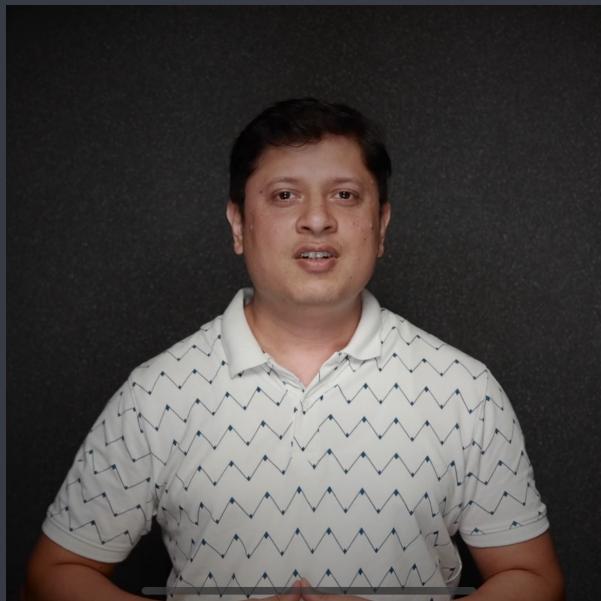


# C Language

## Data Types and Variable Declarations



Saurabh Shukla (MySirG)

# Agenda

- ① Why classification of data?
- ② Data Types
- ③ variable declarations
- ④ ASCII
- ⑤ float vs double

# Data Classification

- Different data requires different way of handling data in computer.

Factor responsible for data classification

- Memory size required to store data
- Method to convert data into binary for internal representation
- Kind of operations performed on data

# Data Types

char

int

float

double

void

Instruction

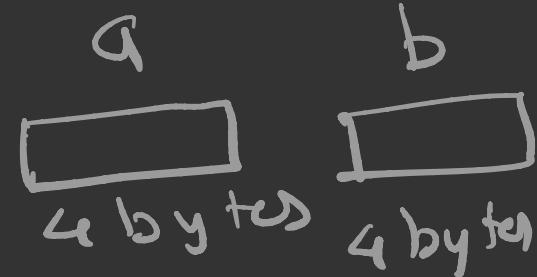
= Statement = Command

- ① Declaration statements
- ② Action statements

# Variable Declaration

Integers

int a, b; 4 bytes



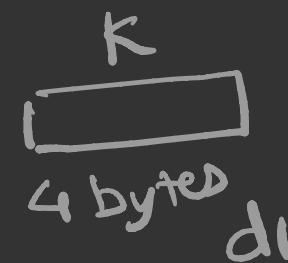
Character

char m; 1 byte



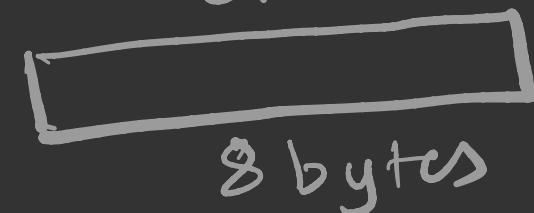
Real

float k; 4 bytes



Real

double d1; 8 bytes



## Variable Declaration

Integer

int a=5,b ; 4 bytes



Character

char m='A' ; 1 byte



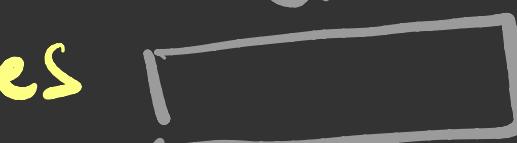
Real

float k ; 4 bytes



Real

double dl; 8 bytes



char m = 'A'; ✓ ASCII character encoding

m

01000001

1 byte

American Standard Code  
for Information Interchange

256 character

' '	32
'0'	48
'9'	57
'@'	64
'A'	65
'B'	66
'.'	90
'C'	99
'.'	106
'Z'	122
'a'	97
'b'	98

char m = 65; ✓

int a = 65; ✓

int a = 'A'; ✓

## float vs double

$(0.7)_{10}$

$(-10110011\ldots)_2$  4 bytes  
Single precision



8 bytes

double precision

$$\begin{array}{rcl} 0.7 \times 2 = 1.4 & & 1 \\ 0.4 \times 2 = 0.8 & 0 & \downarrow \\ 0.8 \times 2 = 1.6 & 1 & \\ 0.6 \times 2 = 1.2 & 1 & \\ 0.2 \times 2 = 0.4 & 0 & \\ 0.4 \times 2 = 0.8 & 0 & \\ 0.8 \times 2 = 1.6 & 1 & \\ 0.6 \times 2 = 1.2 & 1 & \end{array}$$