INTRODUCTION
OF
COMPUTING

Types of C Variables

1. Integer Variable (can hold only an integer constant)
2. Real variable (can hold only a real constant)
3. Character Variables (can hold only a character constant)

NOTE:

- The rules for constructing different types of constants are different.
- However, for constructing variable names of all types, the same set of rules applies

Rules for Constructing Variable Names

1. A variable name is any combination of alphabets, digits or underscores. Some compilers allow variable names whose length could be up to 247 characters. Still, it would be safer to stick to the rule of 31 characters. Do not create unnecessarily long variable names as it adds to your typing effort.

2. The first character in the variable name must be an alphabet or underscore (_). It cannot be in digit.

3. No commas or blanks are allowed within a variable name.

4. No special symbol other than an underscore (as in **gross_sal) can be** used in a variable name.

Rules for Constructing Variable Names

Ex.: si_int

m_hra

pop_e_89

C Keywords

- Keywords are the words whose meaning has already been explained to the C compiler (or in a broad sense to the computer).

- There are only 32 keywords available in C.

- The keywords cannot be used as variable names because if we do so, we are trying to assign a new meaning to the keyword, which is not allowed.

C Keywords

auto	double	int	struct
break	else	long	switch
case	enum	register	typedef
char	extern	return	union
const	float	short	unsigned
continue	for	signed	void
default	goto	sizeof	volatile
do	if	static	while

First C program

```
#include <stdio.h>
#include<conio.h>
void main()
{
    clrscr();
    printf("Hello, World!"); // printf() displays the string inside
                                quotation
    getch();
}
```

First C program Explanation

- The #include is a preprocessor command that tells the compiler to include the contents of stdio.h (standard input and output) file in the program.

- The stdio.h file contains functions such as scanf() and printf() to take input and display output respectively.

First C program Explanation

- If you use the printf() function without writing #include <stdio.h>, the program will not compile (depending on compiler)

- The execution of a C program starts from the main() function.

- printf() is a library function to send formatted output to the screen. In this program, printf() displays Hello, World! text on the screen.

First C program

```
#include <stdio.h>
int main()
{
    clrscr();
    printf("Hello, World!"); // printf() displays the string inside
                                quotation
    return 0;
}
```

The return 0; statement is the **"Exit status"** of the program. In simple terms, the program ends with this statement.

ALGORITHM

An algorithm is a procedure or step-by-step instruction for solving a problem. They form the foundation of writing a program.

For writing any programs, the following has to be known:

- Input
- Tasks to be preformed
- Output expected

Write An Algorithm To Find The Sum Of Two Numbers

STEP 1 : Start

STEP 2 : Accept First Number

STEP 3 : Accept Second Number

STEP 4 : Add These Two Numbers

STEP 5 : Display Result

STEP 6 : Stop

FLOW CHART

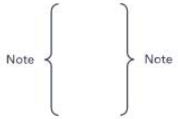
- Flowcharts is an diagrammatic representation of an algorithm .

- Flow chart are very helpful in writing program and explaining programs to others.

Symbols Used In Flowchart

Terminal/Terminator	
Process	
Decision	
Document	

Symbols Used In Flowchart

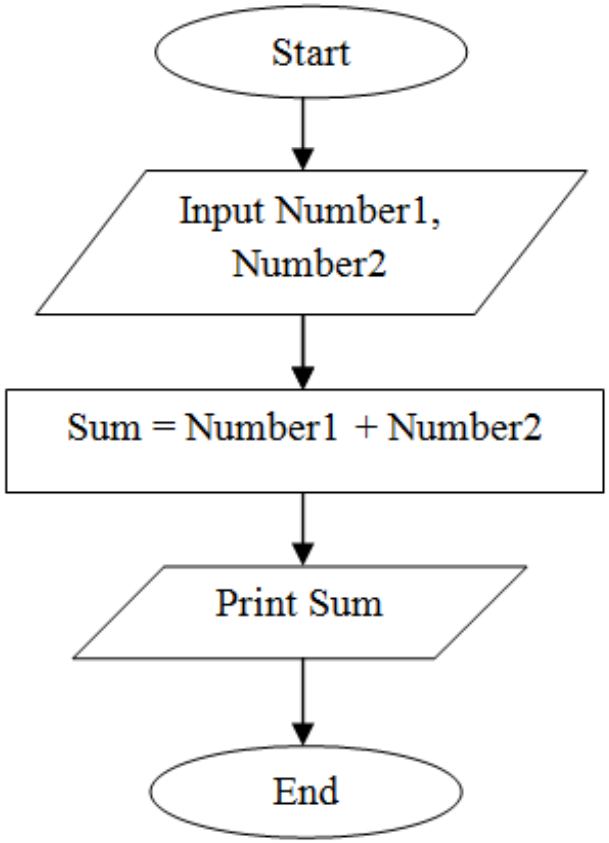
Data, or Input/Output	
Stored Data	
Flow Arrow	
Comment or Annotation	
Predefined process	

Symbols Used In Flowchart

On-page connector/reference

Off-page connector/reference

Flow Chart to Add Two Numbers



Pseudocode

- It's simply an implementation of an algorithm in the form of annotations and informative text written in plain English.

- It has no syntax like any of the programming language and thus can't be compiled or interpreted by the computer.

Pseudocode to Add Two Numbers

```
BEGIN
NUMBER b1,b2,sum
INPUT b1
INPUT b2
sum=b1+b2
OUTPUT sum
END
```

PROGRAM

A computer program is a collection of instructions that can be executed by a computer to perform a specific task.

Program To Add two Numbers

```
#include<stdio.h>
#include<conio.h>
void main()
{
        int num1, num2, sum;
        num1=2;
        num2=3;
        sum=num1+num2;
        printf("%d", sum);
}
```

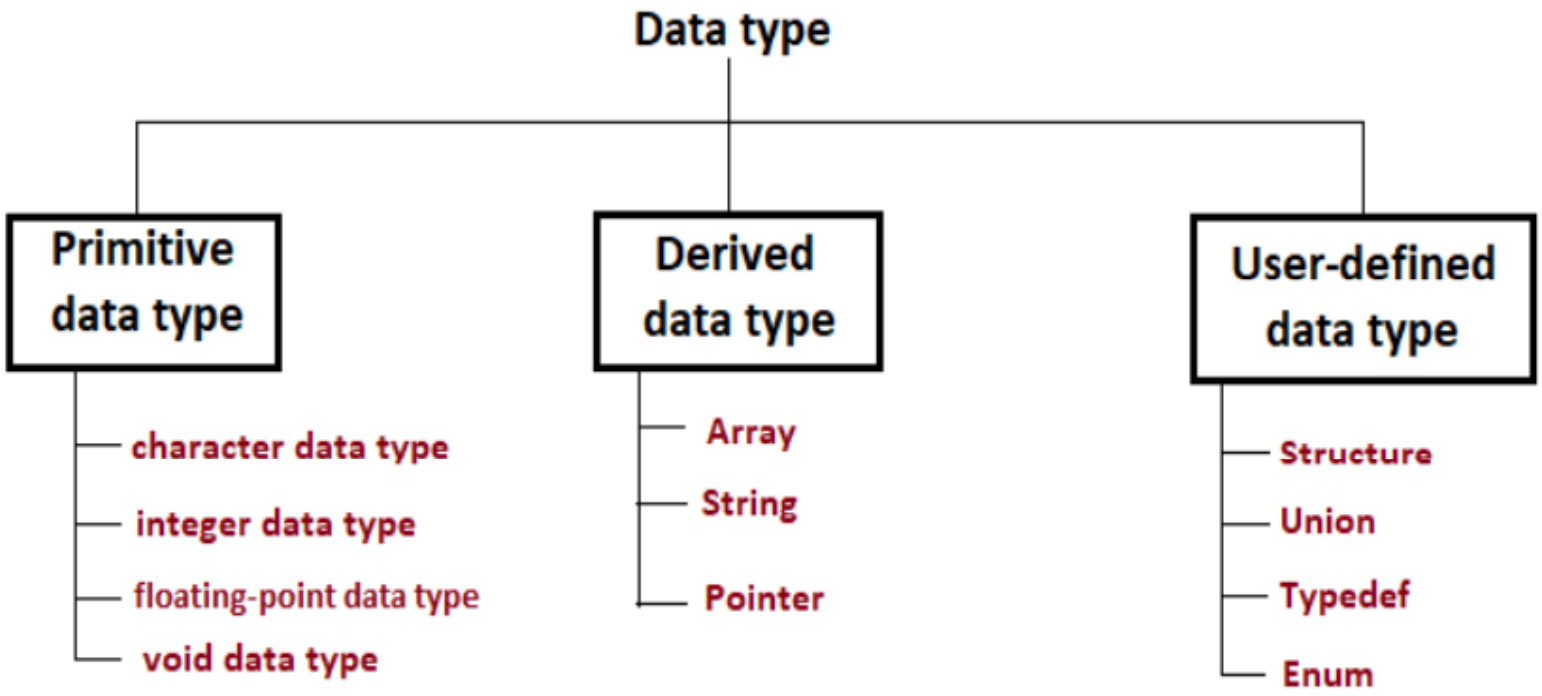
Data Types

A keyword that is used for creating variables for storing single and multiple values is called data types.

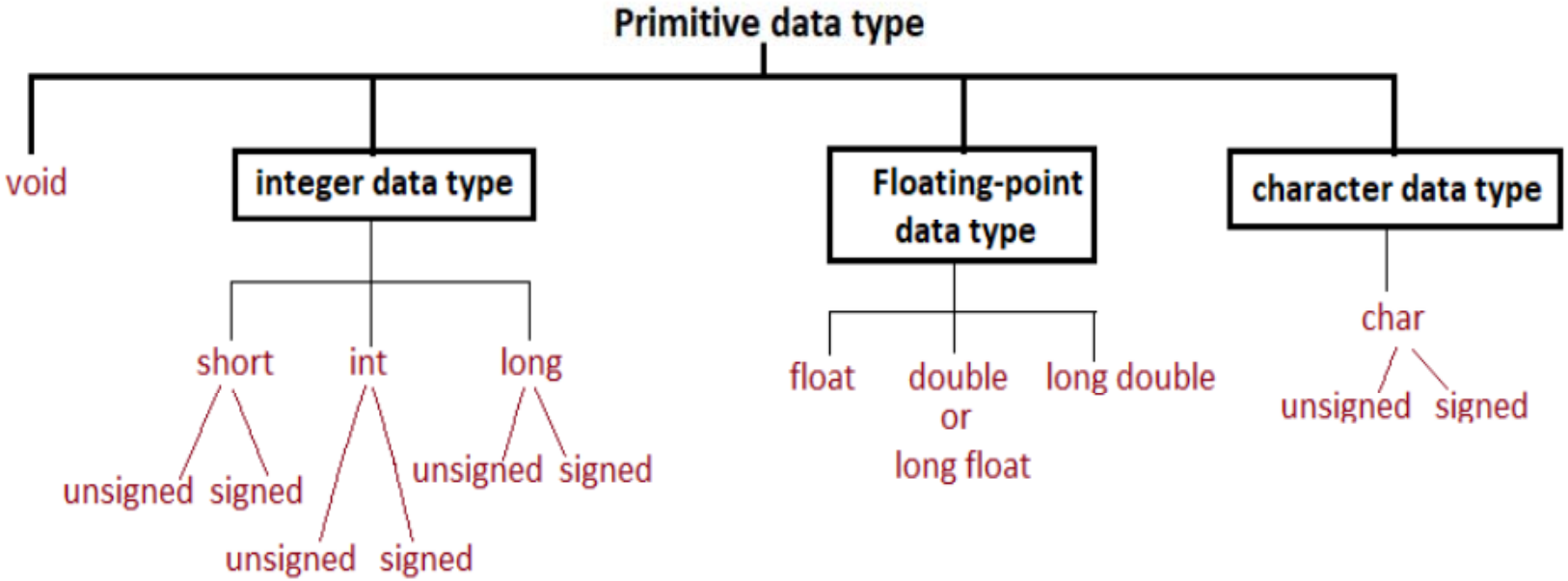
In C language, data types can be classified into three parts:-

- Primitive/Basic data types
- Derived data types
- User-defined data types

Data Types


Data type
Primitive data type
Derived data type
User-defined data type
character data type
integer data type
floating-point data type
void data type
Array
String
Pointer
Structure
Union
Typedef
Enum

Data Types


Primitive data type
void
integer data type
Floating-point data type
character data type
short
int
long
unsigned
signed
unsigned
signed
unsigned
signed
float
double or long float
long double
char
unsigned
signed