

Features of C:

1. C is a multi-purpose language.
2. It is a procedure oriented language.
3. C comes with rich set [more] of operators.
4. C comes different data types.

What is data type?

To store anything in our computer we should have to allocate the memory i.e. bytes. This memory or bytes features like

1. No of bytes
2. Type of data
3. Value range

basically the data types divided into 3 types.

- 1.int → for storing non decimal numbers
2. float → for storing both decimal & non decimal
3. char → for storing alphabets, numbers and special char's

Again these basic data types divided into 3 types:

1. Primitive data types: commonly used data types.

Decided by the data types.

NON-DECIMAL NUMBERS-INTEGER

Short int / int / signed int → +ve & -Ve

Integer → -32768 to +32767 → %d → 2 bytes

int sal = 18000;

unsigned int → 0 to 65535 → %u → 2 bytes

unsigned int sal = 55000;

signed long int → -2147483648 to +2147483647 → %ld → 4 bytes

long int sal = 250000;

unsigned long int → 0 to 4294967295 → %lu

decimal numbers:

float → 3.4×10^{-38} to $3.4 \times 10^{+38}$ → 4 bytes → %f

float height = 5.7; → decimal number

long float/ double → 1.7×10^{-308} to $1.7 \times 10^{+308}$ → 8 bytes → %lf

long double → 3.4×10^{-4932} to $1.1 \times 10^{+4932}$ → 10 bytes → %Lf

The screenshot shows a Windows IDE with a blue background. The menu bar includes File, Edit, Run, Compile, Project, Options, Debug, and Break/watch. The status bar at the top indicates 'You are screen sharing' and 'Stop Share'. The code editor displays the following C program:

```
Line 6 Col 24 Insert Indent Tab Fill Unindent * C:NONAME.  
#include<stdio.h>  
void main()  
{  
int a=100;  
float b=1.2;  
printf("a=%d, b=%f",a,b);  
}
```

A chat window is open on the right side of the IDE, showing messages from Prasad Chaganti, Mr. CHINTU DAS, and sai kakumanu. The taskbar at the bottom shows various application icons, including Windows, File Explorer, and a terminal window.

char → 1 byte → 256 characters

signed char → -128 to +127 [default]

unsigned char → 0 to 255

char name[8]="Kishore"; ← string ← %s ← 8 bytes

char name[]="Kishore"; ← string ← %s ← 8 bytes

char gender='M'; → char → 1 byte → %c

```
Line 7 Col 55 Insert Indent Tab Fill Unindent * C:NONAME.C
#include<stdio.h>
void main()
{
char name[ ]="Kishore";
char gender='M';
char city[] = "Hyd-16"; /* string==>alpha-numeric */
printf("Name=%s, gender=%c, city=%s",name, gender,city);
}
```

void – nothing

2. **Derived data types**: They have created from primitive data types.
 - a. Array
 - b. Pointer
 - c. Function
3. **User defined data types**: Created by user using both primitive and derived data types.
 1. Structure

2. Union

3. Enum