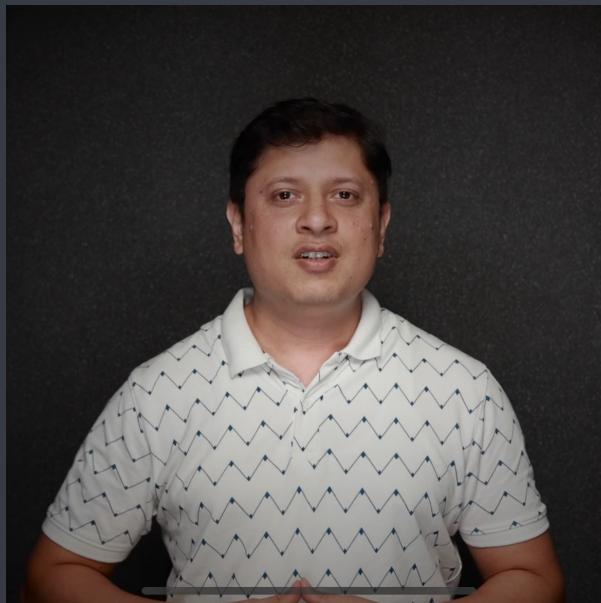


C Language

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

Syntax

1 byte = 8 bits Variable Declaration

integer

int a=5, b ; 4 bytes



character

char m; 1 byte



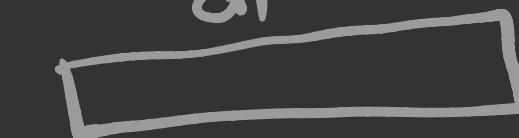
Real

float k; 4 bytes



Real

double d1; 8 bytes



Variable Declaration

Integer

int a=5,b ; 4 bytes



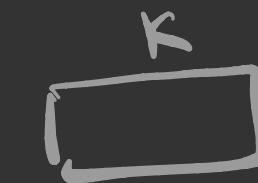
Character

char m='A' ; 1 byte



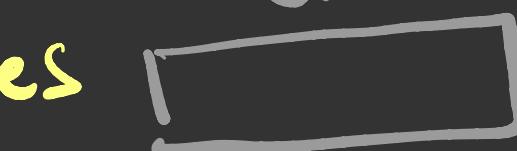
Real

float k ; 4 bytes



Real

double dl; 8 bytes



char m='A';

m

0	1	0	0	0	0	0	1
---	---	---	---	---	---	---	---

char m=65;

int a=65;

int a='A';

a	00000000 01000001
0 -----	

4 bytes

ASCII

character encoding

American Standard Code

for Information Interchange

ASCII Character Code

' '	32	→ 0 to 255
'0'	48	
'g'	57	
'@'	64	
'A'	65	
'B'	66	
'.'	90	
'z'	90	
'a'	97	
'z'	122	

256
characters

float vs double

$$0.7 = 0.101100110011001100\dots$$

$$\begin{array}{l} 0.7 \times 2 = 1.4 \\ 0.4 \times 2 = 0.8 \\ 0.8 \times 2 = 1.6 \\ 0.6 \times 2 = 1.2 \\ 0.2 \times 2 = 0.4 \\ 0.4 \times 2 = 0.8 \\ 0.8 \times 2 = 1.6 \\ 0.6 \times 2 = 1.2 \\ 0.2 \times 2 = 0.4 \\ 0.4 \times 2 = 0.8 \end{array}$$

↓



float $a = 0.7;$
double $b = 0.7;$

$a == b$ \times
 $b > a$