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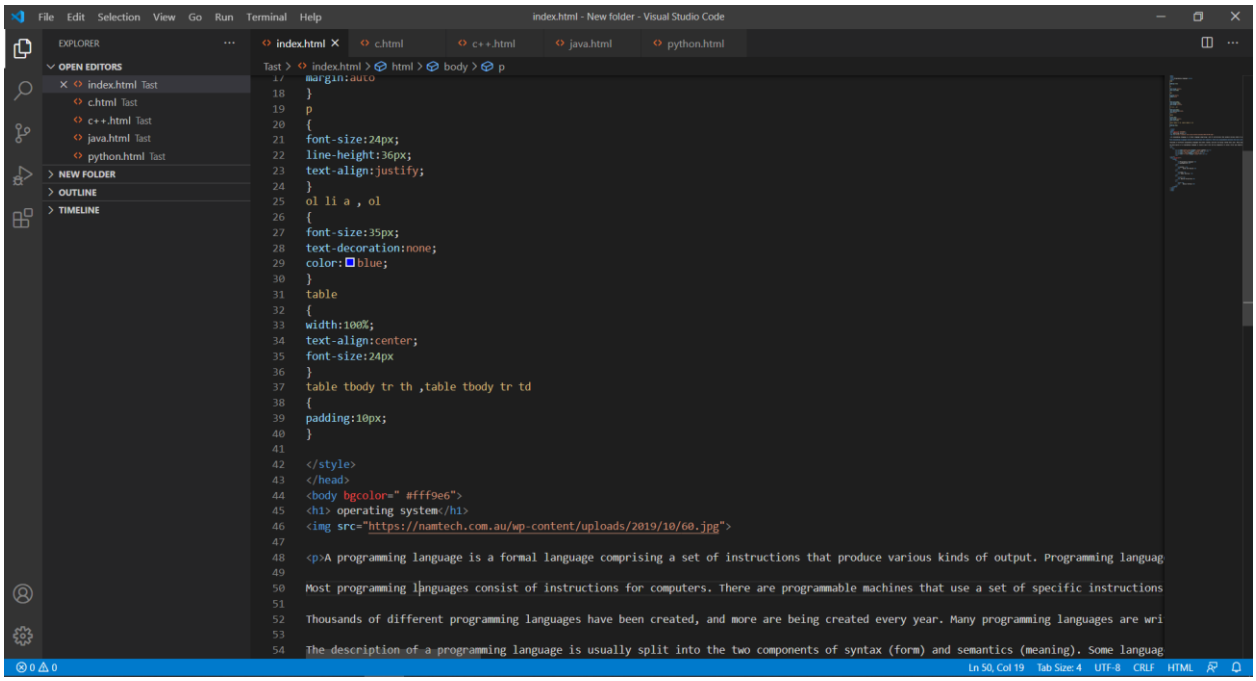
Github -Link: https://github.com/Ali-Abdelmotaleb/ECE006

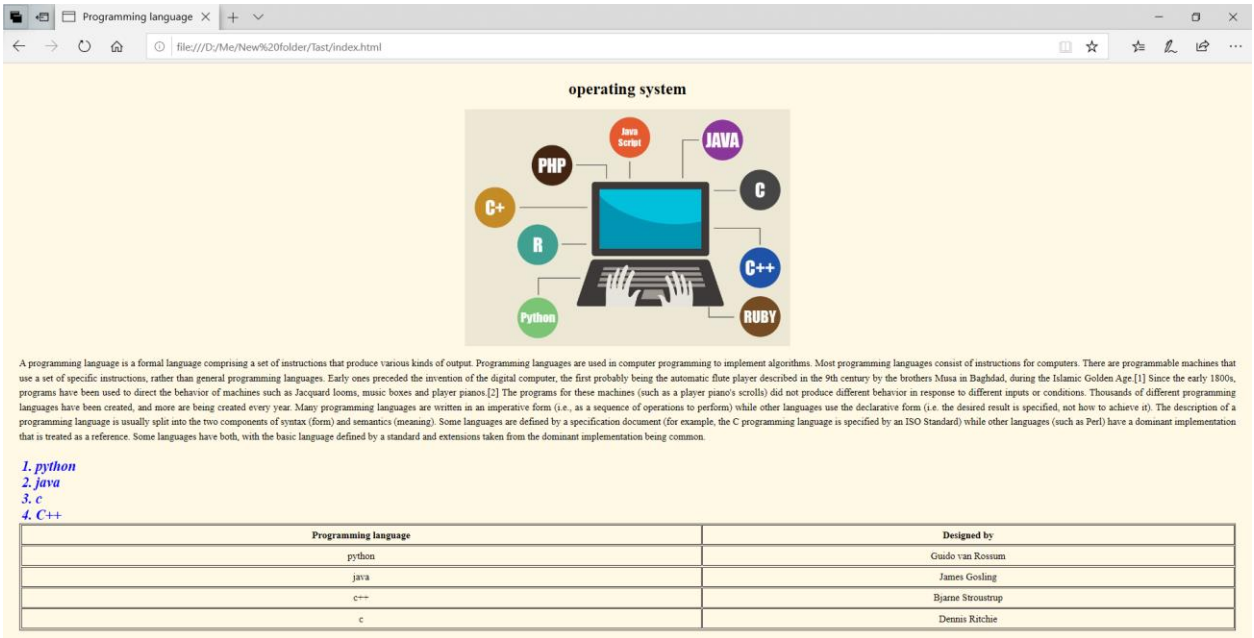
Github -Page: https://ali-abdelmotaleb.github.io/ECE006/

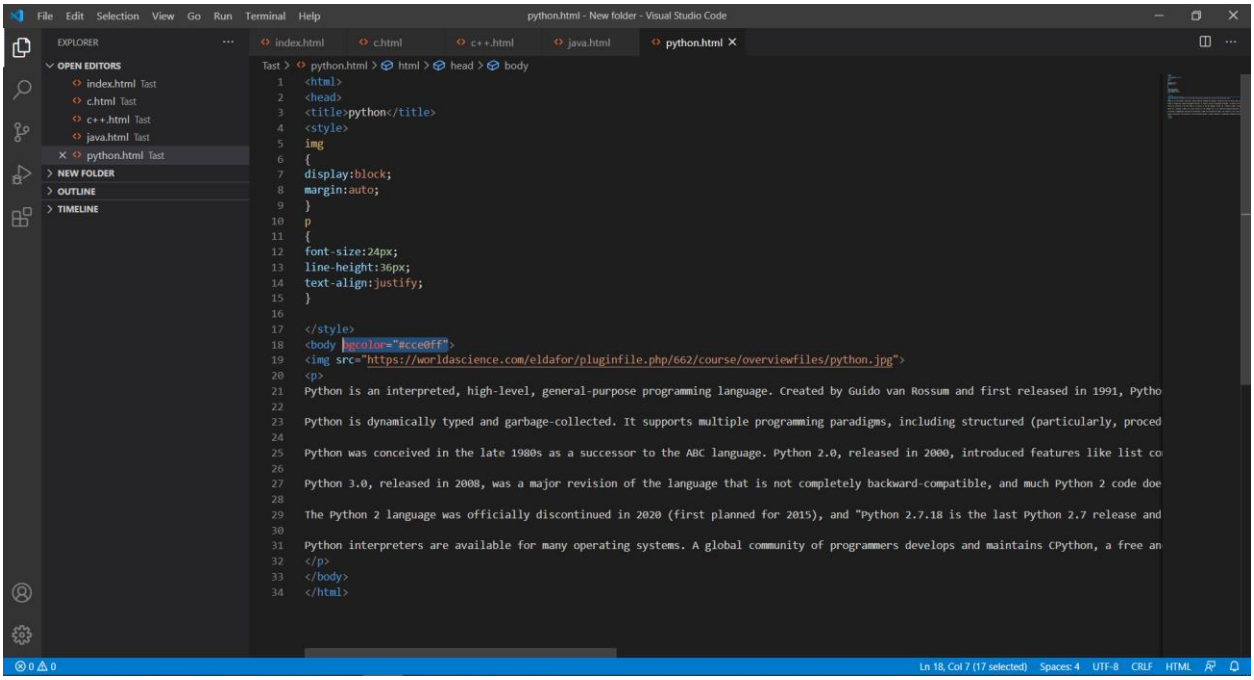
Application Brief: Programming Language

A programming language is a formal language comprising a set of instructions that produce various kinds of output. Most programming languages consist of instructions for computers. There are programmable machines that use a set of specific instructions, rather than general programming languages. Early ones preceded the invention of the digital computer, the first probably being the automatic flute player described in the 9th century by the brothers Musa in Baghdad, during the Islamic Golden Age.[1] Since the early 1800s, programs have been used to direct the behavior of machines such as Jacquard looms, music boxes and player pianos.[2] The programs for these machines (such as a player piano's scrolls) did not produce different behavior in response to different inputs or conditions. Thousands of different programming languages have been created, and more are being created every year. Many programming languages are written in an imperative form (i.e., as a sequence of operations to perform) while other languages use the declarative form (i.e. the desired result is specified, not how to achieve it). The description of a programming language is usually split into the two components of syntax (form) and semantics (meaning). Some languages are defined by a specification document (for example, the C programming language is specified by an ISO Standard) while other languages (such as Perl) have a dominant implementation that is treated as a reference. Some languages have both, with the basic language defined by a standard and extensions taken from the dominant implementation being common.

Screenshots and Source code: -



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Python interpreters are available for many operating systems. A global community of programmers develops and maintains CPython, a free an

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Programming language
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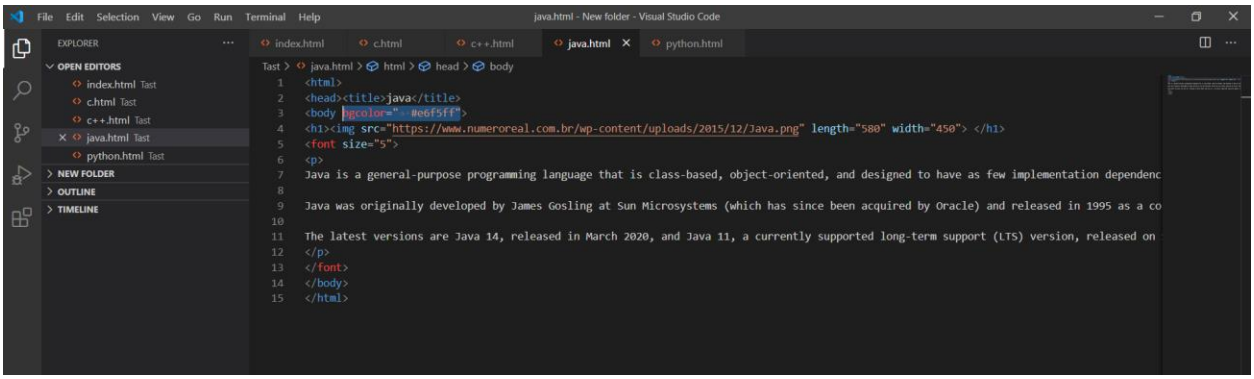
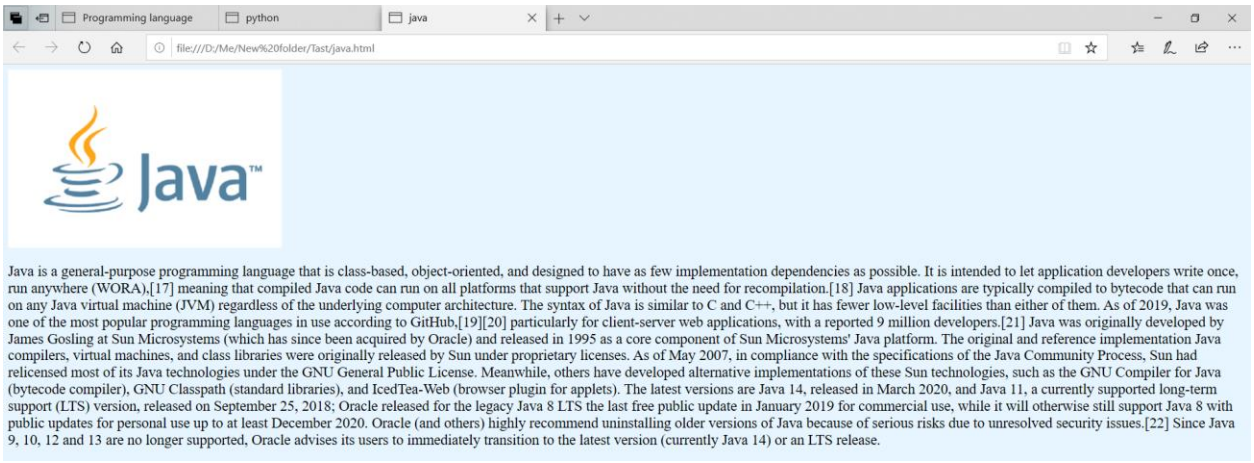
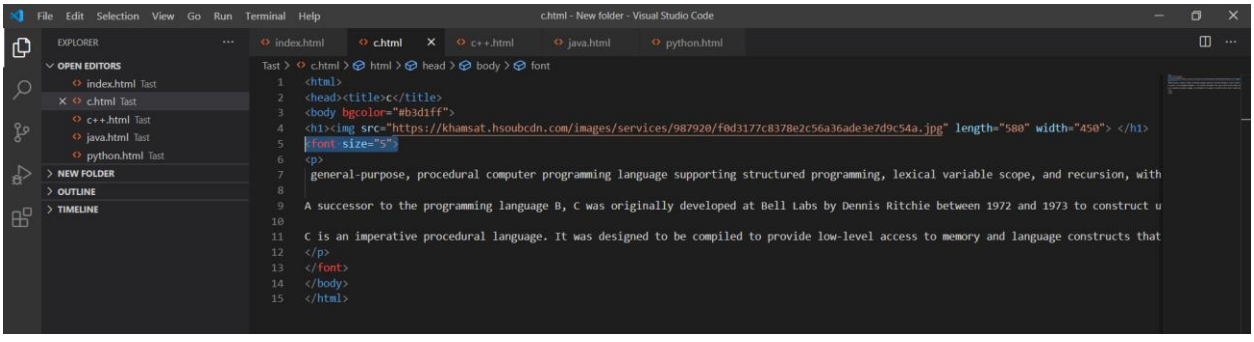
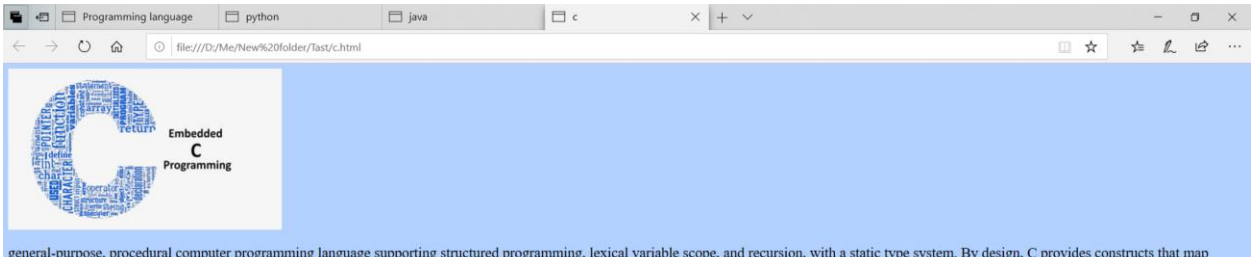
python
for beginners
Python is an interpreted, high-level, general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.[28] Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented, and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.[29] Python was conceived in the late 1980s as a successor to the ABC language. Python 2.0, released in 2000, introduced features like list comprehensions and a garbage collection system with reference counting. Python 3.0, released in 2008, was a major revision of the language that is not completely backward-compatible, and much Python 2 code does not run unmodified on Python 3. The Python 2 language was officially discontinued in 2020 (first planned for 2015), and "Python 2.7.18 is the last Python 2.7 release and therefore the last Python 2 release."[30] No more security patches or other improvements will be released for it.[31][32] With Python 2's end-of-life, only Python 3.5.x[33] and later are supported. Python interpreters are available for many operating systems. A global community of programmers develops and maintains CPython, a free and open-source[34] reference implementation. A non-profit organization, the Python Software Foundation, manages and directs resources for Python and CPython development.



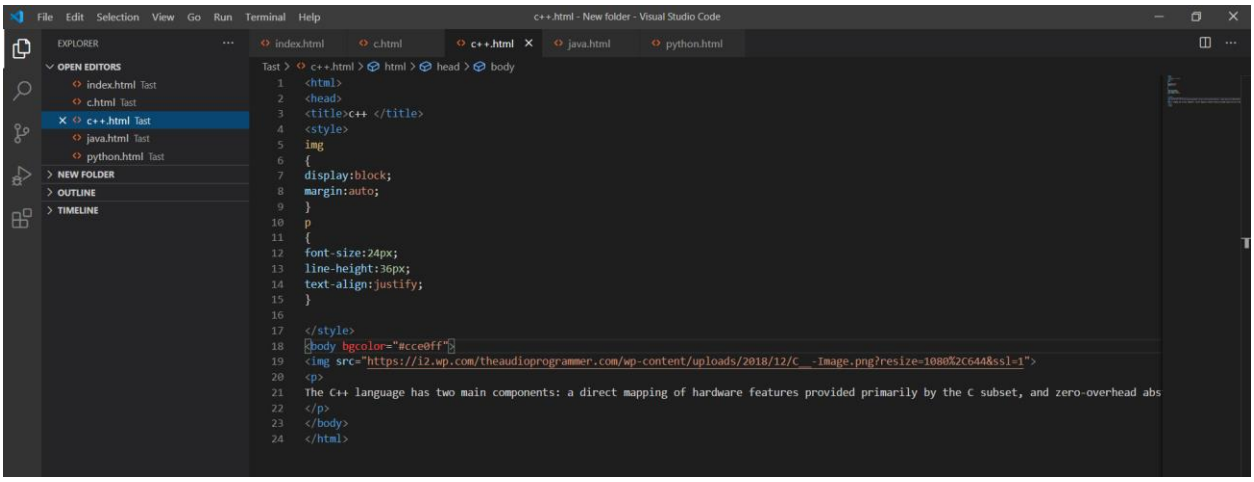


Java is a general-purpose programming language that is class-based, object-oriented, and designed to have as few implementation dependencies as possible. It is intended to let application developers write once, run anywhere (WORA),[17] meaning that compiled Java code can run on all platforms that support Java without the need for recompilation.[18] Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but it has fewer low-level facilities than either of them. As of 2019, Java was one of the most popular programming languages in use according to GitHub,[19][20] particularly for client-server web applications, with a reported 9 million developers.[21] Java was originally developed by James Gosling at Sun Microsystems (which has since been acquired by Oracle) and released in 1995 as a core component of Sun Microsystems' Java platform. The original and reference implementation Java compilers, virtual machines, and class libraries were originally released by Sun under proprietary licenses. As of May 2007, in compliance with the specifications of the Java Community Process, Sun had relicensed most of its Java technologies under the GNU General Public License. Meanwhile, others have developed alternative implementations of these Sun technologies, such as the GNU Compiler for Java (bytecode compiler), GNU Classpath (standard libraries), and IcedTea-Web (browser plugin for applets). The latest versions are Java 14, released in March 2020, and Java 11, a currently supported long-term support (LTS) version, released on September 25, 2018; Oracle released for the legacy Java 8 LTS the last free public update in January 2019 for commercial use, while it will otherwise still support Java 8 with public updates for personal use up to at least December 2020. Oracle (and others) highly recommend uninstalling older versions of Java because of serious risks due to unresolved security issues.[22] Since Java 9, 10, 12 and 13 are no longer supported, Oracle advises its users to immediately transition to the latest version (currently Java 14) or an LTS release.





general-purpose, procedural computer programming language supporting structured programming, lexical variable scope, and recursion, with a static type system. By design, C provides constructs that map efficiently to typical machine instructions. It has found lasting use in applications previously coded in assembly language. Such applications include operating systems and various application software for computers architectures that range from supercomputers to PLCs and embedded systems. A successor to the programming language B, C was originally developed at Bell Labs by Dennis Ritchie between 1972 and 1973 to construct utilities running on Unix. It was applied to re-implementing the kernel of the Unix operating system.[5] During the 1980s, C gradually gained popularity. It has become one of the most widely used programming languages,[6][7] with C compilers from various vendors available for the majority of existing computer architectures and operating systems. C has been standardized by the ANSI since 1989 (ANSI C) and by the International Organization for Standardization (ISO). C is an imperative procedural language. It was designed to be compiled to provide low-level access to memory and language constructs that map efficiently to machine instructions, all with minimal runtime support. Despite its low-level capabilities, the language was designed to encourage cross-platform programming. A standards-compliant C program written with portability in mind can be compiled for a wide variety of computer platforms and operating systems with few changes to its source code.



The C++ language has two main components: a direct mapping of hardware features provided primarily by the C subset, and zero-overhead abstractions based on those mappings. Stroustrup describes C++ as "a light-weight abstraction programming language [designed] for building and using efficient and elegant abstractions";[10] and "offering both hardware access and abstraction is the basis of C++. Doing it efficiently is what distinguishes it from other languages.