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GitHub-website

https://github.com/Zeyad-Magdi-Elnagi/ECE001

My Website URL

https://zeyad-magdi-elnagi.github.io/ECE001/

Introduction

The programming language, is a set of commands, written according to rules determined by the programming language, and then these commands go through several stages until they are executed on the computer.

Types of Programming Languages:-

1. **Low level programming languages:**
    a. Machine code
    b. Assembly Language
    c. TMG language
2. **Some of High level programming languages:**
    a. C++
    b. Java
    c. C#
    d. Pascal

Types of Programming Languages:-

1) Low level programming languages

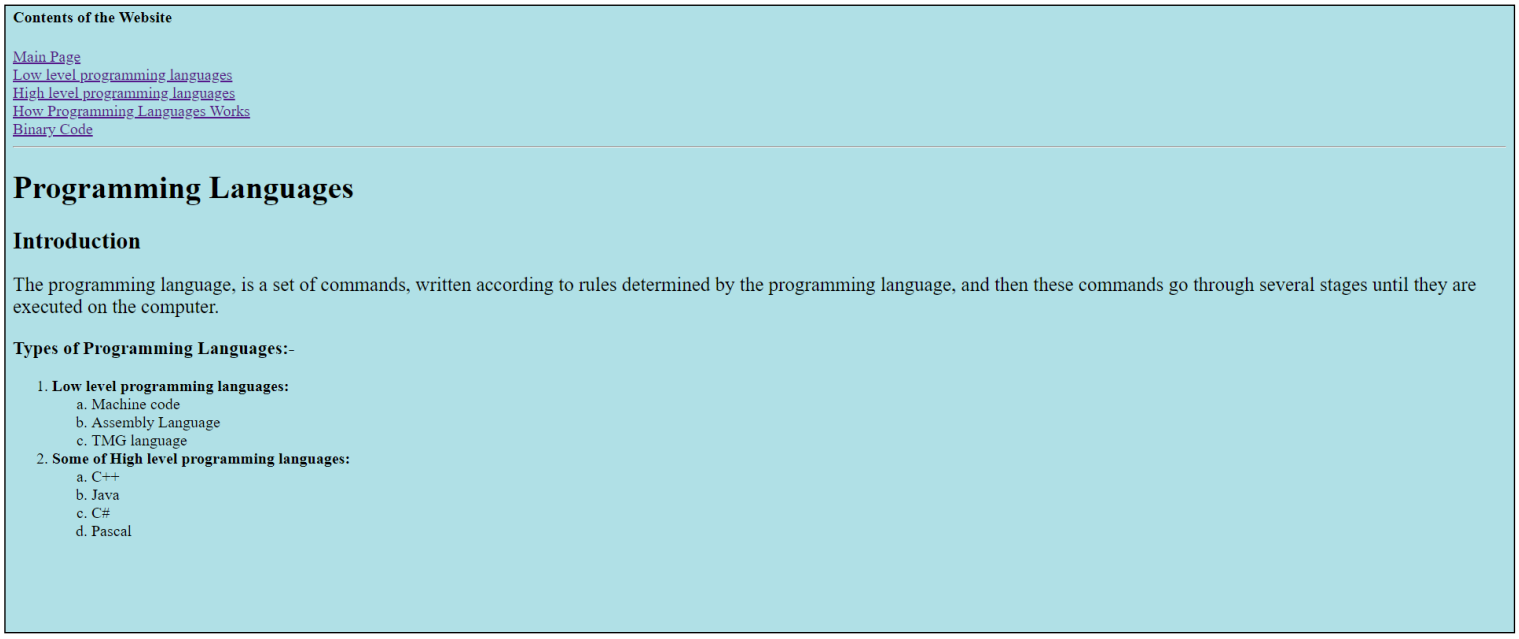
Low-level programming language is a programming language that provides little or no abstraction from a computer's instruction set architecture commands or functions in the language map closely to processor instructions.

2) High level programming languages

High-level programming language is a programming language with strong abstraction from the details of the computer. In contrast to low level programming languages. It may use natural language elements or it sometimes be easier than the natural language. His process of developing a program simpler and more understandable than when using a lower level language.

Screenshots of my website

Main page



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High level programming languages
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Binary Code

Programming Languages

Introduction

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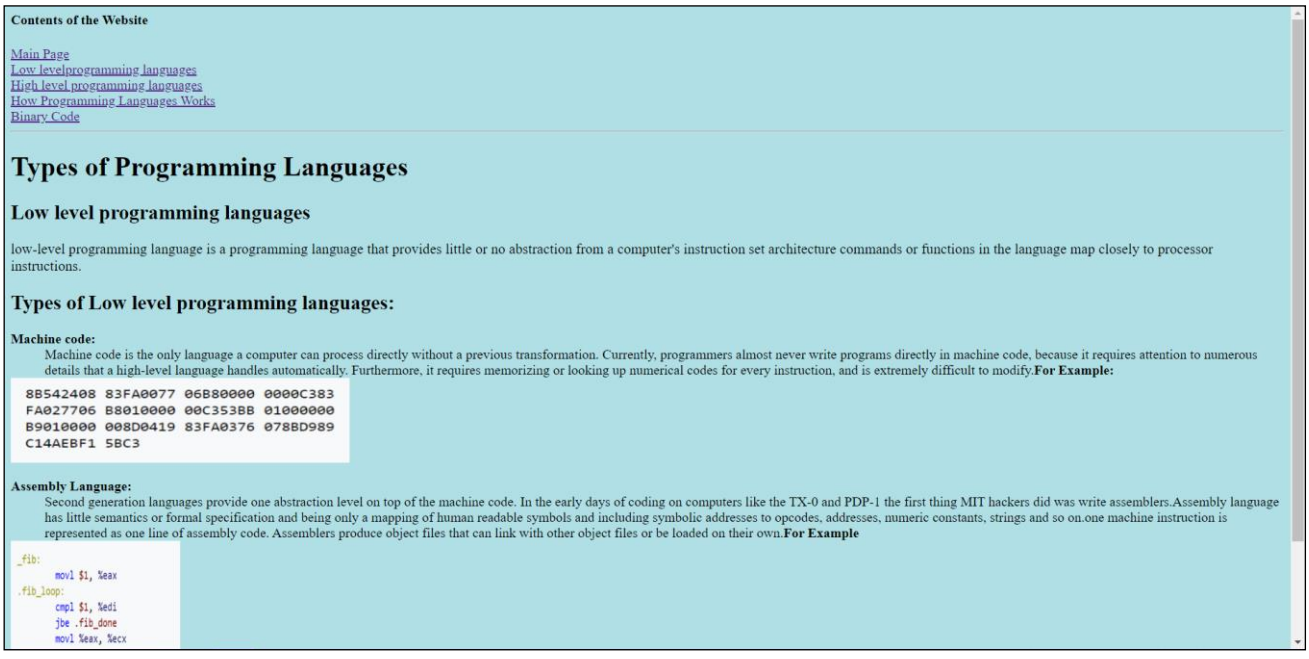

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Types of Programming Languages

Low level programming languages

low-level programming language is a programming language that provides little or no abstraction from a computer's instruction set architecture commands or functions in the language map closely to processor instructions.

Types of Low level programming languages:

Machine code:
Machine code is the only language a computer can process directly without a previous transformation. Currently, programmers almost never write programs directly in machine code, because it requires attention to numerous details that a high-level language handles automatically. Furthermore, it requires memorizing or looking up numerical codes for every instruction, and is extremely difficult to modify.**For Example:**

```
8B542408 83FA0077 06B80000 0000C383
FA027706 B8010000 00C353BB 01000000
B9010000 008D0419 83FA0376 078BD989
C14AEBF1 5BC3
```

Assembly Language:
Second generation languages provide one abstraction level on top of the machine code. In the early days of coding on computers like the TX-0 and PDP-1 the first thing MIT hackers did was write assemblers.Assembly language has little semantics or formal specification and being only a mapping of human readable symbols and including symbolic addresses to opcodes, addresses, numeric constants, strings and so on.one machine instruction is represented as one line of assembly code. Assemblers produce object files that can link with other object files or be loaded on their own.**For Example**

```
_fib:
        movl $1, %eax
.fib_loop:
        cmpl $1, %edi
        jbe .fib_done
        movl %eax, %ecx
```

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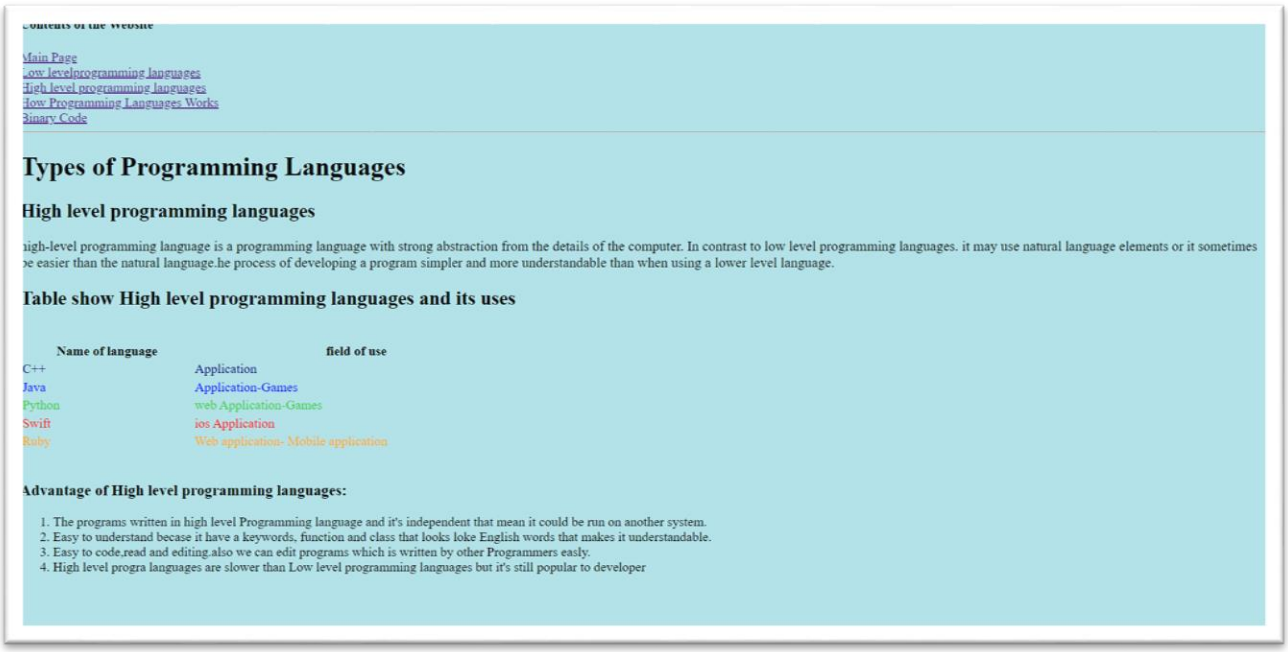

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Table show High level programming languages and its uses

Name of language	field of use
C++	Application
Java	Application-Games
Python	web Application-Games
Swift	ios Application
Ruby	Web application- Mobile application

Advantage of High level programming languages:

1. The programs written in high level Programming language and it's independent that mean it could be run on another system.
2. Easy to understand becase it have a keywords, function and class that looks loke English words that makes it understandable.
3. Easy to code,read and editing.also we can edit programs which is written by other Programmers easly.
4. High level progra languages are slower than Low level programming languages but it's still popular to developer

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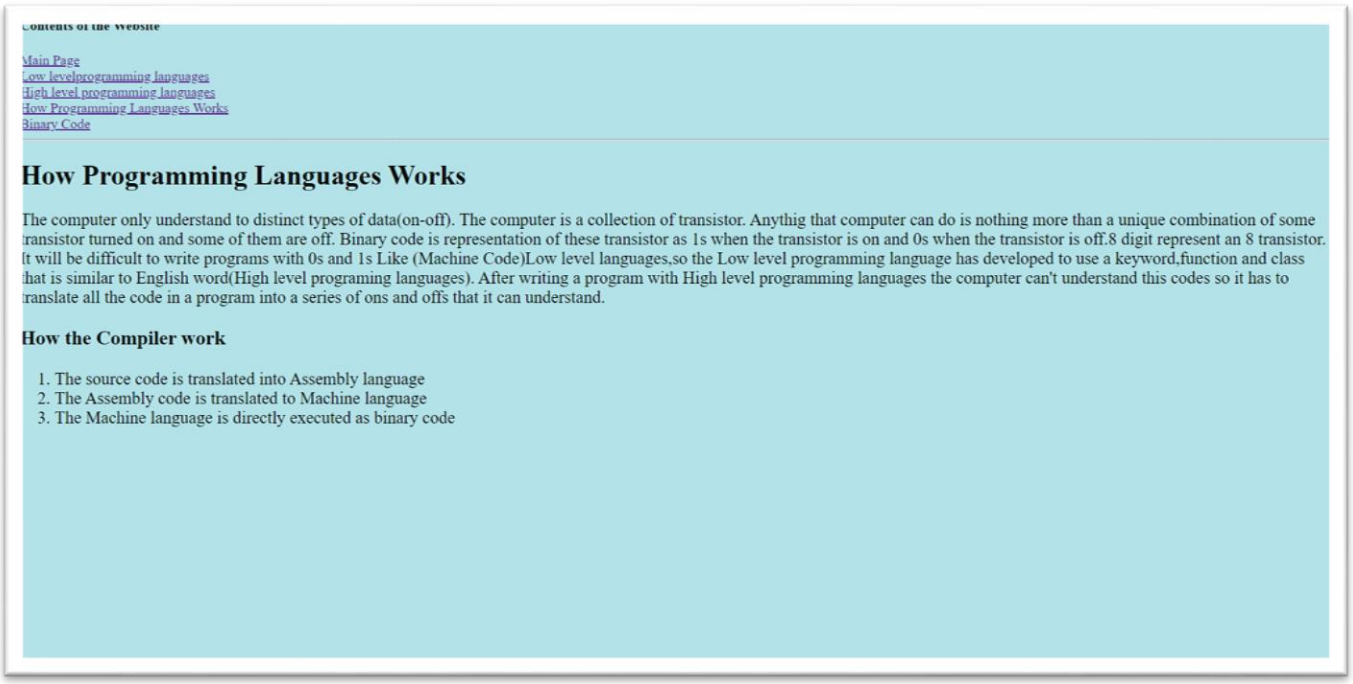

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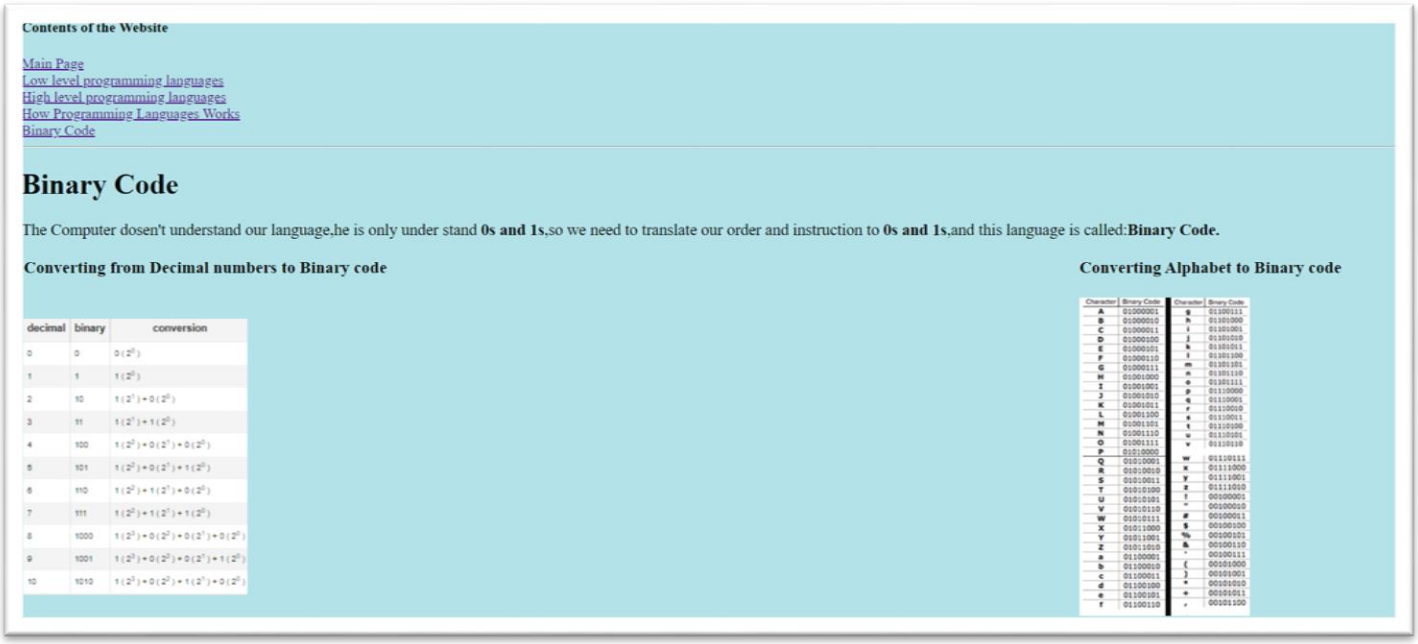
Binary Code

How Programming Languages Works

The computer only understand to distinct types of data(on-off). The computer is a collection of transistor. Anythig that computer can do is nothing more than a unique combination of some transistor turned on and some of them are off. Binary code is representation of these transistor as 1s when the transistor is on and 0s when the transistor is off.8 digit represent an 8 transistor. It will be difficult to write programs with 0s and 1s Like (Machine Code)Low level languages,so the Low level programming language has developed to use a keyword,function and class that is similar to English word(High level programing languages). After writing a program with High level programming languages the computer can't understand this codes so it has to translate all the code in a program into a series of ons and offs that it can understand.

How the Compiler work

1. The source code is translated into Assembly language
2. The Assembly code is translated to Machine language
3. The Machine language is directly executed as binary code



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Binary Code

The Computer dosen't understand our language,he is only under stand **0s and 1s**,so we need to translate our order and instruction to **0s and 1s**,and this language is called:**Binary Code.**

Converting from Decimal numbers to Binary code

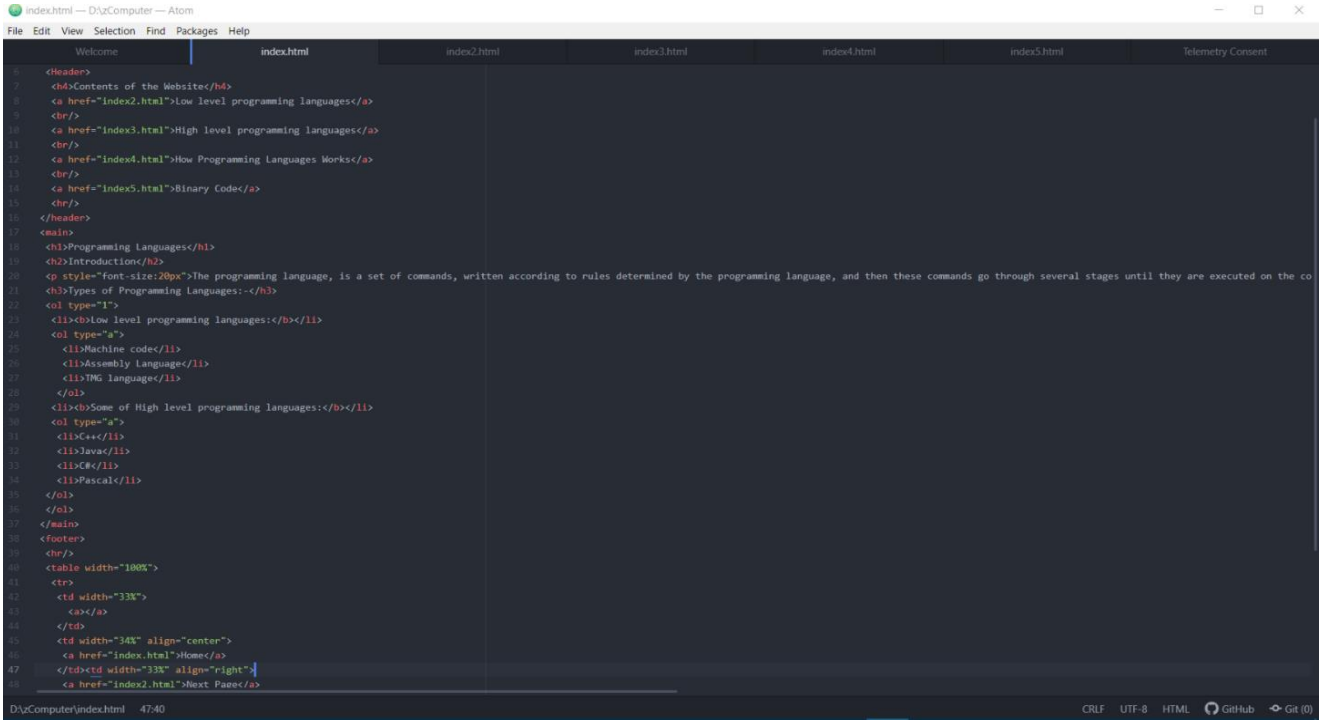
decimal	binary	conversion
0	0	$0(2^0)$
1	1	$1(2^0)$
2	10	$1(2^1)+0(2^0)$
3	11	$1(2^1)+1(2^0)$
4	100	$1(2^2)+0(2^1)+0(2^0)$
5	101	$1(2^2)+0(2^1)+1(2^0)$
6	110	$1(2^2)+1(2^1)+0(2^0)$
7	111	$1(2^2)+1(2^1)+1(2^0)$
8	1000	$1(2^3)+0(2^2)+0(2^1)+0(2^0)$
9	1001	$1(2^3)+0(2^2)+0(2^1)+1(2^0)$
10	1010	$1(2^3)+0(2^2)+1(2^1)+0(2^0)$

Converting Alphabet to Binary code

Character	Binary Code	Character	Binary Code
A	01000001	g	01100111
B	01000010	h	01101000
C	01000011	i	01101001
D	01000100	j	01101010
E	01000101	k	01101011
F	01000110	l	01101100
G	01000111	m	01101101
H	01001000	n	01101110
I	01001001	o	01101111
J	01001010	p	01110000
K	01001011	q	01110001
L	01001100	r	01110010
M	01001101	s	01110011
N	01001110	t	01110100
O	01001111	u	01110101
P	01010000	v	01110110
Q	01010001	w	01110111
R	01010010	x	01111000
S	01010011	y	01111001
T	01010100	z	01111010
U	01010101	!	00100001
V	01010110	"	00100010
W	01010111	#	00100011
X	01011000	$	00100100
Y	01011001	%	00100101
Z	01011010	&	00100110
a	01100001	'	00100111
b	01100010	(	00101000
c	01100011	)	00101001
d	01100100	*	00101010
e	01100101	+	00101011
f	01100110	,	00101100

Screenshots of the source code

Main page



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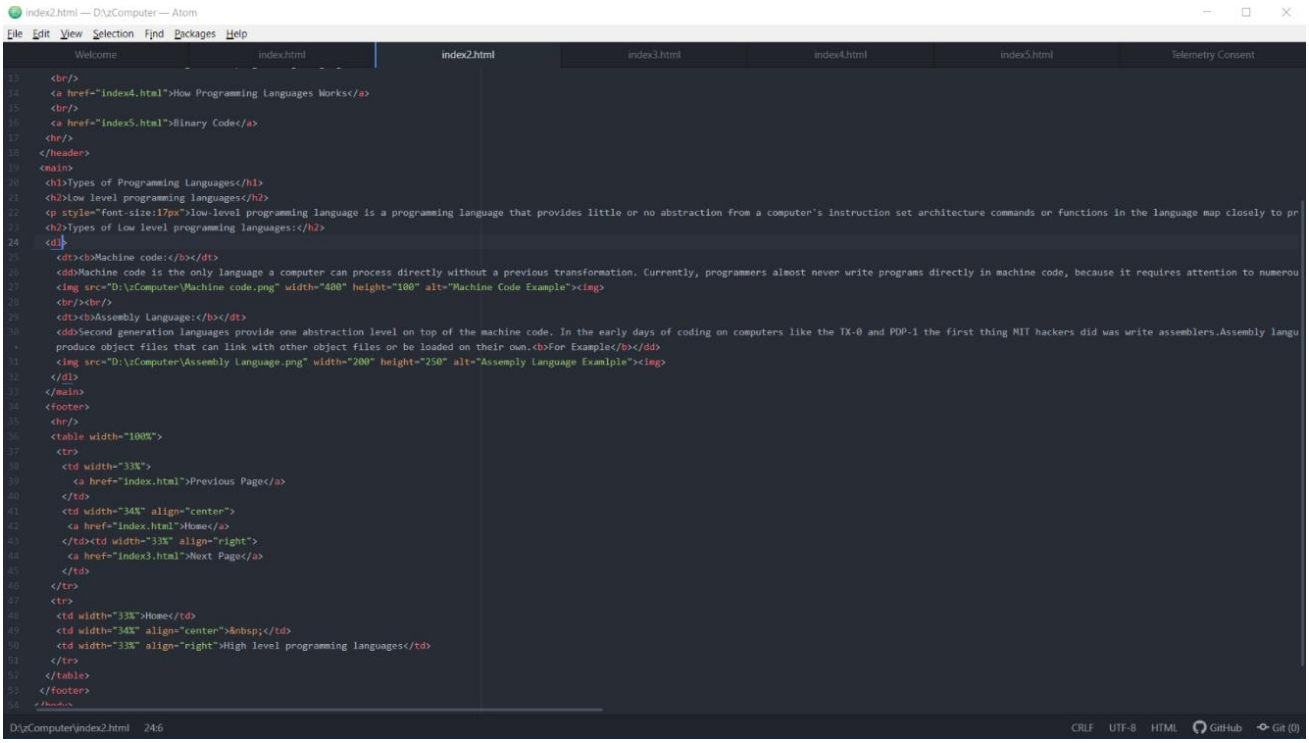

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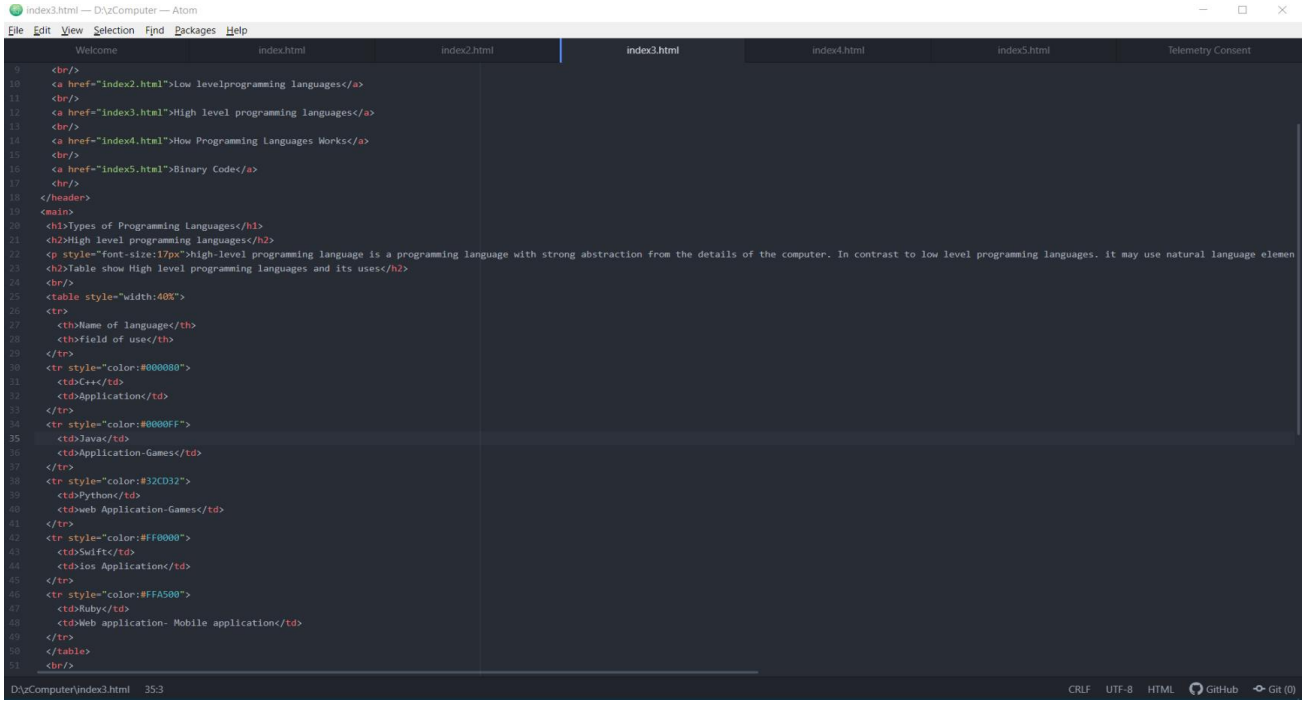
index3.html — D:\zComputer — Atom
File Edit View Selection Find Packages Help
Welcome
index.html
index2.html
index3.html
index4.html
index5.html
Telemetry Consent

Low levelprogramming languages

High level programming languages

How Programming Languages Works

Binary Code
<hr/>
</header>
<main>
<h1>Types of Programming Languages</h1>
<h2>High level programming languages</h2>
High-level programming language is a programming language with strong abstraction from the details of the computer. In contrast to low level programming languages. it may use natural language elemen
<h2>Table show High level programming languages and its uses</h2>

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<tr>
<th>Name of language</th>
<th>field of use</th>
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<tr style="color:#000080">
<td>C++</td>
<td>Application</td>
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<td>Swift</td>
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<td>Ruby</td>
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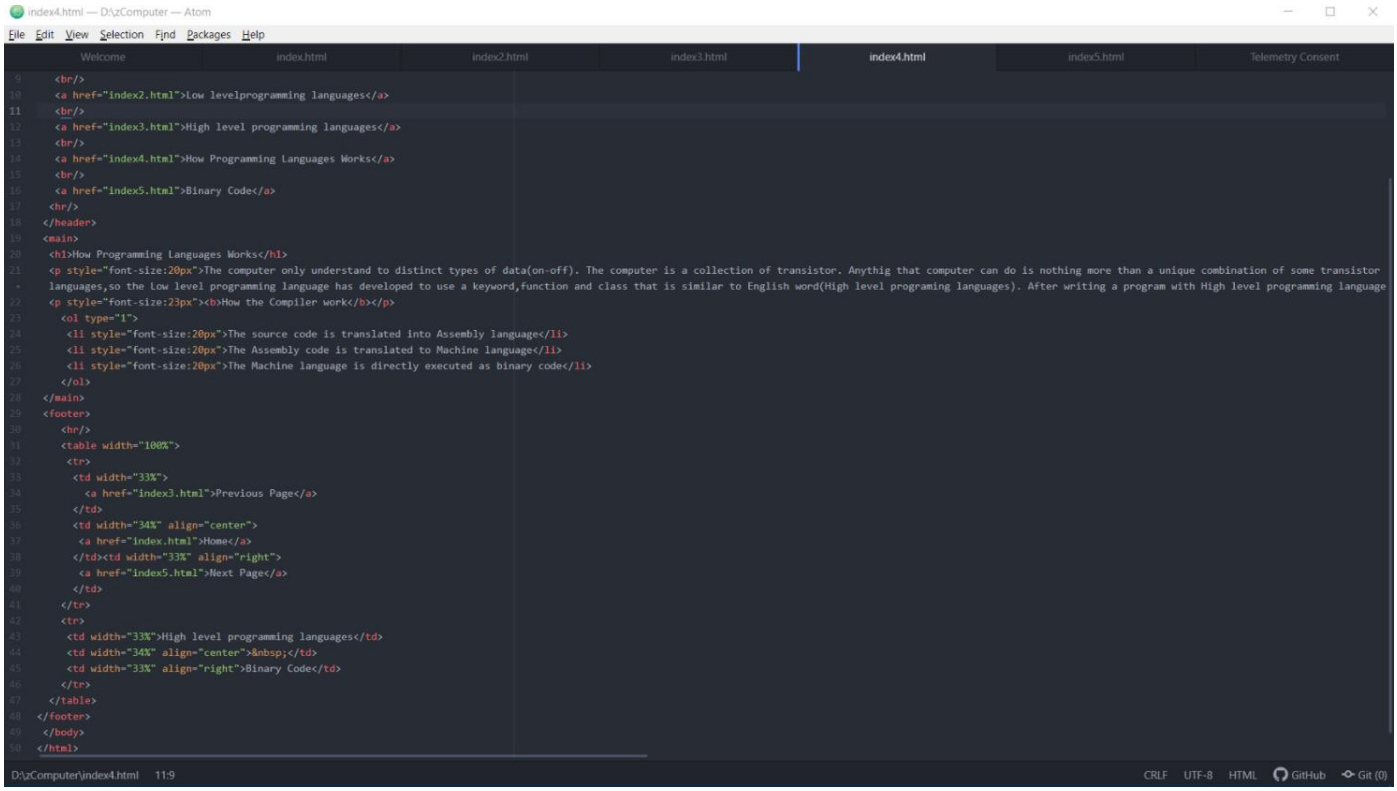
index4.html — D:\zComputer — Atom
File Edit View Selection Find Packages Help
Welcome
index.html
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<li style="font-size:20px">The Machine language is directly executed as binary code

</main>
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Previous Page
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Home
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Next Page
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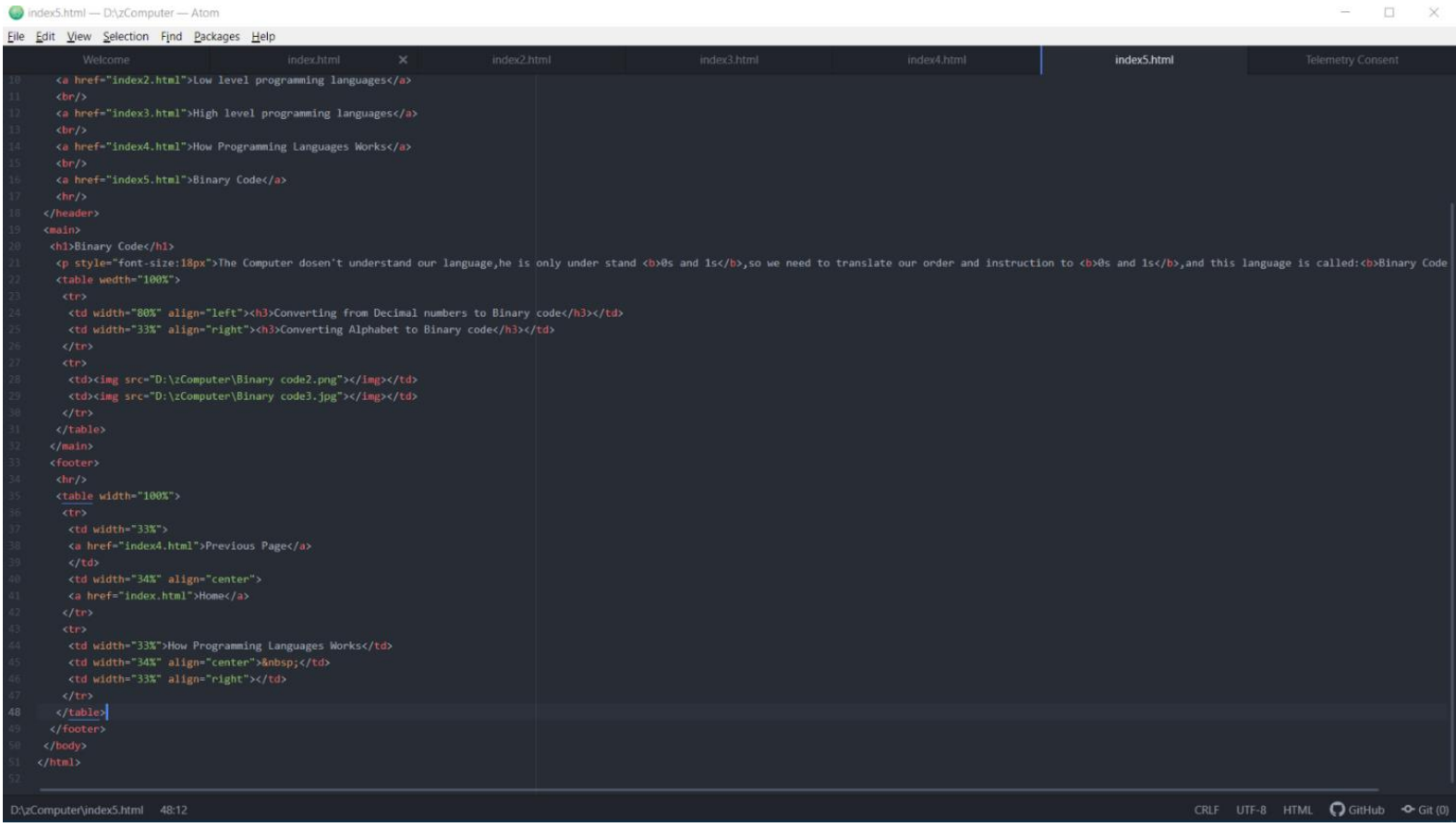
index5.html — D:\zComputer — Atom
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index.html
index2.html
index3.html
index4.html
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High level programming languages

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Binary Code
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</header>
<main>
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<p style="font-size:18px">The Computer dosen't understand our language,he is only under stand 0s and 1s,so we need to translate our order and instruction to 0s and 1s,and this language is called:Binary Code
<table wedth="100%">
<tr>
<td width="80%" align="left"><h3>Converting from Decimal numbers to Binary code</h3></td>
<td width="33%" align="right"><h3>Converting Alphabet to Binary code</h3></td>
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