide range of business tools, and each tool makes a unique contribution to Accenture's overall sales generation. Mobility products, virtual advertising, and marketing analytics are offered by Accenture Consulting. company formation is a specialty in studies and development, generation answer implementation, and generation labs for rising technologies. (alertify, n.d.)

IV. **ORACLE -** Oracle Corporation is among the most renowned American MNCs, with its main headquarters in Redwood Shores, California. OracIe, that employs about 135,000 people, has the second-highest sales in the software industry, after Microsoft. The company is well-known for its ERP solutions, database implementation and maintenance, supply chain management software, and customer dating management software. With more than 400,000 customers worldwide and representation across a broad range of industries in more than 150 countries, OracIe has a significant customer base. OracIe is known for its user-friendly programs and makes ongoing efforts to decrease the difficulty of the programs they create, such as those ranging from resource center operations to cloud programs. With more than 400,000 global customers and visibility across a wide range of industries in more than 150 countries, OracIe has a substantial customer base. OracIe is known for its consumer software and continuously works to avoid the sophistication of the programs they create, such as those ranging from data center operations to cloud software, which can be a stumbling block to business innovation, speed, flexibility, manageability, reliability, security, and engineering. Oracle also placed fourth among the top IT organizations worldwide.

Mr Larry Ellison is the CEO of the Oracle Organization. (alertify, n.d.)

V.   **SAP -** In terms of the software operations and corporate application industries, SAP has strategically placed itself as the world's top player. With more over 88,000 employees who work in more over 130 various countries, SAP came in third in terms of market value among software companies. About 380,000 clients use SAP in more than 170 countries. With a very long history of technology advance, SAP has prioritized the development of new technologies. As just a result, more than 110 centres for innovation and development have been established all over the world. To solve a variety of company issues, SAP is leveraging technologies such machine learning, the Internet of Things, blockchain, cloud computing, and SAP HANA.. (alertify, n.d.)

4.

a)   **Software Engineer** -   This role includes analysing and modifying existing software, and designing, building, and testing end-user applications to meet user requirements. All of this is done through software programming languages. This role also focuses on the complex, large-scale software systems that make up the core systems of an organization. (roberthalf, n.d.)

b)   **Software Architect –** A software architect is responsible for the overall planning and organization of a software system. They are responsible for creating high-level design and framing standards. Also, decide which tools, platforms, and programming standards are right for your project. (Medushevska, 2022)

c)   **Business Analyst –** BA is accountable for produce new models that support business conclusion by working closely with financial reporting and IT teams to develop initiatives and strategies to enhance imports and advance costs. there is. (targetjobs, n.d.)

d)   **Quality Assurance Engineer** – Quality Assurance Engineers (QA Engineers) play a key role in the software development and distribution lifecycle. QA engineers ensure that all aspects of a product meet the organization's established quality standards and requirements before release. (u-tor, n.d.)

e)   **Project Manager – A** project manager is responsible for planning, procuring, executing, and completing a project. The project manager is responsible for the entire project and is responsible for all tasks such as: B. Project scope, project team leadership, and resources allocated to the project. (betterteam, n.d.)

f)   **Software Support Engineer -** Software support engineers specialize in working closely with corporate software development teams to solve complex software problems and provide technical support to customers. Her responsibilities include answering calls and correspondence, addressing problems and concerns,

troubleshooting, providing step-by-step solutions, and directing customers to other services when necessary. In addition, software support engineers can participate in software development procedures to ensure the quality and efficiency of software and applications by creating test structures and identifying and eliminating errors. (bestaccreditedcolleges, 2022)

5.

a) **Purpose of using Variables in C Language** -

A variable is the name of an area of memory that a program can exploit. All variables in C possess a specific class that determines the size and layout of the variable memory. The ley of values that can be stored in this memory. A set of operations that can be applied to variables.

Variable names can consist of letters, numbers, and underscores. Also it must start with a letter or underscore. It is case sensitive because C is case sensitive. (Brian W. Kernighan, 1978)

a) **Purpose of Operators and types of Operators** –

Operators are the basis of all programming languages. Operators can be defined as symbols that help perform certain mathematical and logical calculations on their operands. In other words, we say that operators operate on their operands.

C Language has many built-in operators, which can be divided into 6 types:

i. **Arithmetic Operators** –   These Operators are used to perform tasks like Arithmetic and Mathematical Operation on their Operands.

ii. **Relational Operators** - These Operators are used to compare the Values of two Operators.

iii. **Logical Operators** – Logical Operators are used to perform bit-level operations on operands. Operators are first transformed at the bit level and then the computation is performed on the operands.

iv. **Bitwise Operators** - Bitwise Operators are used to perform bit-level operations on operands. Operators are first transformed at the bit level and then the computation is performed on the operands.

v. **Assignment Operators –** The assignment operator is used to assign a value to a specific variable. The left operand of an assignment operator is a variable and the right operand of an assignment operator is a value.

vi.   Other Operators – Apart from the operators mentioned above, there are
several other operators that can be used in C to perform specific tasks.

The Below Figure Shows Some Examples for the Above-Mentioned Operators

Operators in C

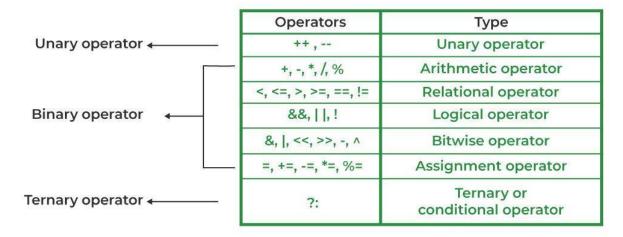| Operators	Type
++ , --	Unary operator
+, -, *, /, %	Arithmetic operator
<, <=, >, >=, ==, !=	Relational operator
&&, ||, !	Logical operator
&, |, <<, >>, -, ^	Bitwise operator
=, +=, -=, *=, %=	Assignment operator
?:	Ternary or conditional operator

Unary operator ←

Binary operator ←

Ternary operator ←

Figure 1

(geeksforgeeks, n.d.)