

# C Language

## More about Pointers

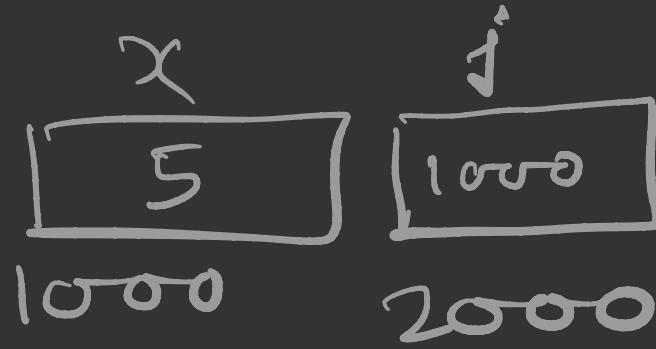


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# Agenda

- ① what is pointer?
- ② Size of pointer
- ③ Base address
- ④ Data type of pointer
- ⑤ Extended concept of pointers

```
int x = 5;  
int *j;  
j = &x;
```



j is a pointer variable

Two types of variables

① Ordinary variables [value type variable]

② Pointer variables

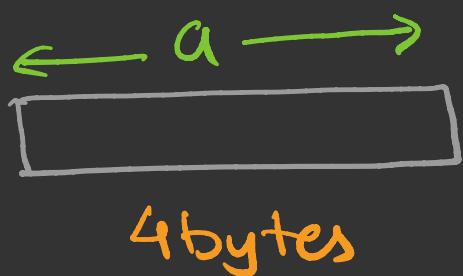
## What is a Pointer?

Pointer is variable, which contains address of another variable.

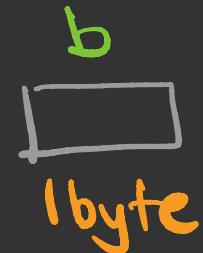
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## Size of Pointer

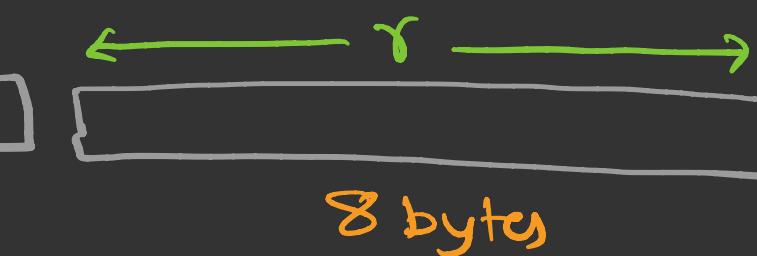
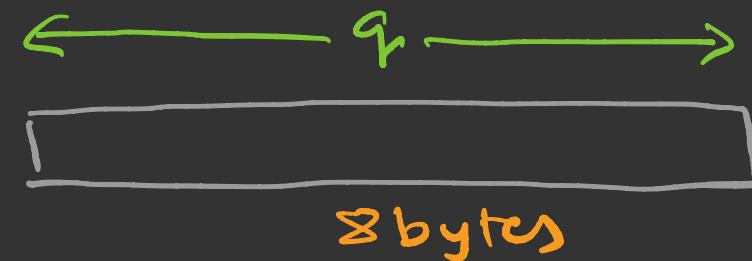
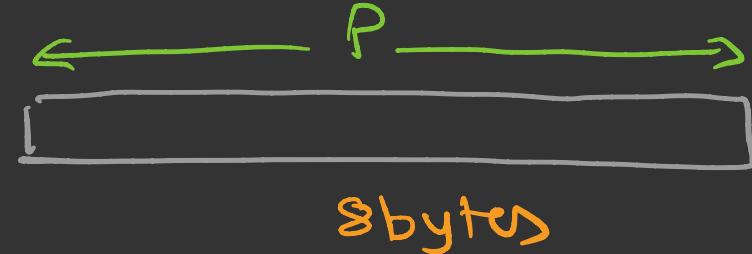
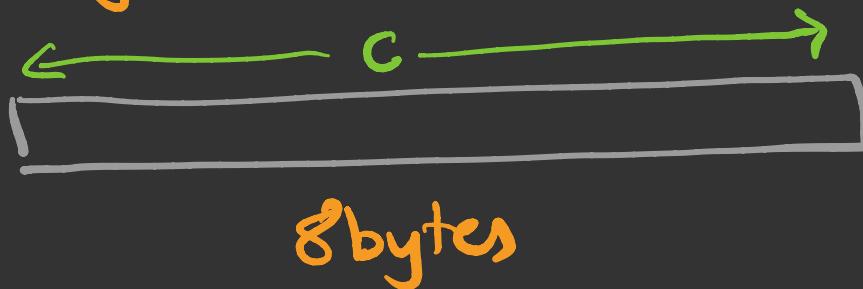
int a, \*P ;



char b, \*q;

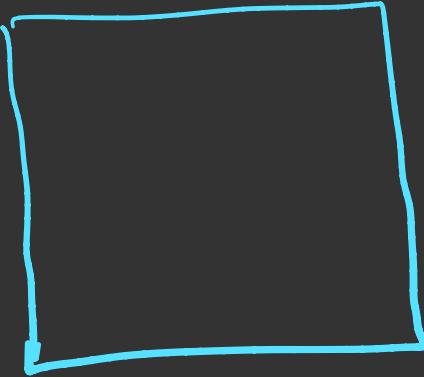


double c, \*s;

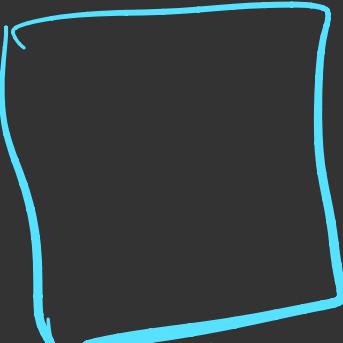


Ordinary variable ka size uske type par depend karta hai

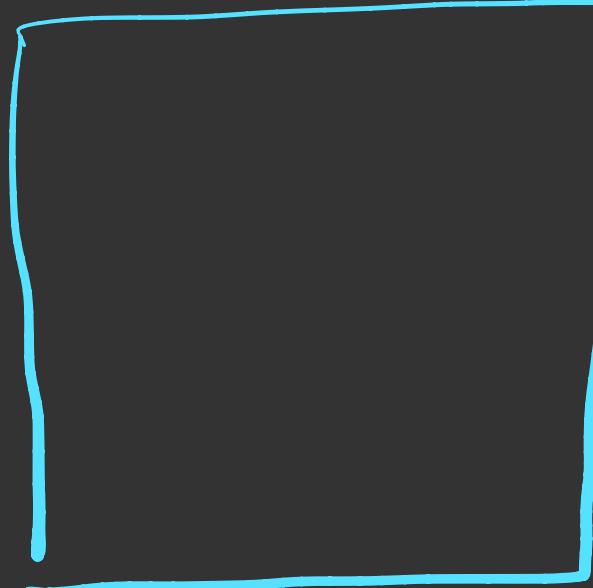
Pointer variable kisi bhi type ka ho wo hamesha 8 bytes memory lega



64 Kb



$2^{32} b$



4 Gb

$2^{64}$  bytes  
 $2^{24}$  Tb

$$2^{16} = 64 \times 1024 \text{ bytes}$$

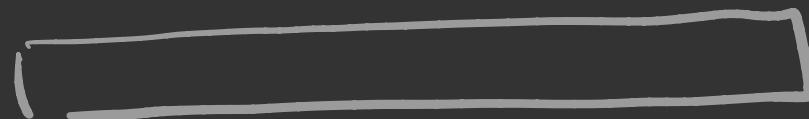
$$2^{16} = 65536 \text{ bytes}$$

0 to 65535  
Address range

$2^{64}$



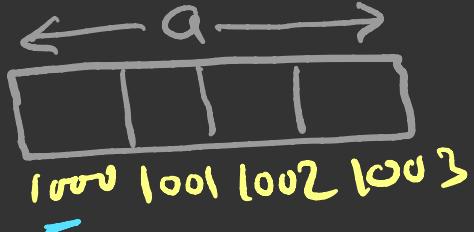
16 bits = 2 bytes



8 bytes = 64 bits

# Base Address

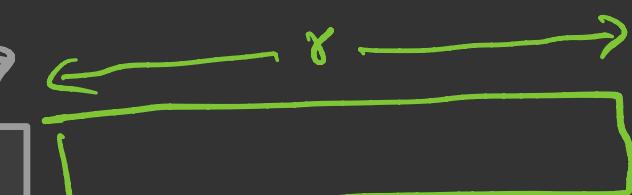
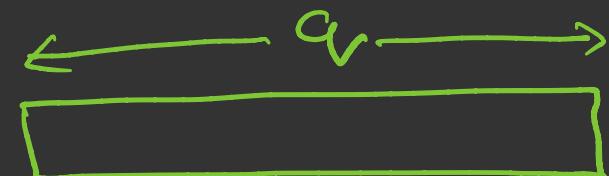
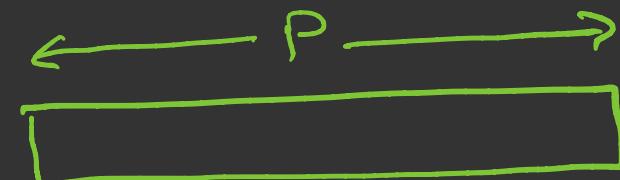
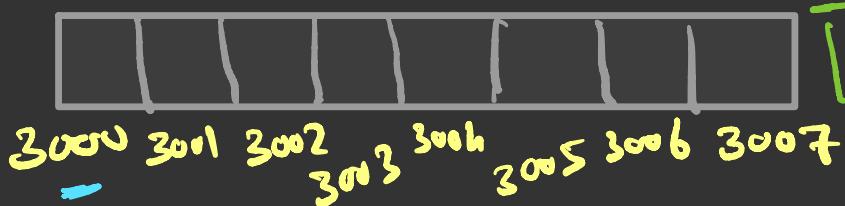
int a, \*p;



char b, \*q;



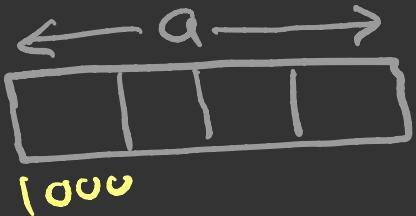
double c, \*r;



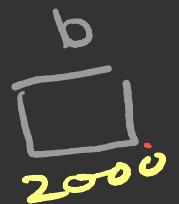
Address of first byte of a variable is  
known as base address  
Pointer variable always stores base address

## Data Type of Pointer

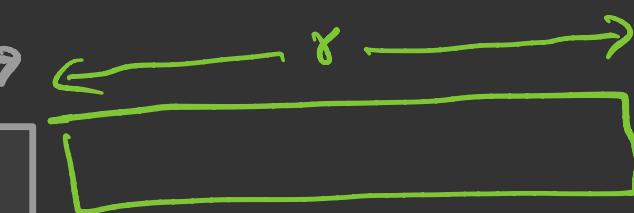
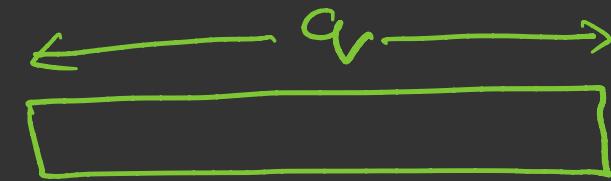
int a, \*p;



char b, \*q;



double c, \*r;



q is a pointer to char variable

p is a pointer to int variable

r is a pointer to double variable

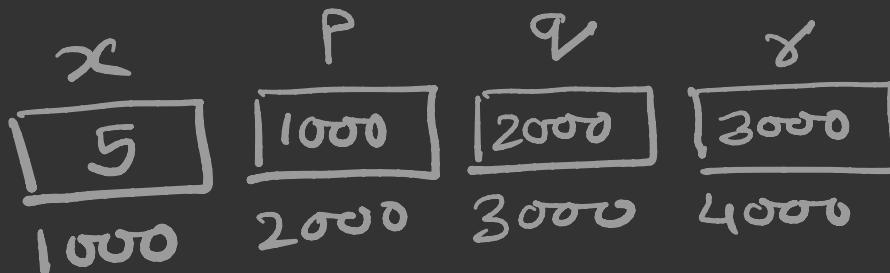
# Extended Concept of Pointers

```
int x=5,*p,**q,*r;
```

$$P = \delta x;$$

$$q = \delta p;$$

$$\gamma = \delta q;$$



```
 $\delta = \sigma - v,$ 
printf ("%d %d %d %d %d", p, &v, *x, *p);
```

pointed ("γ-d" 1000, "γ-d" 5, "γ-d" 2000, "γ-d" 2000, \*\*δ, \*\*δ, \*\*q, q, & p).

```
printf("%d %d %d %d", ***r, ***g, r, g);
```

