What is computer ?

an electronic device which is capable of receiving information (data) in a particular form and of performing a sequence of operations in accordance with a predetermined but variable set of procedural instructions (program) to produce a result in the form of information or signals..

application of computer:

Business

A computer has high speed of calculation, diligence, accuracy, reliability, or versatility which has made it an integrated part in all business organizations.

- Payroll calculations
- Budgeting
- Sales analysis
- Financial forecasting
- Managing employee database
- Maintenance of stocks, etc.

Banking

Today, banking is almost totally dependent on computers.

Banks provide the following facilities −

- Online accounting facility, which includes checking current balance, making deposits and overdrafts, checking interest charges, shares, and trustee records.
- ATM machines which are completely automated are making it even easier for customers to deal with banks.

Insurance

Insurance companies are keeping all records up-to-date with the help of computers.

- Procedure to continue with policies
- Starting date of the policies
- Next due installment of a policy
- Maturity date
- Interests due
- Survival benefits
- Bonus

Education

The computer helps in providing a lot of facilities in the education system.

- The computer provides a tool in the education system known as CBE (Computer Based Education).
- CBE involves control, delivery, and evaluation of learning.
- Computer education is rapidly increasing the graph of number of computer students.
- There are a number of methods in which educational institutions can use a computer to educate the students.
- It is used to prepare a database about performance of a student and analysis is carried out on this basis.

Healthcare

Computers have become an important part in hospitals, labs, and dispensaries. They are being used in hospitals to keep the record of patients and medicines. It is also used in scanning and diagnosing different diseases. ECG, EEG, ultrasounds and CT scans, etc. are also done by computerized machines.

Government

Computers play an important role in government services. Some major fields in this category are −

- Budgets
- Sales tax department
- Income tax department
- Computation of male/female ratio
- Computerization of voters lists

Basic Structure of computer:
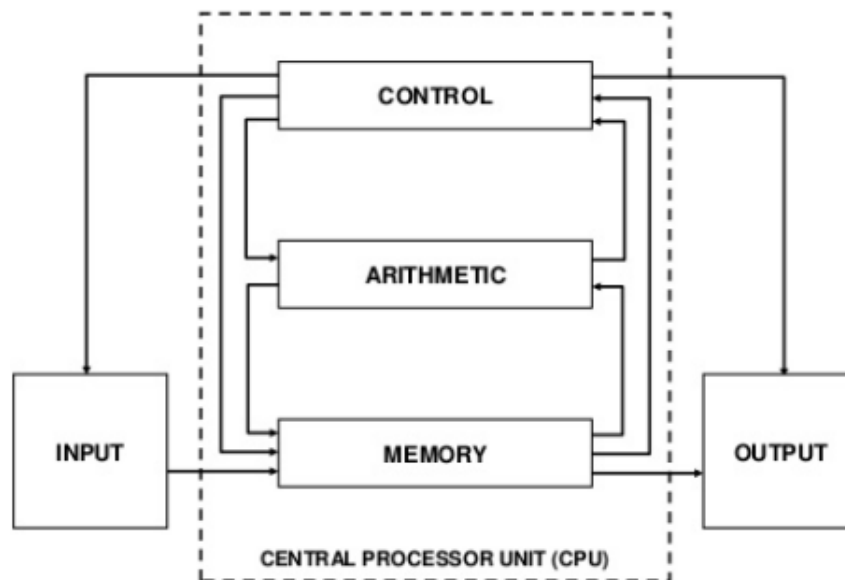
COMPUTER

What is SOFTWARE:

Computer software, or simply software, is a part of a computer system that consists of data or computer instructions, in contrast to the physical hardware from which the system is built.

What is hardware:

Computer hardware are the physical parts or components of a computer, such as the monitor, keyboard, computer data storage, graphic card, sound card and motherboard. By contrast, software is instructions that can be stored and ran by hardware,

What is system software:

System software, or systems software, is computer software designed to provide a platform to other software.

Application software

An application program is a computer program designed to perform a group of coordinated functions, tasks, or activities for the benefit of the user.

Operating system

An operating system is system software that manages computer hardware and software resources and provides common services for computer programs.

Difference between ram and rom:

Options	RAM	ROM
Elaboration	Random Access Memory	Read Only memory
Accessibility	In reference with the processor, the information stored in the RAM is easily accessed	The processor cannot directly access the information that is stored in the ROM. In order to access the ROM information, first the information will be transferred into the RAM and then it gets executed by the processor
Working type	Both the read and write operations can be performed over the information that is stored in the RAM	The ROM memory only allows the user to read the information. User cannot make any changes to the information.
Storage	RAM memory is only used to store the temporary information.	ROM memory is used to store permanent information and cannot be deleted.

Central processing unit

A central processing unit is the electronic circuitry within a computer that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output operations specified by the instructions.

Arithmetic logic unit

An arithmetic logic unit is a combinational digital electronic circuit that performs arithmetic and bitwise operations on integer binary numbers. This is in contrast to a floating-point unit, which operates on floating point numbers.

Control unit:

The **control unit** (**CU**) is a component of c**omputer's** central processing unit (**CPU**) that directs the operation of the processor. It tells the **computer's** memory, arithmetic/logic unit and input and output devices how to respond to a program's instructions. ... Most **computer** resources are managed by the **CU**.

C

C is a general-purpose, imperative computer programming language, supporting structured programming, lexical variable scope and recursion, while a static type system prevents many unintended operations.

What are Low-level languages?

Low-level languages those languages which are extremely close to machine language. They are also known as Assembly languages. The closest languages after Assembly to Machine language are C and C++. Some people even call C and C++ as low level languages. Machine code is known as low level because unlike high level programming languages it doesn't need anything else like compilers or something. It runs directly on the processor and they are extremely architecture specific.

High-level programming language

In computer science, a high-level programming language is a programming language with strong abstraction from the details of the computer.

What is the skeleton of a C program

Most coding starts with a C language structure. This *skeleton* includes the basic bones upon which most programs are written. Use this simple skeleton to get started:

```
#include <stdio.h>
int main()
{
    return(0);
}
```

what is header file in c program

A **header file** is a **file** containing **C** declarations and macro definitions (see Macros) to be shared between several source **files**. You request the use of a **header file** in your **program** by including it, with the **C** preprocessing directive ' #include '. **Header files** serve two purposes.

what is library file in c programming

A **library** in **C** is a group of functions and declarations, exposed for use by other programs. The **library** therefore consists of an interface expressed in a .h **file** (named the "header") and an implementation expressed in a .**c file**.

what is preprocessor in c programming

C Programming/Preprocessor directives and macros. ... C++ compilers use the same **C preprocessor**. The **preprocessor** is a part of the compiler which performs preliminary operations (conditionally compiling code, including files etc...) to your code before the compiler sees it.

Compiler

A compiler is computer software that transforms computer code written in one programming language into another programming language. Compilers are a type of translator that support digital devices, primarily computers.

There are five basic data types associated with variables:

- int - integer: a whole number.
- float - floating point value: ie a number with a fractional part.
- double - a double-precision floating point value.
- char - a single character.
- void - valueless special purpose type which we will examine closely in later sections.

Integer Types

The following table provides the details of standard integer types with their storage sizes and value ranges —

Type	Storage size	Value range
char	1 byte	-128 to 127 or 0 to 255
unsigned char	1 byte	0 to 255
signed char	1 byte	-128 to 127
int	2 or 4 bytes	-32,768 to 32,767 or -2,147,483,648 to 2,147,483,647
unsigned int	2 or 4 bytes	0 to 65,535 or 0 to 4,294,967,295
short	2 bytes	-32,768 to 32,767
unsigned short	2 bytes	0 to 65,535
long	4 bytes	-2,147,483,648 to 2,147,483,647
unsigned long	4 bytes	0 to 4,294,967,295

Floating-Point Types

The following table provide the details of standard floating-point types with storage sizes and value ranges and their precision –

Type	Storage size	Value range	Precision
float	4 byte	1.2E-38 to 3.4E+38	6 decimal places
double	8 byte	2.3E-308 to 1.7E+308	15 decimal places
long double	10 byte	3.4E-4932 to 1.1E+4932	19 decimal places

What is type conversion:

```
bool -> char -> short int -> int ->
unsigned int -> long -> unsigned ->
long long -> float -> double -> long double
```

1. Arithmetic Operators

C programming language provides all basic arithmetic operators: +, -, *, / and %.

Operators	Meanings
+	Addition or unary plus
-	Subtraction or unary minus
*	Multiplication
/	Division
%	Modulo division

Table 1: Arithmetic Operators in C

2. Relational Operators

Relational operators are used when we have to make comparisons. C programming offers 6 relational operators.

Operators	Meanings
<	Is less than
<=	Is less than or equal to
>	Is greater than
>=	Is greater than or equal to
==	Is equal to
!=	Is not equal to

Table 2: Relational Operators in C

3. Logical Operators

Logical operators are used when more than one conditions are to be tested and based on that result, decisions have to be made. C programming offers three logical operators. They are:

Operator	Meaning
&&	Logical AND
||	Logical OR
!	Logical NOT

Table 3: Logical Operator in C

7. Bitwise Operator

In C programming, bitwise operators are used for testing the bits or shifting them left or right. The bitwise operators available in C are:

Operators	Meaning
&	Bitwise AND
!	Bitwise OR
^	Bitwise exclusive OR
<<	Shift left
>>	Shift right

Table 4: Bitwise Operators in C

10. C Operator Precedence

At first, the expressions within parenthesis are evaluated. If no parenthesis is present, then the arithmetic expression is evaluated from left to right. There are two priority levels of operators in C.

High priority: * / %
Low priority: + -

Declaration of a variable in c language:

In **C programming**, **variables** which are to be used later in different parts of the functions have to be **declared**. **Variable declaration** tells the compiler two things: The name of the **variable**. The type of data the **variable** will hold.

definition of a variable in c language

C Programming/Variables. ... **Variables** are simply names used to refer to some location in memory – a location that holds a value with which we are working. It may help to think of **variables** as a placeholder for a value. You can think of a **variable** as being equivalent to its assigned value.

Defining a Function

The general form of a function definition in C programming language is as follows −

```
return_type function_name( parameter list ) {

   body of the function

}
```

A function definition in C programming consists of a *function header* and a *function body*. Here are all the parts of a function −

- **Return Type** − A function may return a value. The **return_type** is the data type of the value the function returns. Some functions perform the desired operations without returning a value. In this case, the return_type is the keyword **void**.

- **Function Name** − This is the actual name of the function. The function name and the parameter list together constitute the function signature.

- **Parameters** − A parameter is like a placeholder. When a function is invoked, you pass a value to the parameter. This value is referred to as actual parameter or argument. The parameter list refers to the type, order, and number of the parameters of a function. Parameters are optional; that is, a function may contain no parameters.

- **Function Body** − The function body contains a collection of statements that define what the function does.

-

Library function

Library functions in C language are inbuilt **functions** which are grouped together and placed in a common place called **library**. ... All **C** standard **library functions** are declared in many header files which are saved as filename's. Actually, **function** declaration, definition for macros are given in all header files.

Standard library function is that which is already included in the header file of compiler.

User defined function is the function which is created by the user in order to do a program.