2b - Integer Promotion

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Whenever a small integer type (char or short) is used in any expression, it is automatically converted to int.

eg:

```
char c = 'a';
printf("%c", c);   → a
printf("%d", a);   → 97
printf(c+1);       → 98
```

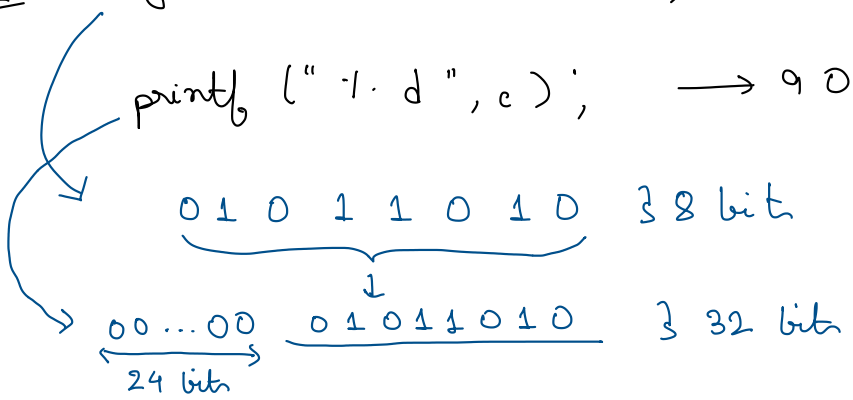
So a no. can be stored as:

i) char 1 Byte
ii) short 2 Byte
iii) int 4 Byte

So using a char is more efficient.

eg:

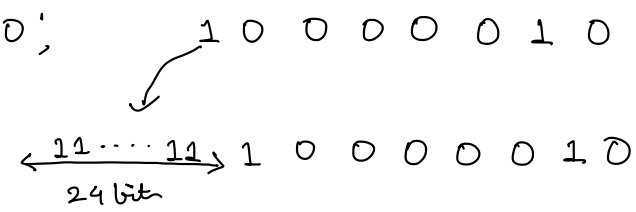
```
signed char c = 90;
printf("%d", c);   → 90
```



If 8th bit is 1 with signed source

signed char x = 130;

printf ("%d", x);



The MSB fills the 24 bit,

o/p is −126 (−128 + 2)

(If source is unsigned then this does not occur.)

Limits of Storing in short int

Char is only 1 Byte (8 bits) so highest value that can be stored is 256.

eg: If 258 is stored then the 9th bit is truncated.

Q signed char a = 30, b = 40;

" " d = a * b;

printf ("%d", d); → −80 (only last 8 bits taken)

" ("%d", a * b);