

$$\boxed{x^p} = \begin{cases} p=0 & | & 1 \\ p \neq 0 & | & x \cdot \underbrace{x \cdot x \cdot \dots \cdot x}_{(p-1)} \end{cases}$$

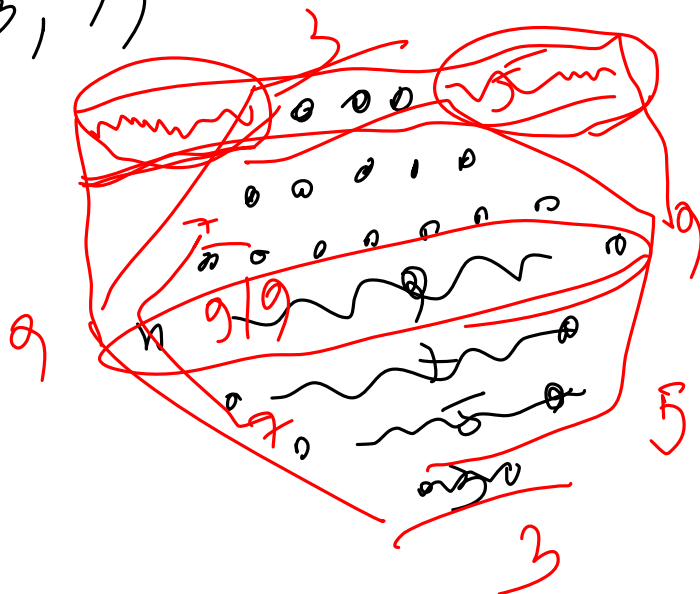
$\xrightarrow{(p-2)} \dots \xrightarrow{1} p$
 $\hookrightarrow x \cdot x$
 \dots

$$X^p = \begin{cases} p \text{ even} & \boxed{X^{p/2}} \cdot \boxed{X^{p/2}} \\ p \text{ odd} & X \cdot [X^{(p-1)/2}]^2 \\ p = 0 & 1 \\ p = 1 & p \end{cases}$$

$$2^{10} = \left[2^5 \right]^2 \rightarrow 2 \cdot \left[2^2 \right]^2 \rightarrow \left(2^1 \right)^2 \rightarrow 2 \cdot \left[2^0 \right]^2$$

$$x^2 = y \rightarrow \log_2(y) = x$$

$\text{hex}(3, 9)$



✓ 10

✓ #define x 10

✓ enum { X = 10; };

✗ const int x = 10;

C: $\begin{array}{c} \uparrow \\ \text{10} \\ \downarrow \\ \text{5} \end{array}$

C++: $\begin{array}{c} \uparrow \\ \text{10} \\ \downarrow \\ \text{5} \end{array}$

✓ const expr int x = 10; C23

VLA - Variable Length Array C99 (optional since C11) (not available in C90 or in C++)

VMT - Variably Modified Type C99 (...) (not available in C90 or in C++)

s1 = "ABCD"

s1 = s1 + "xyz"

s1 = "1234"

s1[⁸~~1024~~] = "ABCD";

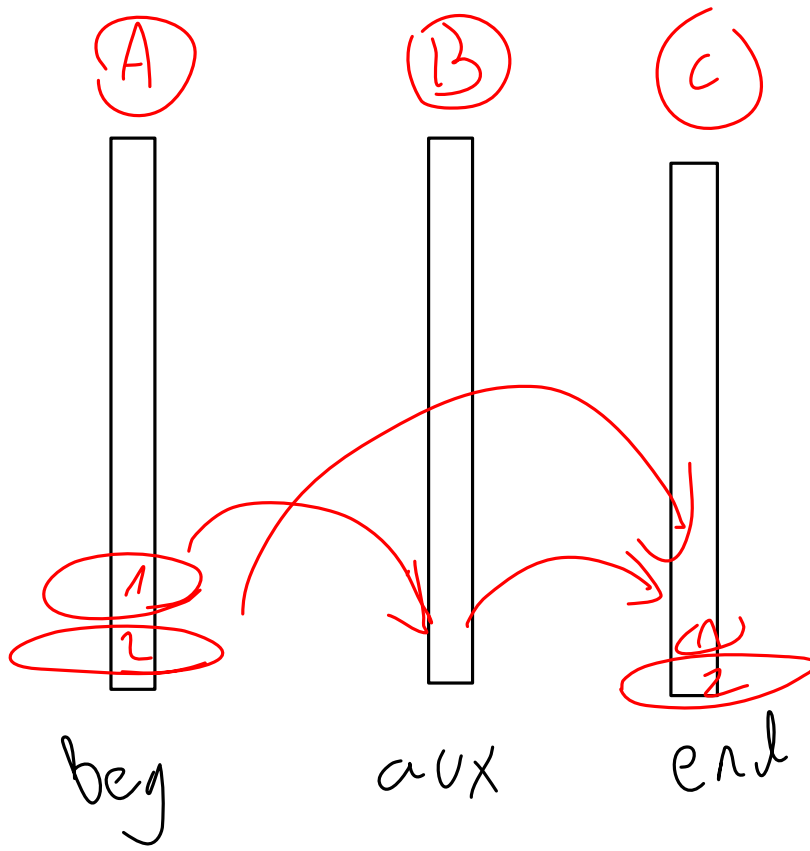
{ 'A', 'B', 'C', 'D', '\0' }

strcpy(s1, "xyz");

ASCII
0
'\0'

~~s1 = "1234";~~

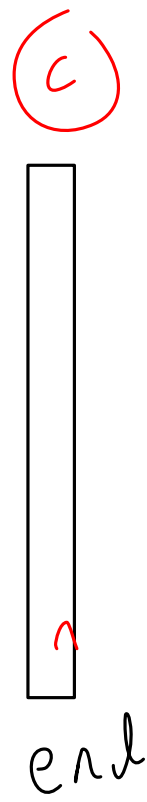
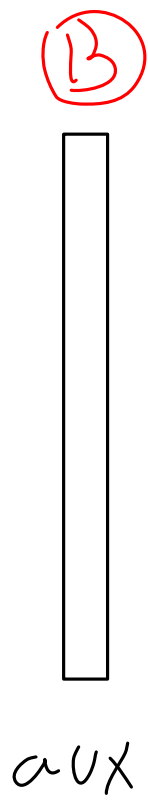
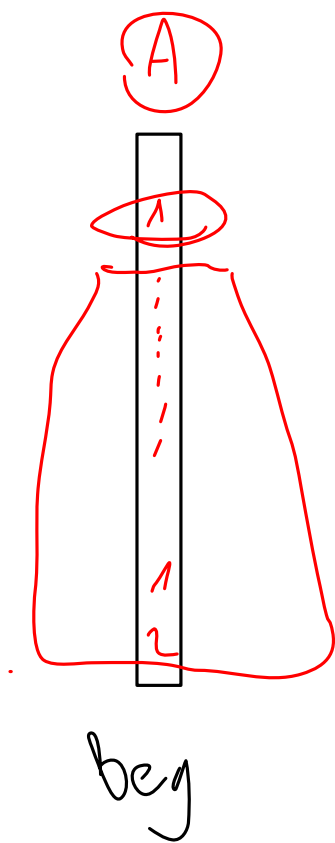
strcpy(s1, "1254");



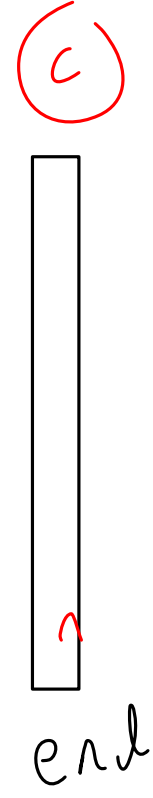
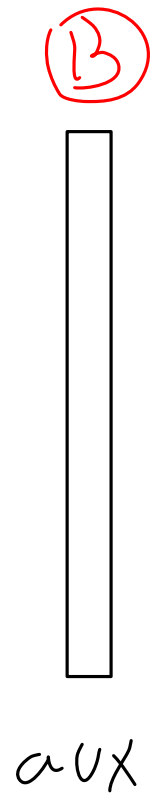
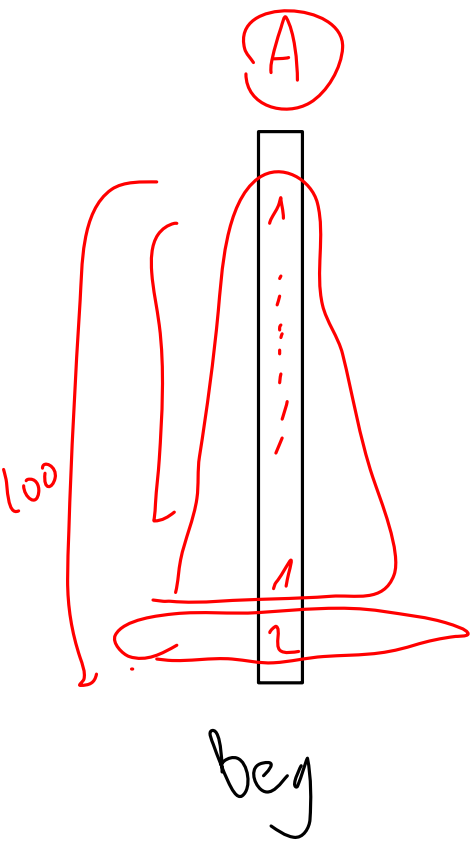
$A \rightarrow B$

$A \rightarrow C$

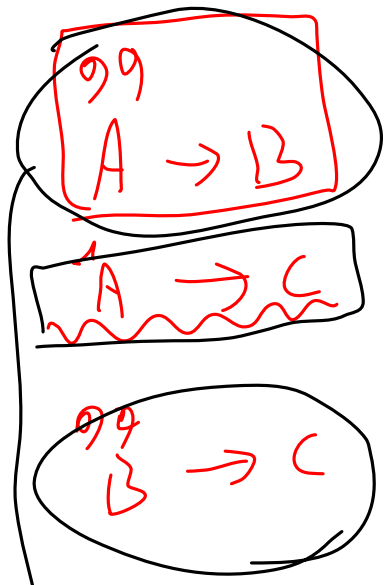
$B \rightarrow C$



$A \rightarrow B$
 $A \rightarrow C$
 $B \rightarrow C$



$h(\frac{be}{A}, \frac{C}{B}, \frac{a}{B}, \frac{N}{100})$

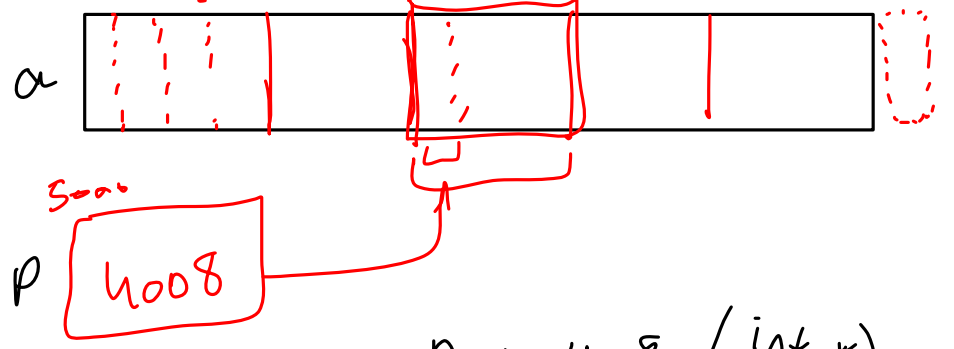


$\Rightarrow h(A, B, C, 99)$

int a[5] = {10, 20, 30, 40, 50};

int *p = &a[2]

4B
int*
4008
p + 1
4008 + 1 * 4
4



p ⇒ 4008 (int*)
&p ⇒ 5000 (int**)

int a[5]; int *p;

~> 0 1 2

pointer
arithmetic

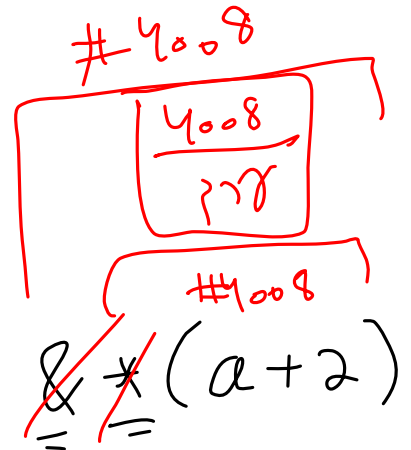
decay


$$a[1] \rightarrow *(\underline{a} + \underline{1})$$

$$a[N] \rightarrow *(a + (N))$$

$$\&\underline{a[2]} \rightarrow \underline{\&}\underline{*(a+2)}$$

$$\Rightarrow \underline{\underline{a+2}}$$

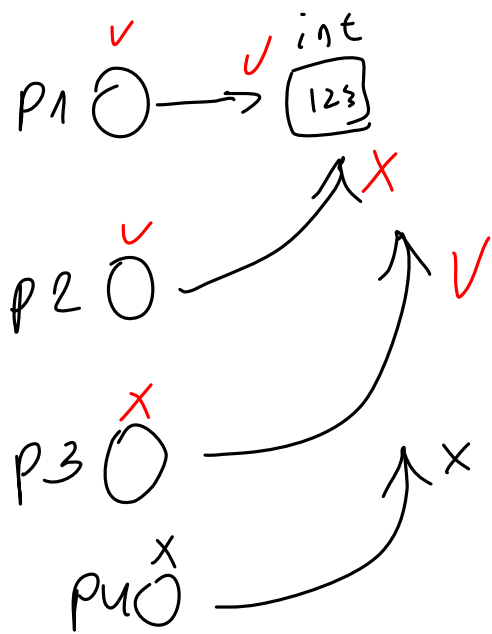


$$a \leftrightarrow \underbrace{\&* (a)} \leftrightarrow \&* (a+0) \leftrightarrow \underbrace{\&a[0]}$$


$$\underline{\underline{*a}} \rightarrow \underbrace{* \&a[0]} \rightarrow \underline{\underline{a[0]}}$$

$$*a \rightarrow *(a+0) \rightarrow a[0]$$

int x = 123, y = 456
int * p1;



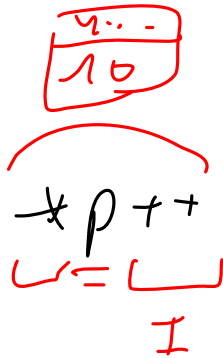
\rightarrow const int * $p2$
 \rightarrow int const * $p2 = \&x$;
 $\quad \quad \quad \underline{p2 = \&y}; \checkmark$
 $\quad \quad \quad \rightarrow p2 = \&x; X$

int * const $p3 = \&x$;
 $\quad \quad \quad p3 = \&y; X$

const int * const $p4 = \&x$;
 \rightarrow int const * const $p4$

^{#4000 #404 #408}
int a[] = { 10, 20, 30 };

int *p = a;



$p = 4000$

$p = 4004$



4D
 $\text{int } a[] = \{ 10, 20, 30 \};$

$\text{int } *p = a;$

4004
 20

4004
 *++p

$p = 4000 \rightarrow \boxed{10}$

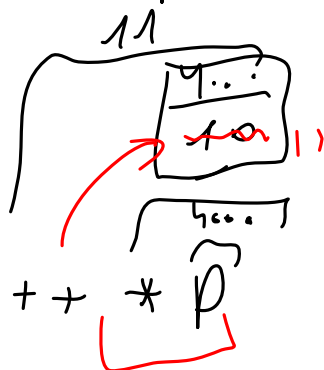
$p = 4004$

~ ~ ~ p ~ ~ ~
 IV V VI I II III
 ← (2) (1) →

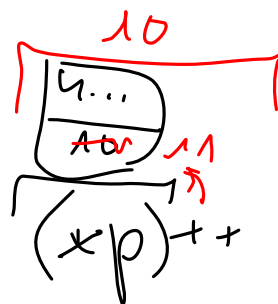
#4000 #4..4 #4..8


int a[] = { 10, 20, 30 };

int *p = a;



p = 4000 → 4...
10



src 

dest 

strcpy(dest, src) // dest ← src

"aaa" < "aab"

$\text{if}(x) \rightarrow \text{if}(x \neq 0)$

$\text{strcmp}("aaa", "aab") < 0$

$\text{if}(!x)$

$\hookrightarrow \text{if}(x == 0)$

$== 0$

> 0

> 0

\vdots

$\text{strcmp}(s1, s2) == 0$

$\rightarrow \text{strcmp}(s1, s2) \neq 0$

$! \text{strcmp}(s1, s2)$

"strcmp"