

A job ready bootcamp in C++, DSA and IOT

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

bool

char

int

float

double

void

= assignment Variable Declaration

== equal to

Integers

int a, b=5; 4 bytes



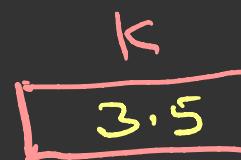
Character

char m='A'; 1 byte



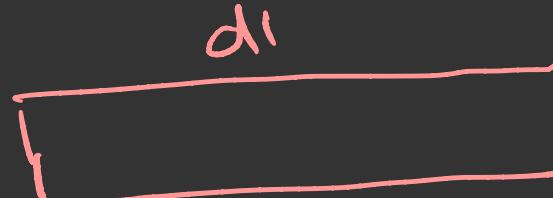
Real

float K=3.5; 4 bytes



Real

double d1; 8 bytes



b=8;

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

a, b, m, K, d1 are variables

1 byte = 8 bits

ASCII American Standard Code for Information Interchange

int a=5; 5 → 101 4 bytes = 32 bits

00000000 00000000 00000000 00000101

- ✓ char m='A';
- ✓ char m=65;
- ✓ int x=65;
- ✓ int x='A';

01000001

character encoding

- ASCII 256 (0 to 255)

- Unicode

=

'@'	64
'A'	65
'B'	66
'C'	67
'D'	68
'E'	69
'F'	70
'G'	71
'H'	72
'I'	73
'J'	74
'K'	75
'L'	76
'M'	77
'N'	78
'O'	79
'P'	80
'Q'	81
'R'	82
'S'	83
'T'	84
'U'	85
'V'	86
'W'	87
'X'	88
'Y'	89
'Z'	90
'a'	97
'b'	98
'c'	99
'd'	100
'e'	101
'f'	102
'g'	103
'h'	104
'i'	105
'j'	106
'k'	107
'l'	108
'm'	109
'n'	110
'o'	111
'p'	112
'q'	113
'r'	114
's'	115
't'	116
'u'	117
'v'	118
'w'	119
'x'	120
'y'	121
'z'	122

00000000 00000000 00000000 01000001

float vs double

0.7



$$0.7 \times 2 = 1.4$$

1

$$0.4 \times 2 = 0.8$$

0

$$0.8 \times 2 = 1.6$$

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

$$0.2 \times 2 = 0.4$$

0

$$0.4 \times 2 = 0.8$$

0

$$0.8 \times 2 = 1.6$$

1

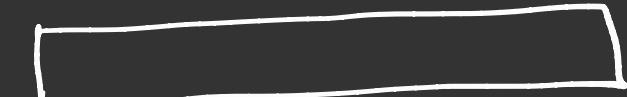
25.7

11001.10110011001100...

0.10110011001100.....



4 bytes



8 bytes

float → single

double → double

