

DATA TYPES RANGES

1. Primitive Types

- char [provided by c language]
- int
- float
- double
- void

Derived Types

- Arrays (char, int ...)
- Pointers (char, int)
- ~~Functions~~

Use-Defined Types

- struct
- union
- enum
- typedef

Char - Data Type

Char 1Byte = 8bits

RAM

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

⇒ 'A' OR 65

Range

-128 to +127

0-127 (ASCII code/values)

Char ch = 'A';

↓
65.

↓
Binary

Char ch = 'B';

↓

66 →

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

⇒ 66 'B'

1000010
↑

		63					
128	64	32	16	8	4	2	1
1	0	0	0	0	0	0	1
↓		31					↓
1		0	0	0	0	1	0

Char ch = 'A'; ✓

Char ch = 65; ✓

Char ch = -120; ✓

Char ch = 121; ✓

Char ch = 97; ✓

printf("%c", ch);

↑
a
printf("%d", a)

↑
97

DAY# 14.3

Thursday, June 11, 2026 8:48 PM

DATA TYPES RANGE

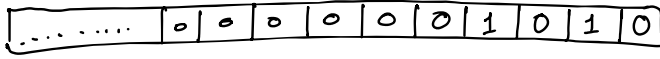
Signed, unsigned
+ - +

<u>char</u>	1 Byte (8 bits)	-128 to 127	-2^7 to $+2^7-1$	
signed char				
unsigned char	1 Byte (8 bits)	0 - 255	2^8	
<u>short int</u>	2 Bytes (16 bits)	-32768 to +32767		// signed short int
unsigned short int	2 Bytes (16 bits)	0 to 65535		
int	4 Bytes (32 bits)	-2,147,483,648 to +2,147,483,647		// signed int
unsigned int	4 Bytes (32 bits)	→ 0 to +4B		⇒ 2B
long int	4 Byte "	"		
unsigned long int	4 Byte "	0 to +4B		
long long int	8 Byte (64 bits)	-9,223,372,036,854,775,808 to +9,223,372,036,854,775,808		
unsigned long long int	8 Bytes (64 bits)	0 to 18 -		
float	4 Bytes	$\pm 3.4 \times 10^{38}$	(6-7 digits)	1234567.111
double	8 Bytes		6 digits Best	
long double	16 Byte?		67 not accurate value.	

DAY #11.4

Thursday, June 11, 2026 9:02 PM

int a = 10;



float b = 5.75;

Integral
value
part

Fractional
value
part

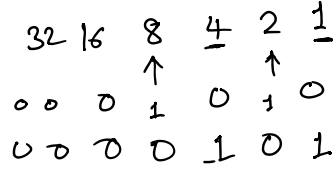
5
↓
101

•75 x 2
•50 x 2
11

1.50
1.00

1
1

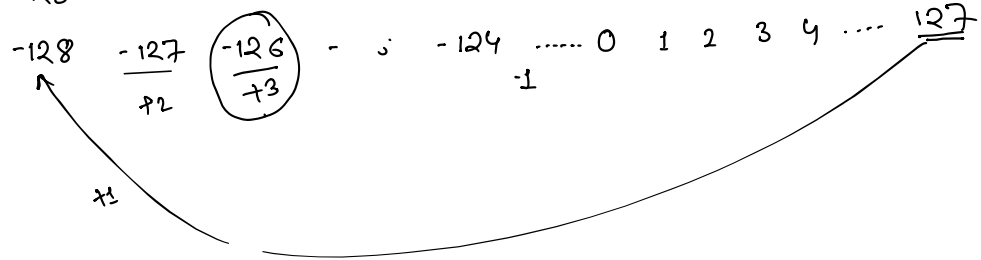
101.11



DAY#14.5

Thursday, June 11, 2026 9:12 PM

char a = 130; $\rightarrow$ -126 -128 to 127



char a = -1; $\rightarrow$ -1

char a = 150; $\rightarrow$ -

unsigned a = 150; $\checkmark$

0 - 255

for a

short int a = 32767
-32767

