(Video 9) Fundamental Data Type - Character Data

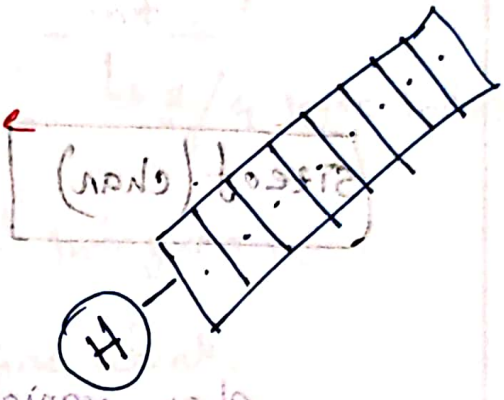
Outline:

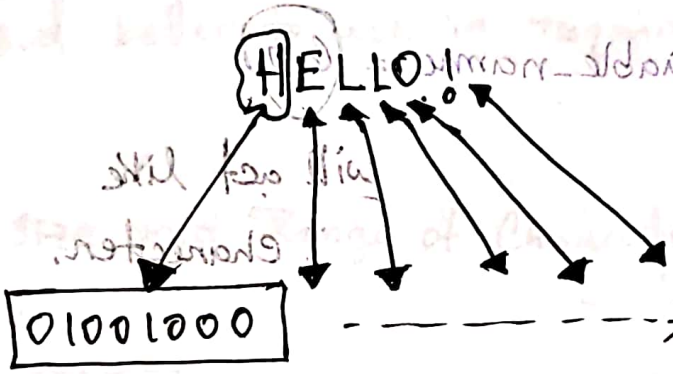
→ Overview character data type

→ Sizeof character data type

→ Range of character data type

→ Signed vs Unsigned character





each character contain 8 bit information.

1 byte per character

ASCII ***

Decimal - 0-32 non-printable control command.

33-127 printable

65-90 Capital A-Z

97-120 small a-z

48-57 number 0-9

8th bit set to zero as ASCII needs 7 bit to represent.

char variable_name = 'N';

can hold only one byte / 8 bit / one character at a time.

sizeof(char)

char variable_name = 65 → will act like character.

[%c use করতে হবে]

```
#include<stdio.h>

int main() {

    char var=65;

    print("%c", var);

    return 0; }
```

output → A

ASCII অনুযায়ী A = 65 হবে

more than 127 ?

Character
↳ 1 byte information

int
↳ 2/4 byte inform

Both can store and print integers
But better to use in require work.

→ Size and Range of Character

Size
1 byte = 8 bit

Range

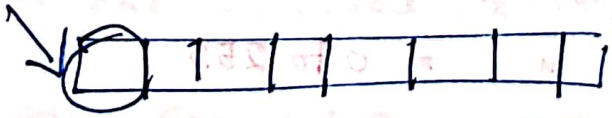
Unsigned : 0 to 255

2^8
$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 256$
$\times 2 = 256$
0-255

extended ASCII

Signed : -128 to 127
↑
2's complement

8th bit → most significant bit. (msb)



→ Signed vs Unsigned characters

$-128 = -2^7\ 2^6\ 2^5\ 2^4\ 2^3\ 2^2\ 2^1\ 2^0$

1 0 0 0 0 0 0 0

$+128 = 2^7\ 2^6\ 2^5\ 2^4\ 2^3\ 2^2\ 2^1\ 2^0$

1 0 0 0 0 0 0 0

Two's Complement study from book

most significant bit is sign change

Range extension integers in word.

Summary:

→ Size of character = 1 byte

→ Signed n range = -128 to +127

→ Unsigned n = 0 to 255

→ -ve value won't by any extra power

→ Tradition ASCII needs 7 bit

→ Extended n n 8 bit.