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Q. What are the main Languages of the computer? Explain them briefly.

Answers:

Definition of Language:

"Way of communication between two or more person is called language"

Programming / Computer Language:

"A computer language is a way of communication between user and the computer"

Each computer language has certain rules. These rules are called as the Syntax of that language.

Types of Computer languages are:

1. Low Level Language.
2. Middle Level Language.
3. High Level Language.

1. Low Level Language:

"A language that is easily understandable by the computer is called low level language"

Types of Low-Level Language:

Low level language is further sub-divided into two types:

- a. Machine Language.
- b. Assembly Language.

(a). Machine Language:

"A language which is directly understandable by the computer without being translated is called machine language"

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Characteristics:

1. It is a machine dependent language.
2. It is also called first generation language.
3. It is written in the form of binary numbers that is in the form of "0" and "1".
4. Program written in the machine language executes very fast.
5. Developing program in machine language is very difficult.

(b). Assembly Language:

"A language which has same features as machine language but uses symbols instead of "0" and "1" and also need to be translated before execution is called assembly language".

Characteristics:

1. It was developed in 1950.
2. We use symbols or mnemonics code, so it is called symbolic language.
3. The program used to translate assembly language into machine language is called assembler.

2. Middle Level Language:

"The language which is understandable by the machine and human being is called middle level language".

Example:

- i. "C" Language.
- ii. Java Language.

Characteristics:

- a. It was developed in 1960.
- b. It is understandable for machine and human.
- c. It is still difficult to develop program in this language.

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3. High Level Language:

"The language, which is closed to human language, is called high level language"

Characteristics:

- i. These languages are easy to understand by the human.
- ii. They are also called "English Oriented Language".
- iii. High Level Language was developed in 1956.
- iv. It is also called "User Friendly Language".
- v. It is difficult for the machine to understand this language.
- vi. Translator is required for computer to understand this language.
- vii. It is easy for programming.
- viii. It is easy to understand by humans.
- ix. It is easy to operate.

Types of High-Level Language:

There are three types of high-level language:

- a. Procedural/Structured Language.
- b. Object Oriented Language.
- c. Database Query Language.

a. Procedural/Structured Language:

"Computer program follows a predetermined procedure"

The computer instructions are executed by the order or in sequence in which they are written. These instructions tell the computer "what to do" and "How to do". These languages are called third generation languages.

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The most popular procedural languages are:

- i. FORTRAN stands for "Formula Translation".
- ii. BASIC stands for "Beginner all-purpose symbolic instruction code"

b. Object Oriented Language:

Object Oriented Programming is latest technology for writing computer programs. A computer program is written as a collection of number of objects. Each object performs specific task. It consists of data and-functions.

Example:

The most used object-oriented languages are C++, Java etc.

c. Database Query Language:

These languages are based on the special type of database called relational database. These languages are used to store, delete, edit and retrieve data from a database.

Examples:

The most commonly used Relational database are:

- a. SQL Server
- b. ORACLE
- c. MS-Access

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Q: Difference between Procedural and Non-Procedural/Object Oriented language?

Ans:

Procedural Languages:

- A. Procedural language uses pre-defined procedures or functions for Programming.
- B. It executes in a strict sequence or order.
- C. It is difficult to debug procedural language program, if any error occurs.
- D. It occupies more memory than non-procedural language.
- E. **“C, Cobol, Fortran”** are examples of procedural language

Object Oriented language:

- A. Non-procedural languages use objects for programming.
- B. It does not follow any sequence or order.
- C. It is very easy to debug nonprocedural language program, if any error occurs.
- D. It occupies less memory because object once created can be used again.
- E. C++ and Java are examples of non-procedural language.

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Q: Difference between High Level language and Low-Level language?

Ans.

Difference between High-level and Low-level Language is as following:

High-level language	Low-level language
1 High-level languages are easy to learn.	1 Low-level languages are difficult to learn.
2 High-level languages are near to human Language.	2 Low-level languages are near to machine.
3 Program written in High-level languages are slow in execution.	3 Program written in Low level languages are fast in execution.
4 Program written in High-level languages are easy to modify.	4 Program written in Low-level languages are difficult to modify
5 High-level languages do not provide facility at hardware level.	5 Low-level languages provide facility at hardware level.
6 These languages are normally used to write system software's.	These languages are normally used to write Application software's.
7 Error removing is difficult in High-level Language.	7 Error removing is easy in low-level Language.
8 C++, Java are the example of high-level language.	8 Machine language, assembly language is the example of low-level language

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Q: Difference between Source Code and Object Code?

Ans:

Difference between source code and object code as following:

	Source Code		Object Code
1	A computer program written in high-level language is called source code.	1	A computer program written in low-level language called object code.
2	It is also called source Program.	2	It is also called object Program.
3	The source program can not run directly on the computer.	3	The object program can run directly on the computer.

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Q. What are Language Processors Translators? Briefly describe the various types?

Ans:

Language Translators:

Programs written in high-level languages must be converted into machine language for execution by the computer. Special programs are used to convert source code into object code. These programs are called Language Processors or Language Translators.

There are two types of translators used in high-level language:

1) Compiler:

- a) The language translator that translates programs written in high-level language as a whole is called compiler.
- b) The compiler translates the source code into object code.
- c) The program is compiled only once and can be executed several times directly on the computer.
- d) It saves the compiled program into another file called object file with extension “ .obi ”. The computer directly executes the object code.
- e) If there is any error in the source program, the compiler specifies the error at the time of compilation.
- f) All errors must be removed before the compiler successfully compiles the source program.

2) Interpreter:

- a) The language translators that executes a source program by translating one instruction at a time is called interpreter.
- b) If there is any error in the program. It indicates the error and stops the program execution.

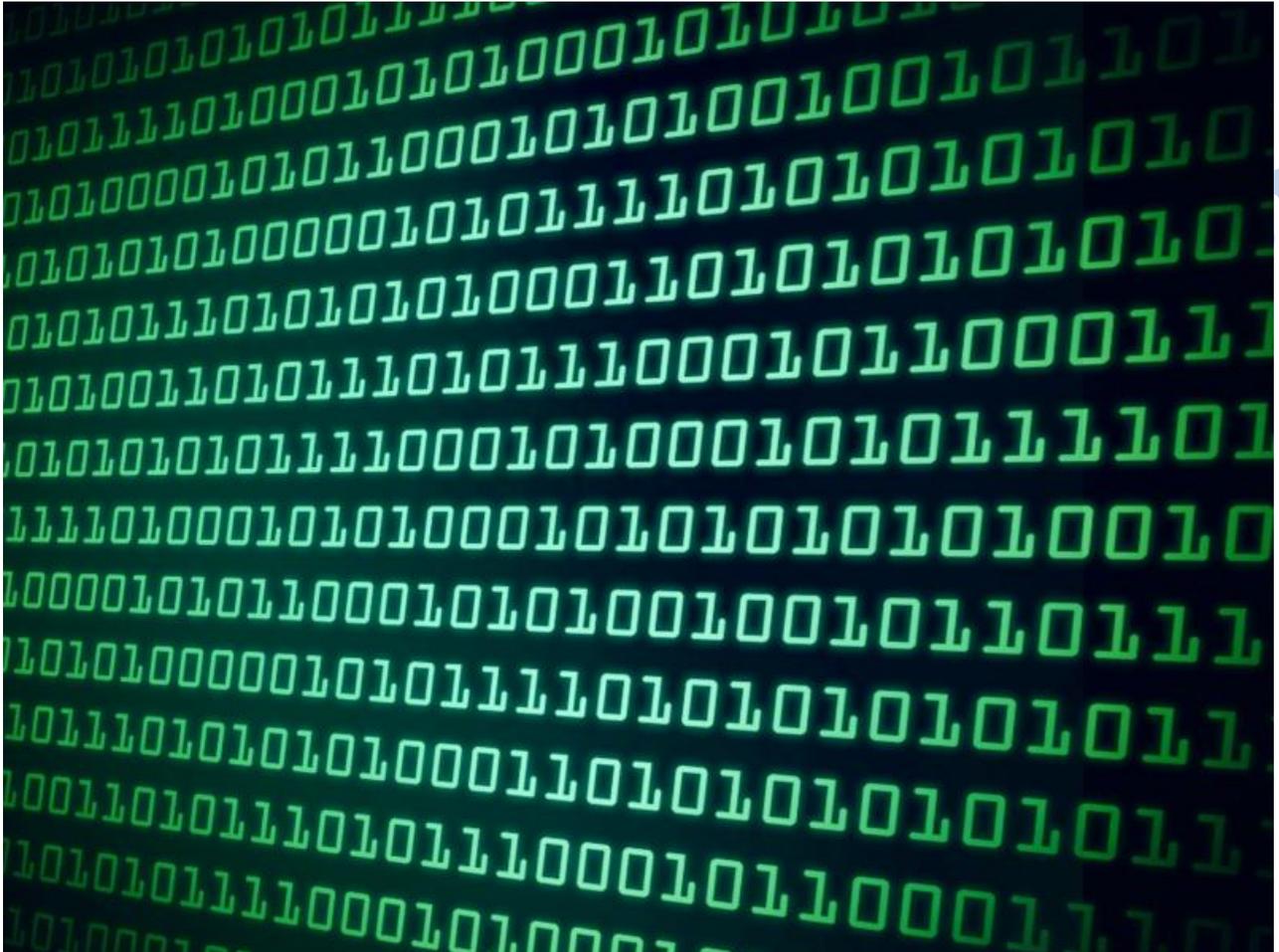
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- c) It does not create any object file.
- d) It translates the source program each time the program is executed.
- e) It works slowly.

Difference between compiler and interpreter?

Compiler	Interpreter
1 It translates the source program as a whole.	1 It translates the source program instruction one by one and execute.
2 It creates an object file with .obj extension.	2 It does not create any object file.
3 It requires large memory in computer.	3 It does not require large memory in computer.
4 It runs faster.	4 It runs slower.
5 Compiler is not easy to write.	5 Interpreter is easy to write.
6 For Example, Compiler used in C or C++ language.	6 For Example, Interpreter used in BASIC or Internet Explorer.

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Allama Iqbal Law

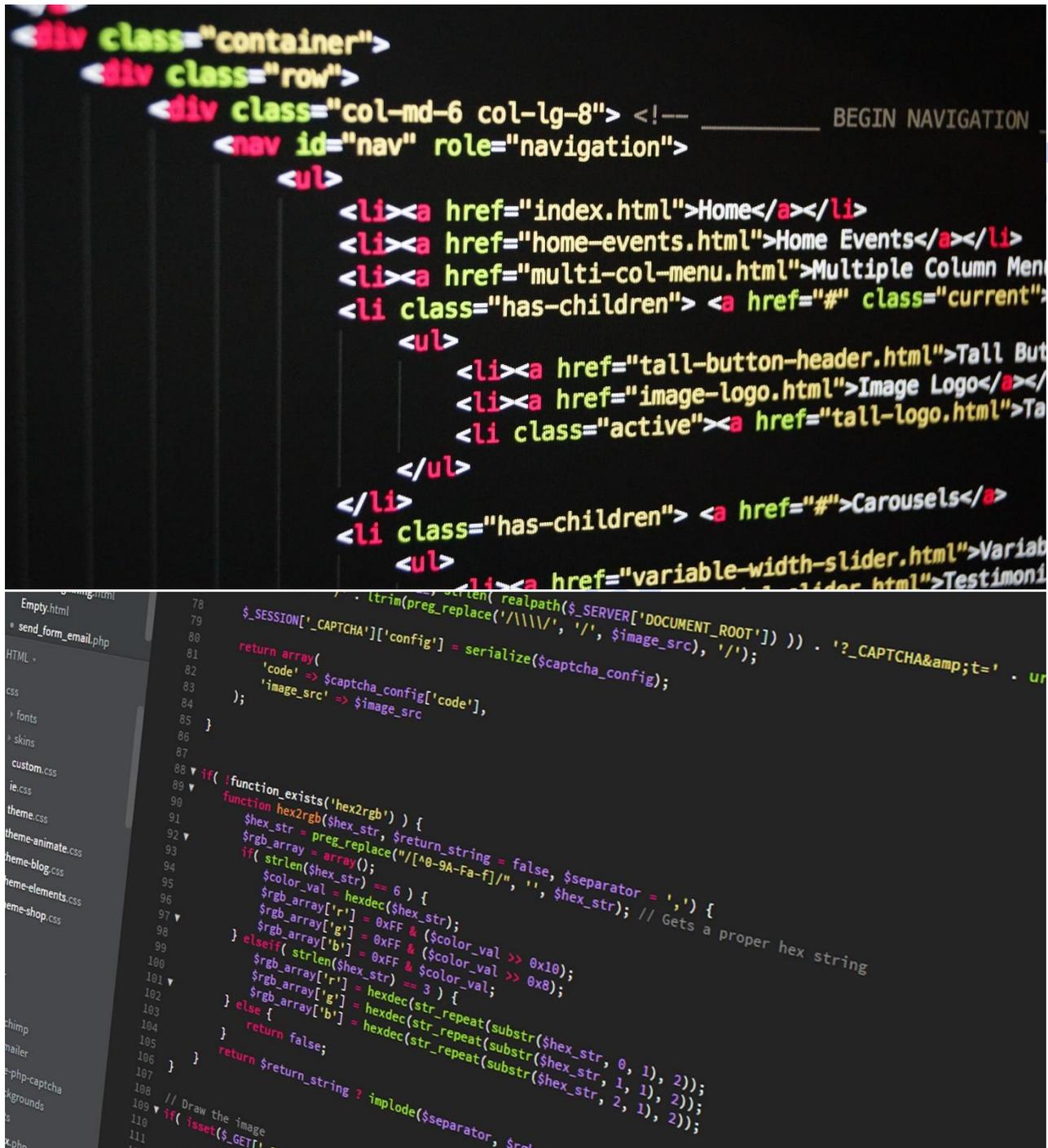
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The images above is how binary language / low level language / machine language look like on screen of a computer.

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```
div class="container">
div class="row">
div class="col-md-6 col-lg-8"> <!-- BEGIN NAVIGATION
nav id="nav" role="navigation">
ul>
li><a href="index.html">Home</a></li>
li><a href="home-events.html">Home Events</a></li>
li><a href="multi-col-menu.html">Multiple Column Men
li class="has-children"> <a href="#" class="current">
ul>
li><a href="tall-button-header.html">Tall But
li><a href="image-logo.html">Image Logo</a></li>
li class="active"><a href="tall-logo.html">Ta
</ul>
</li>
li class="has-children"> <a href="#">Carousels</a>
ul>
li><a href="variable-width-slider.html">Variab
li><a href="testimonial.html">Testimoni

function_exists('hex2rgb') ) {
function hex2rgb($hex_str, $return_string = false, $separator = ',') {
$hex_str = preg_replace("/[A0-9A-Fa-f]/", '', $hex_str); // Gets a proper hex string
if (strlen($hex_str) == 6) {
$color_val = hexdec($hex_str);
$rgb_array['r'] = 0xFF & ($color_val >> 0x10);
$rgb_array['g'] = 0xFF & ($color_val >> 0x8);
} elseif (strlen($hex_str) == 3) {
$rgb_array['r'] = hexdec(str_repeat(substr($hex_str, 0, 1), 2));
$rgb_array['g'] = hexdec(str_repeat(substr($hex_str, 1, 1), 2));
$rgb_array['b'] = hexdec(str_repeat(substr($hex_str, 2, 1), 2));
} else {
return false;
}
return $return_string ? implode($separator, $rgb_array) : $rgb_array;
}

// Draw the image
if (isset($_GET['c'])) {

```

Above two images are how a high level language look on a screen of a computer.