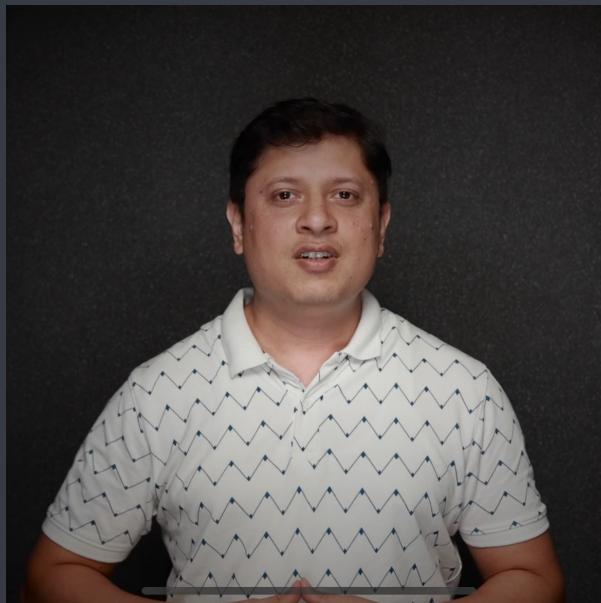


# C Language

## Data Types and Variable Declarations



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# 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 Statement
- ② Action Statement

## Variable Declaration

Integer

int a, b; 4 bytes



Character

char m; 1 byte.



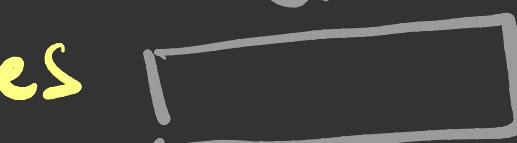
Real

float k; 4 bytes



Real

double dl; 8 bytes

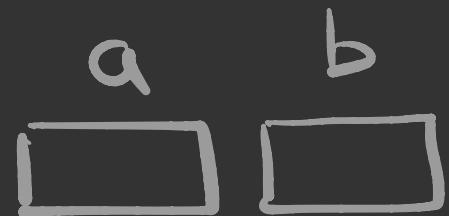


$$4 + 4 + 1 + 4 + 8 = 21$$

## Variable Declaration

Integer

int a=5,b ; 4bytes



Character

char m='A' ; 1byte



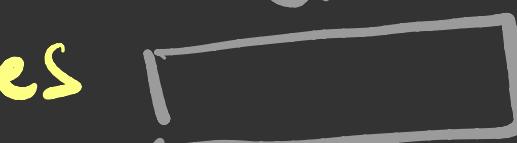
Real

float k ; 4 bytes



Real

double dl; 8 bytes



$$4+4+1+4+8=21$$

char m='A';

0100 0001

char m=65;

int a=65;

int a='A';

$$\begin{array}{r} 97 \\ + 26 \\ \hline 123 \end{array}$$

ASCII

character encoding

American Standard Code  
for Information Interchange  
ASCII Character Code

'	32
'0'	48
'9'	57
'@'	64
'A'	65
'B'	66
'.'	90
'z'	90
'a'	97
'b'	98
'c'	99
'z'	122
	255

# float vs double

4 bytes

Single precision

8 bytes

Double precision

$$0.7 \times 2 = 1.4 \quad |$$

$$0.4 \times 2 = 0.8 \quad 0$$

$$0.8 \times 2 = 1.6 \quad |$$

$$0.6 \times 2 = 1.2 \quad |$$

$$0.2 \times 2 = 0.4 \quad 0$$

$$0.4 \times 2 = 0.8 \quad 0$$

$$0.8 \times 2 = 1.6 \quad |$$

$$0.6 \times 2 = 1.2 \quad |$$

$$0.101100110011\ldots$$



4 bytes



8 bytes