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**الايمل الجامعي:**

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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

### Contents of the Website

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[How Programming Languages Works](#)  
[Binary Code](#)

## Programming Languages

### 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
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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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## Types of Programming Languages

### 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. The process of developing a program simpler and more understandable than when using a lower level language.

**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 because it have a keywords, function and class that looks like English words that makes it understandable.
3. Easy to code, read and editing also we can edit programs which is written by other Programmers easily.
4. High level programming languages are slower than Low level programming languages but it's still popular to developer

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## How Programming Languages Works

The computer only understand to distinct types of data (on-off). The computer is a collection of transistor. Anything 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 programming 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	[	00000001
V	01010110	\	00000010
W	01010111	]	00000011
X	01011000	^	00000100
Y	01011001	_	00000101
Z	01011010	`	00000110
a	01100001	~	00000111
b	01100010	{	00001000
c	01100011	}	00001001
d	01100100	~	00001010
e	01100101	~	00001011
f	01100110	~	00001100

## Screenshots of the source code

# Main page

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

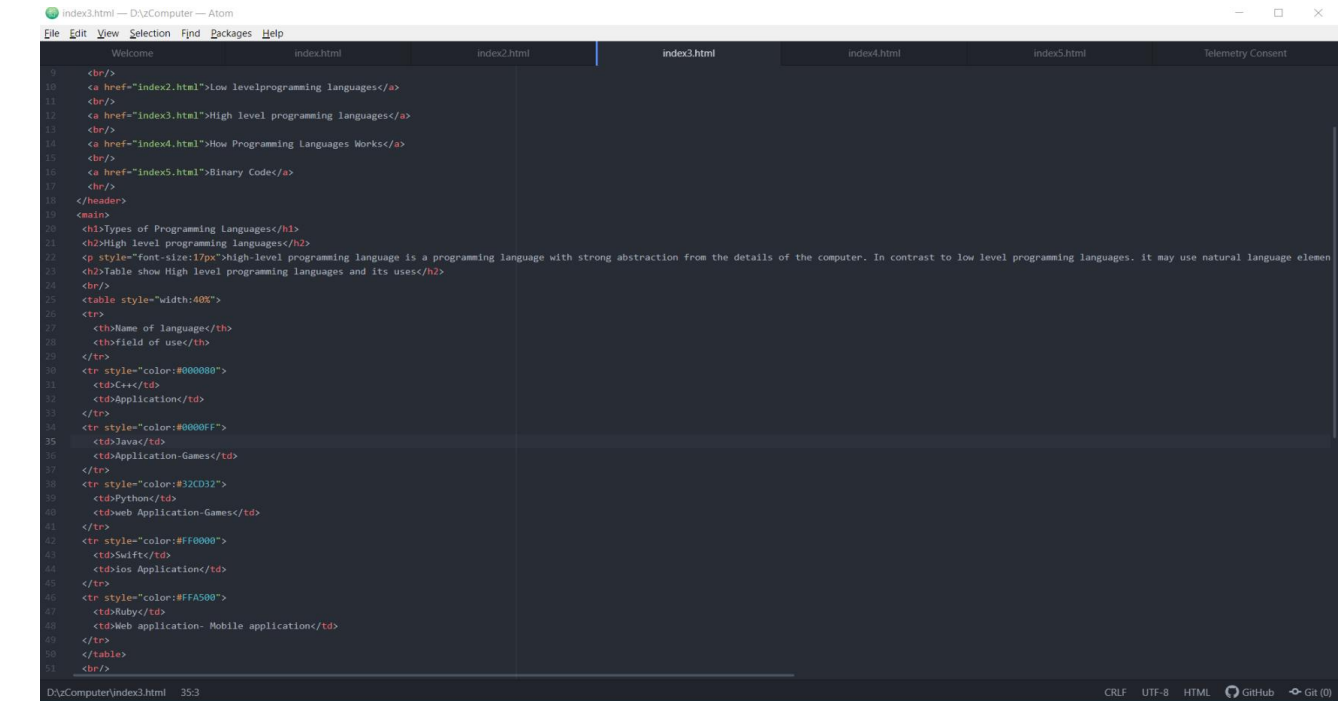
6 <header>
7 <h4>Contents of the Website</h4>
8 <a href="index2.html">Low level programming languages</a>
9 <br/>
10 <a href="index3.html">High level programming languages</a>
11 <br/>
12 <a href="index4.html">How Programming Languages Works</a>
13 <br/>
14 <a href="index5.html">Binary Code</a>
15 <br/>
16 </header>
17 <main>
18 <h1>Programming Languages</h1>
19 <h2>Introduction</h2>
20 <p style="font-size:20px">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 co
21 <h3>Types of Programming Languages:</h3>
22 <ol type="1">
23 <li><b>Low level programming languages:</b></li>
24 <ol type="a">
25 <li>Machine code</li>
26 <li>Assembly Language</li>
27 <li>IMG language</li>
28 </ol>
29 <li><b>Some of High level programming languages:</b></li>
30 <ol type="a">
31 <li>C++</li>
32 <li>Java</li>
33 <li>C</li>
34 <li>Pascal</li>
35 </ol>
36 </ol>
37 </main>
38 <footer>
39 <br/>
40 <table width="100%">
41 <tr>
42 <td width="33%">
43 <a href="index.html">Home</a>
44 </td>
45 <td width="34%>
46 <a href="index2.html">Next Page</a>
47 </td>
48 <td width="33%">
49 </td>
50 </tr>
51 </table>
52 </footer>
```

## Page 1

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

21 <br/>
22 <a href="index4.html">How Programming Languages Works</a>
23 <br/>
24 <a href="index5.html">Binary Code</a>
25 <br/>
26 </header>
27 <main>
28 <h1>Types of Programming Languages</h1>
29 <h2>Low level programming languages</h2>
30 <p style="font-size:17px">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 pr
31 <h3>Types of low level programming languages:</h3>
32 <ol>
33 <li><b>Machine code:</b>
34 <ol>
35 <li>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 numerou
36 
37 </li>
38 <li>Assembly Language:</li>
39 <ol>
40 <li>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 langu
41 produce object files that can link with other object files or be loaded on their own.</li>
42 
43 </li>
44 </ol>
45 </main>
46 <footer>
47 <br/>
48 <table width="100%">
49 <tr>
50 <td width="33%">
51 <a href="index.html">Previous Page</a>
52 </td>
53 <td width="34%>
54 <a href="index.html">Home</a>
55 </td>
56 <td width="33%">
57 <a href="index3.html">Next Page</a>
58 </td>
59 </tr>
60 <tr>
61 <td width="33%">Home</td>
62 <td width="34%">&nbsp;</td>
63 <td width="33%">High level programming languages</td>
64 </tr>
65 </table>
66 </footer>
```

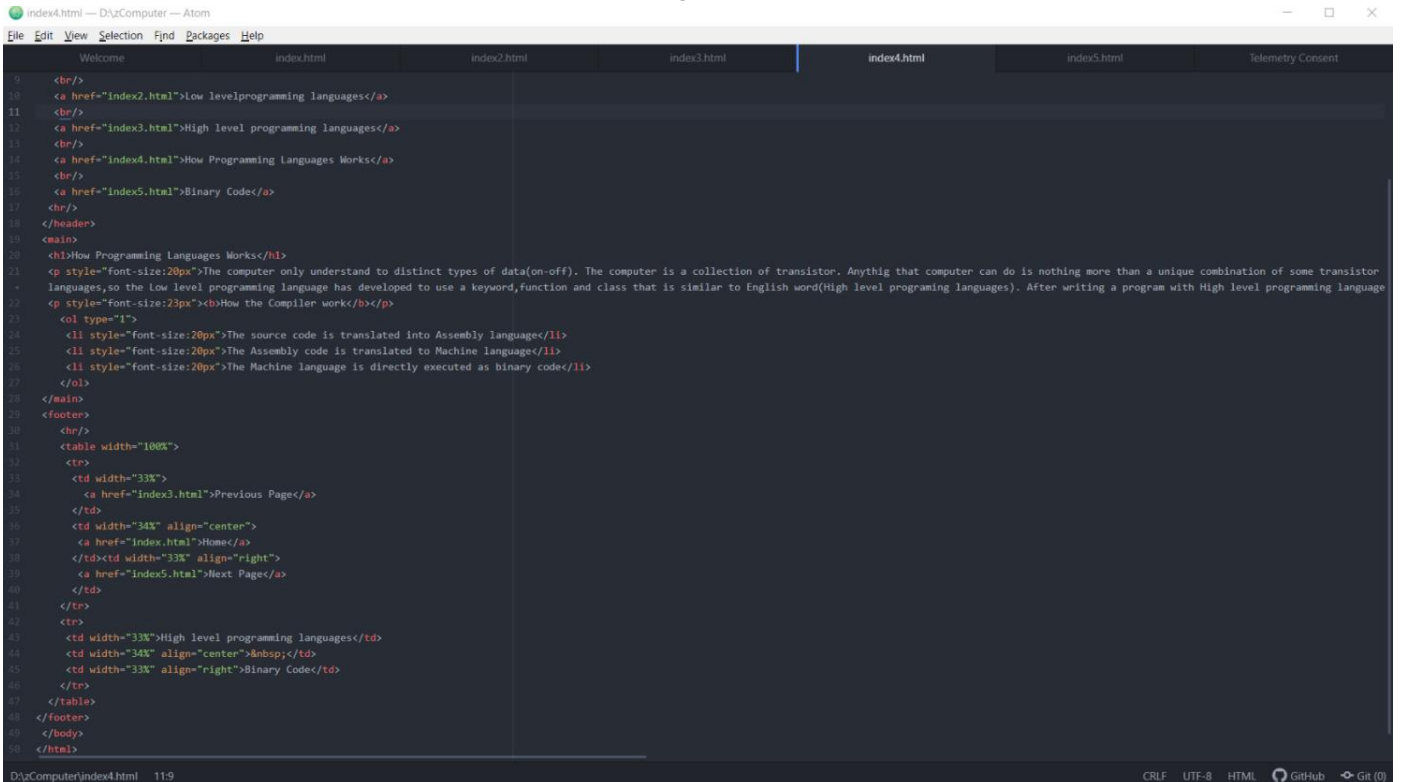
## Page 2



The screenshot shows the Atom editor interface with the file 'index3.html' open. The editor displays HTML code for a page titled 'Types of Programming Languages'. The code includes a header with navigation links to index2.html, index3.html, index4.html, and index5.html. The main content area features a table with 2 columns: 'Name of language' and 'field of use'. The table lists several programming languages and their applications, including Java, Python, Swift, and iOS. The footer contains a table with 3 columns: 'High level programming languages', 'Binary Code', and a blank space.

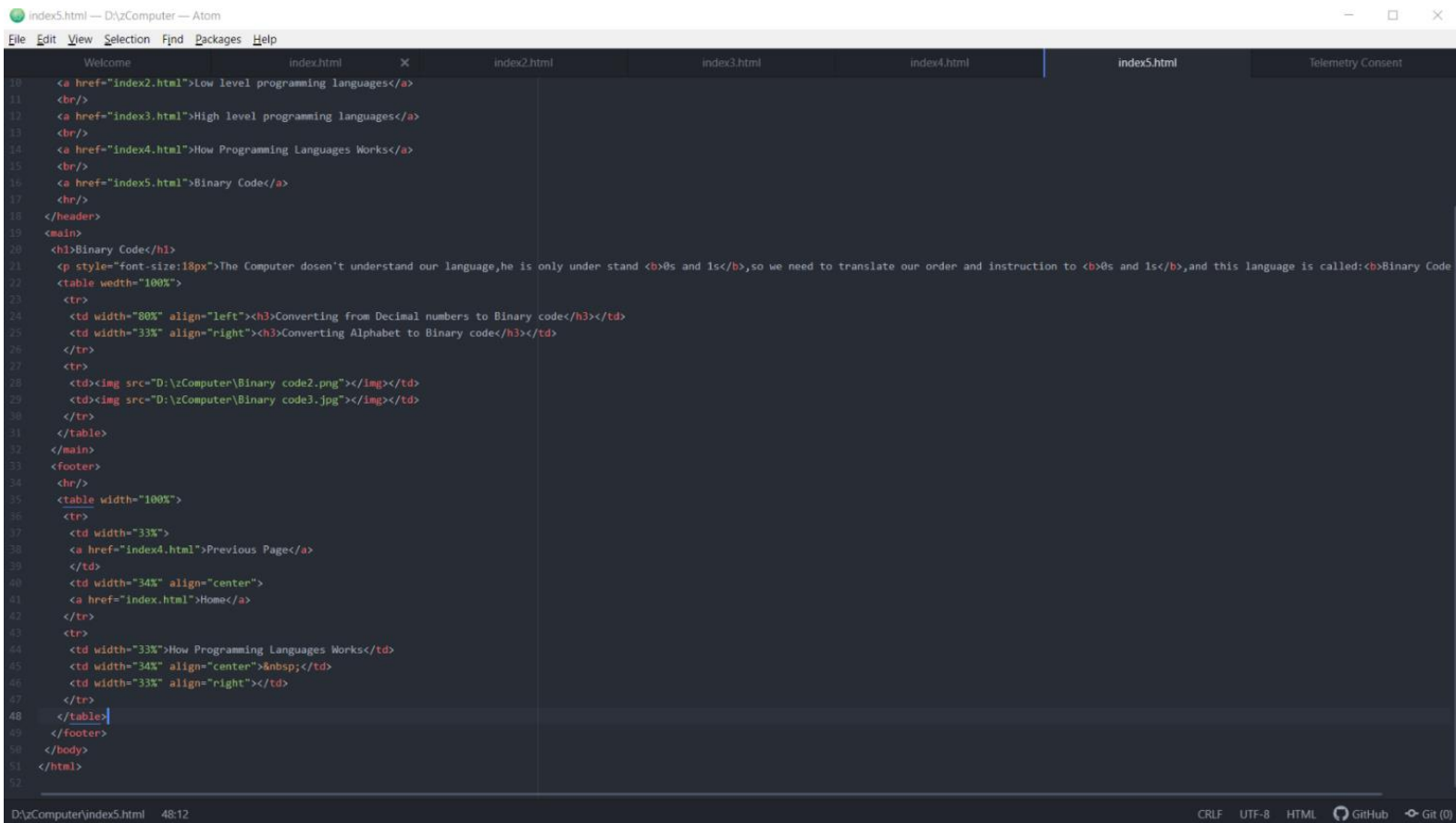
```
9 <br/>
10 <a href="index2.html">Low levelprogramming languages</a>
11 <br/>
12 <a href="index3.html">High level programming languages</a>
13 <br/>
14 <a href="index4.html">How Programming Languages Works</a>
15 <br/>
16 <a href="index5.html">Binary Code</a>
17 <br/>
18 </header>
19 <main>
20 <h1>Types of Programming Languages</h1>
21 <h2>High level programming languages</h2>
22 <p style="font-size:17px">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
23 <h2>Table show High level programming languages and its uses</h2>
24 <br/>
25 <table style="width:400%">
26 <tr>
27 <th>Name of language</th>
28 <th>field of use</th>
29 </tr>
30 <tr style="color:#000080">
31 <td>C++</td>
32 <td>Application</td>
33 </tr>
34 <tr style="color:#0000FF">
35 <td>Java</td>
36 <td>Application-Games</td>
37 </tr>
38 <tr style="color:#32CD32">
39 <td>Python</td>
40 <td>Web Application-Games</td>
41 </tr>
42 <tr style="color:#FF0000">
43 <td>Swift</td>
44 <td>iOS Application</td>
45 </tr>
46 <tr style="color:#FFA500">
47 <td>Ruby</td>
48 <td>Web application- Mobile application</td>
49 </tr>
50 </table>
51 <br/>
52 </main>
```

## Page 3



The screenshot shows the Atom editor interface with the file 'index4.html' open. The editor displays HTML code for a page titled 'How Programming Languages Works'. The code includes a header with navigation links to index2.html, index3.html, index4.html, and index5.html. The main content area features a table with 2 columns: 'Name of language' and 'field of use'. The table lists several programming languages and their applications, including Java, Python, Swift, and iOS. The footer contains a table with 3 columns: 'High level programming languages', 'Binary Code', and a blank space.

```
9 <br/>
10 <a href="index2.html">Low levelprogramming languages</a>
11 <br/>
12 <a href="index3.html">High level programming languages</a>
13 <br/>
14 <a href="index4.html">How Programming Languages Works</a>
15 <br/>
16 <a href="index5.html">Binary Code</a>
17 <br/>
18 </header>
19 <main>
20 <h1>How Programming Languages Works</h1>
21 <p style="font-size:20px">The computer only understand to distinct types of data(on-off). The computer is a collection of transistor. Anything that computer can do is nothing more than a unique combination of some transistor
22 <p style="font-size:23px"><b>How the Compiler work</b></p>
23 <ol type="1">
24 <li style="font-size:20px">The source code is translated into Assembly language</li>
25 <li style="font-size:20px">The Assembly code is translated to Machine language</li>
26 <li style="font-size:20px">The Machine language is directly executed as binary code</li>
27 </ol>
28 </main>
29 <footer>
30 <br/>
31 <table width="100%">
32 <tr>
33 <td width="33%">
34 <a href="index3.html">Previous Page</a>
35 </td>
36 <td width="34% align="center">
37 <a href="index.html">Home</a>
38 </td>
39 <td width="33% align="right">
40 <a href="index5.html">Next Page</a>
41 </td>
42 </tr>
43 <tr>
44 <td width="33%">High level programming languages</td>
45 <td width="34% align="center">&nbsp;&nbsp;&nbsp;</td>
46 <td width="33% align="right">Binary Code</td>
47 </tr>
48 </table>
49 </footer>
50 </body>
51 </html>
```



```
index5.html — D:\zComputer — Atom
File Edit View Selection Find Packages Help

Welcome index.html index2.html index3.html index4.html index5.html Telemetry Consent

10 <a href="index2.html">Low level programming languages</a>
11 <br/>
12 <a href="index3.html">High level programming languages</a>
13 <br/>
14 <a href="index4.html">How Programming Languages Works</a>
15 <br/>
16 <a href="index5.html">Binary Code</a>
17 <br/>
18 </header>
19 <main>
20 <h1>Binary Code</h1>
21 <p style="font-size:18px">The Computer dosen't understand our language,he is only under stand <b>0s and 1s</b>,so we need to translate our order and instruction to <b>0s and 1s</b>,and this language is called:<b>Binary Code</b>
22 <table wedth="100%">
23 <tr>
24 <td width="80%" align="left"><h3>Converting from Decimal numbers to Binary code</h3></td>
25 <td width="33%" align="right"><h3>Converting Alphabet to Binary code</h3></td>
26 </tr>
27 <tr>
28 <td></img></td>
29 <td></img></td>
30 </tr>
31 </table>
32 </main>
33 <footer>
34 <hr/>
35 <table width="100%">
36 <tr>
37 <td width="33%">
38 <a href="index4.html">Previous Page</a>
39 </td>
40 <td width="34%" align="center">
41 <a href="index.html">Home</a>
42 </td>
43 <tr>
44 <td width="33%">How Programming Languages Works</td>
45 <td width="34%" align="center">&nbsp;&nbsp;&nbsp;</td>
46 <td width="33%" align="right"></td>
47 </tr>
48 </table>
49 </footer>
50 </body>
51 </html>
52

D:\zComputer\index5.html 48:12 CRLF UTF-8 HTML GitHub Git (0)
```