INFORMATICA I

malloc y realloc

Ing.Juan Carlos Cuttitta

Universidad Tecnológica Nacional
Facultad Regional Buenos Aires
Departamento de Ingeniería Electrónica

27 de junio de 2020

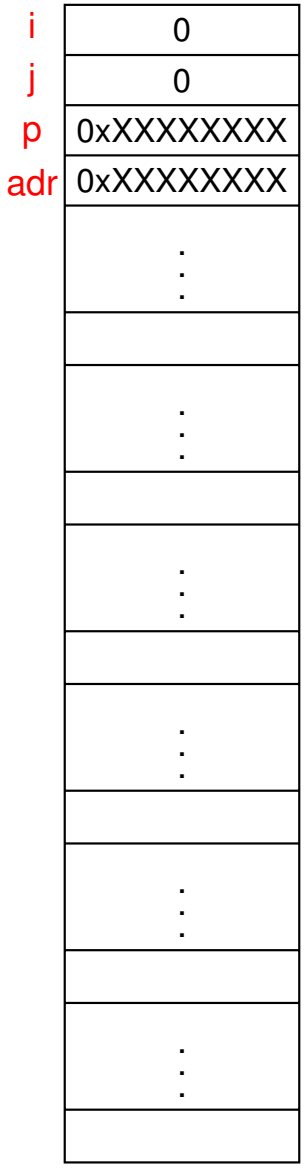
Enunciado del problema

Asignar memoria dinamicamente al vector que contiene las direcciones de los nombres ingresados y utilizar la memoria justa para cada nombre.
La idea es que si reservé espacio para un vector que pueda almacenar 256 bytes pero ingreso un nombre que ocupa 5 bytes, utilicemos los recursos conocidos para que sólo se usen los espacios justos de memoria para esos 5 bytes y no los 256 bytes para cada nombre ingresado).
Termina el programa cuando un nombre comienza con el simbolo @

Ejemplo de malloc y realloc

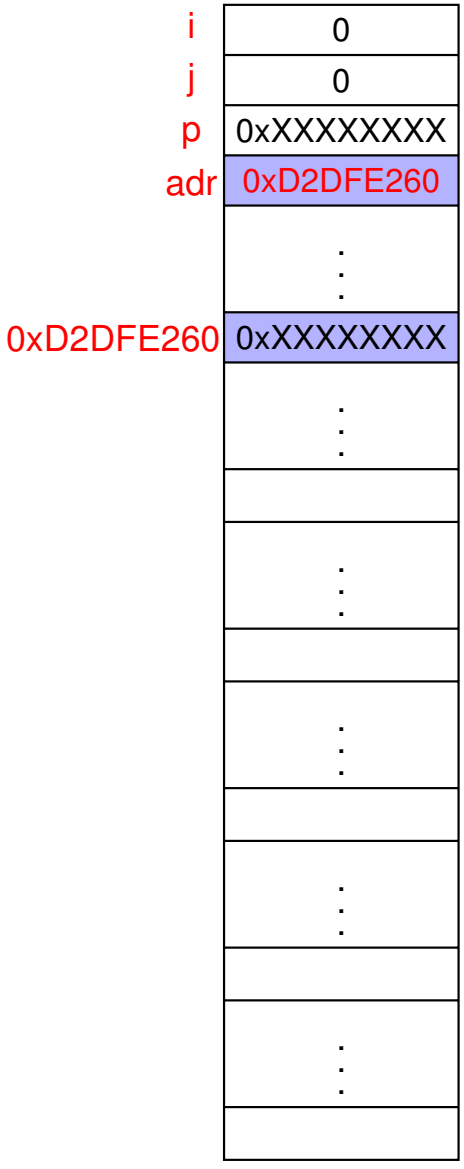
```
1  int main (void)
2  {
3      int      i=0,j=0;
4      char     c,nombres[256];
5      char *   p;
6      char ** adr;
7
8      adr= (char **) malloc(sizeof(char *));
9      do{
10         fgets(nombres , 256 , stdin );
11         j = strlen(nombres);
12         p = (char *) malloc (j*sizeof(char));
13         strcpy ( p , nombres);
14         *(adr + i) = p;
15         c = *(*(adr+i));
16         if ( c != '@' ){
17             adr = (char **) realloc( adr ,(i+2)* sizeof(char *));
18             i++;
19         }else{
20             free(p);
21             *(adr + i) = NULL;
22         }
23     }while( c != '@' );
24     for(i=0 ; *(adr+i) != NULL ;i++){
25         printf("nombre %d :% s ",i, *(adr+i) );
26         free(*(adr+i) );
27     }
28     free (adr);
29     return 0;
30 }
```

malloc y realloc en Arquitectura X86-32 bits



$char\ nombres[256]$

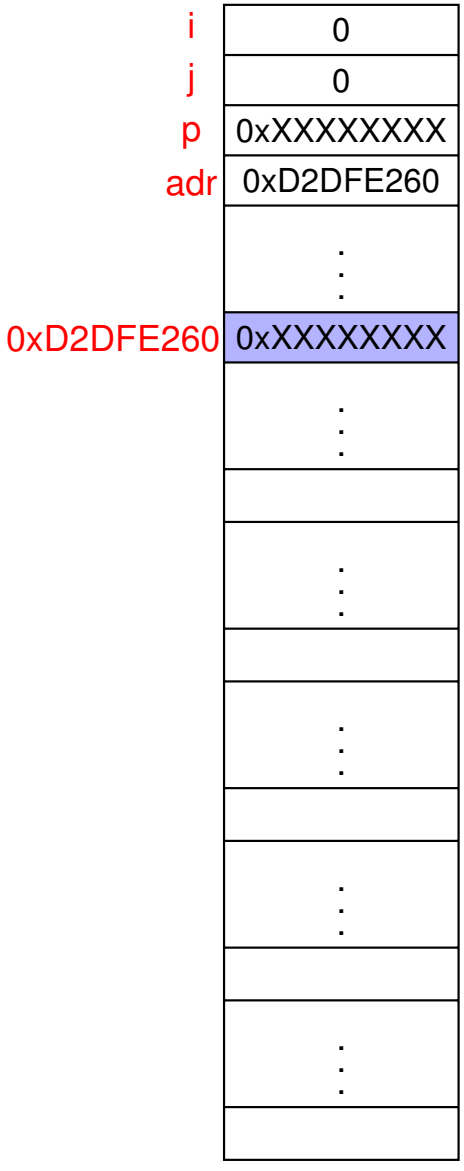
malloc y realloc en Arquitectura X86-32 bits




```
adr= (char **) malloc(sizeof(char *));
```

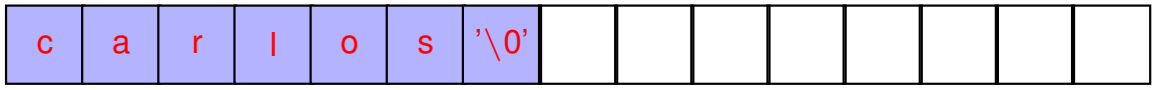
$$char\ nombres[256]$$

malloc y realloc en Arquitectura X86-32 bits

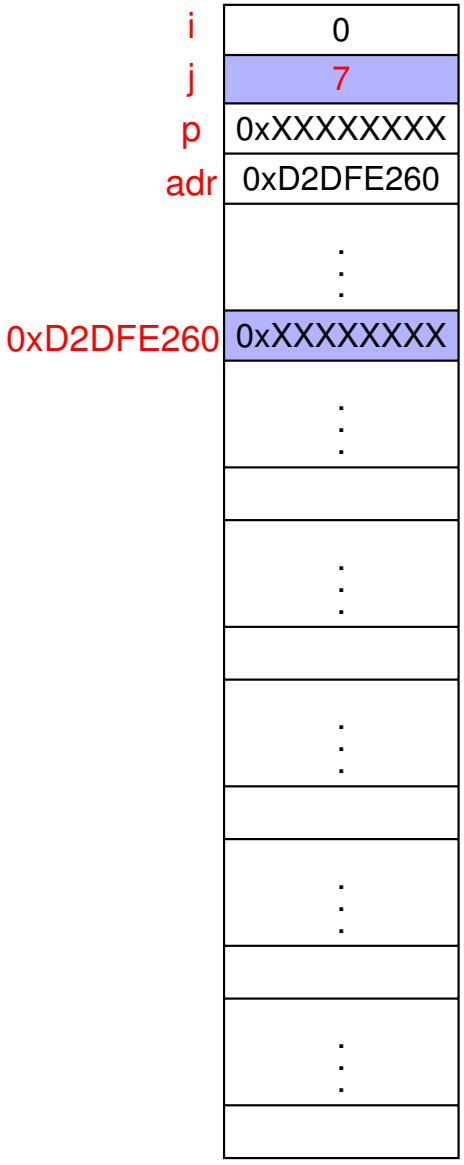


fgets(nombres , 256 , stdin);

$char\ nombres[256]$



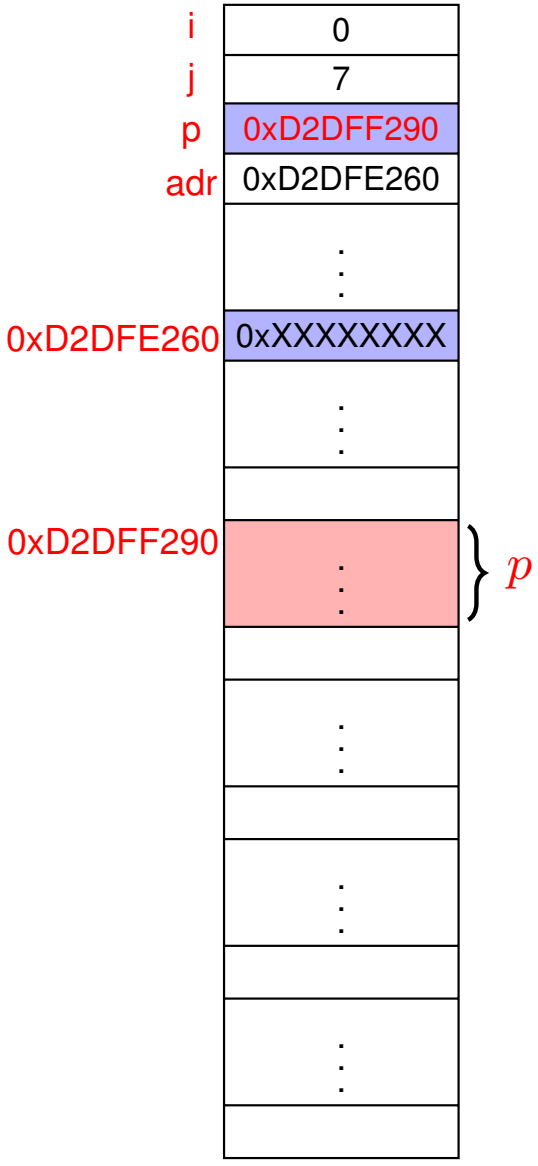
malloc y realloc en Arquitectura X86-32 bits



j = strlen(nombres);

$char\ nombres[256]$

malloc y realloc en Arquitectura X86-32 bits

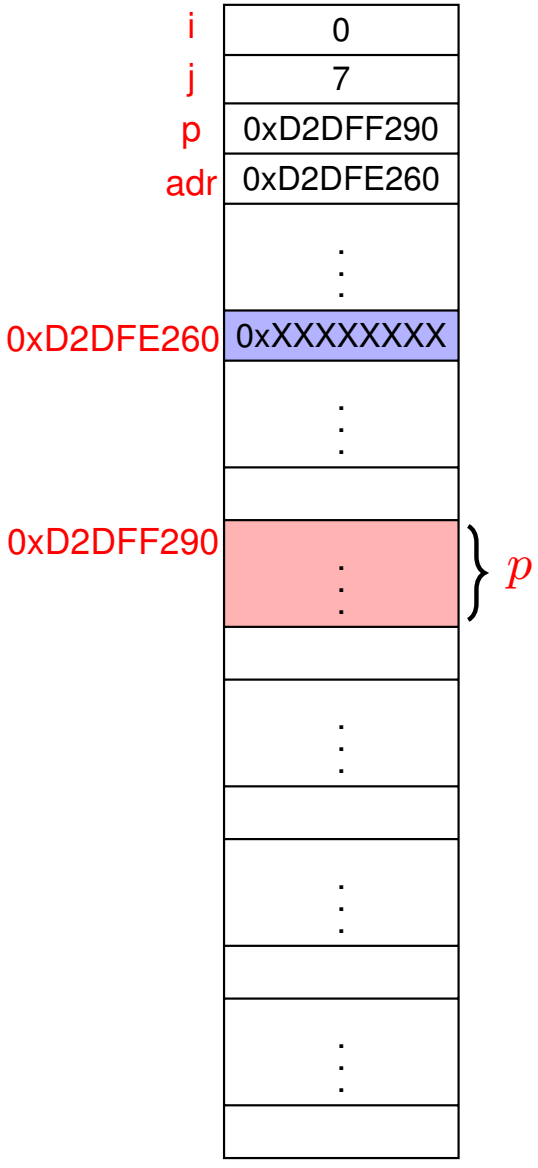



```
p = (char *) malloc ( j * sizeof(char) );
```

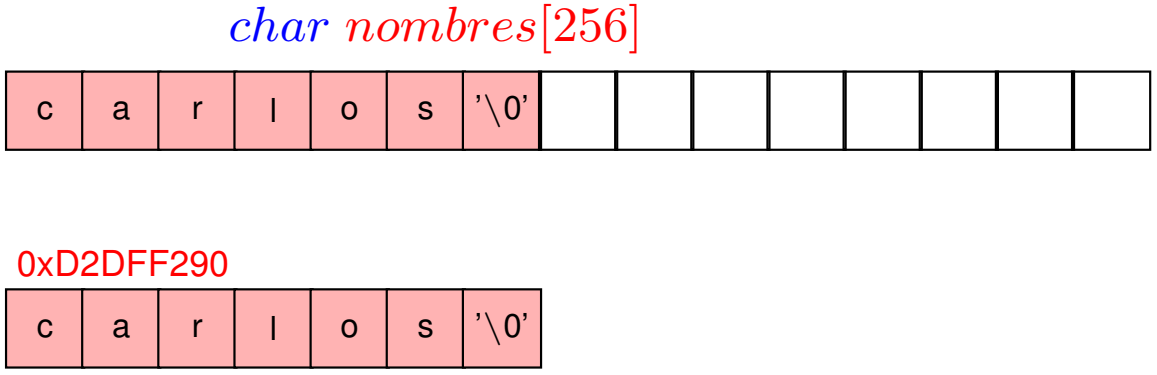
$char\ nombres[256]$

c	a	r	l	o	s	'\0'								

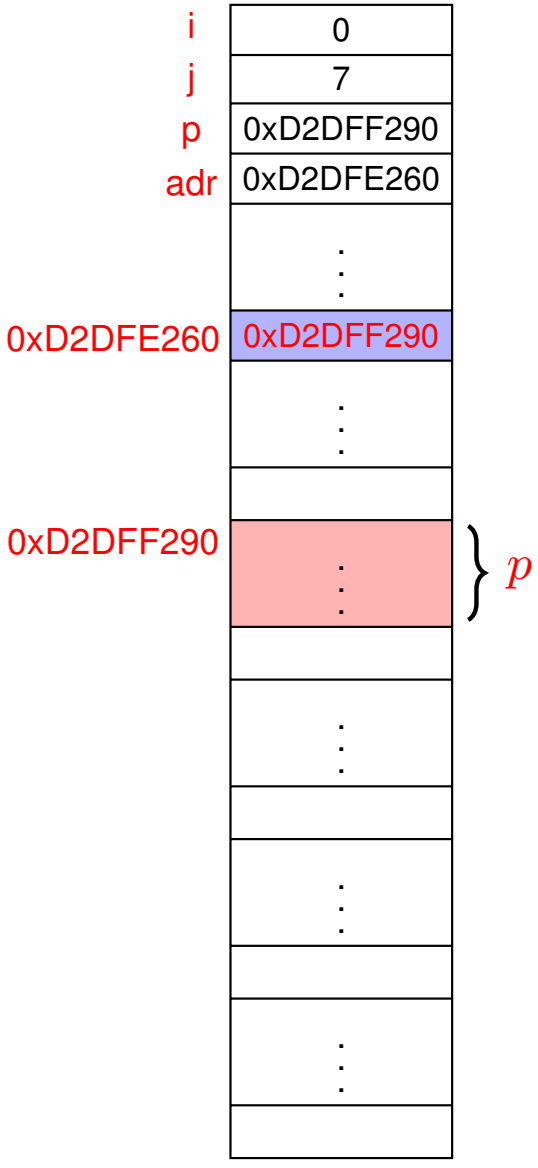
malloc y realloc en Arquitectura X86-32 bits



strcpy (p , nombres);



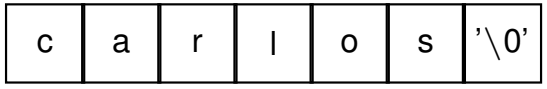
malloc y realloc en Arquitectura X86-32 bits



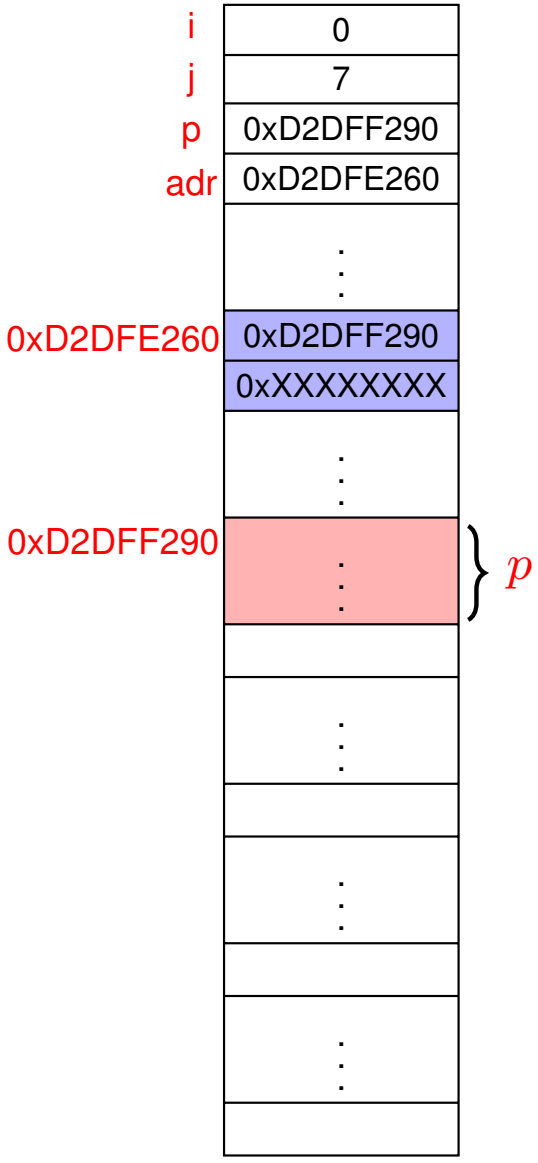
*(adr + i) = p;

$char\ nombres[256]$

0xD2DFF290



malloc y realloc en Arquitectura X86-32 bits



*(*(adr+i)) contiene al primer caracter y como es != @

adr = (char **) realloc(adr , (i+2) * **sizeof**(char *))

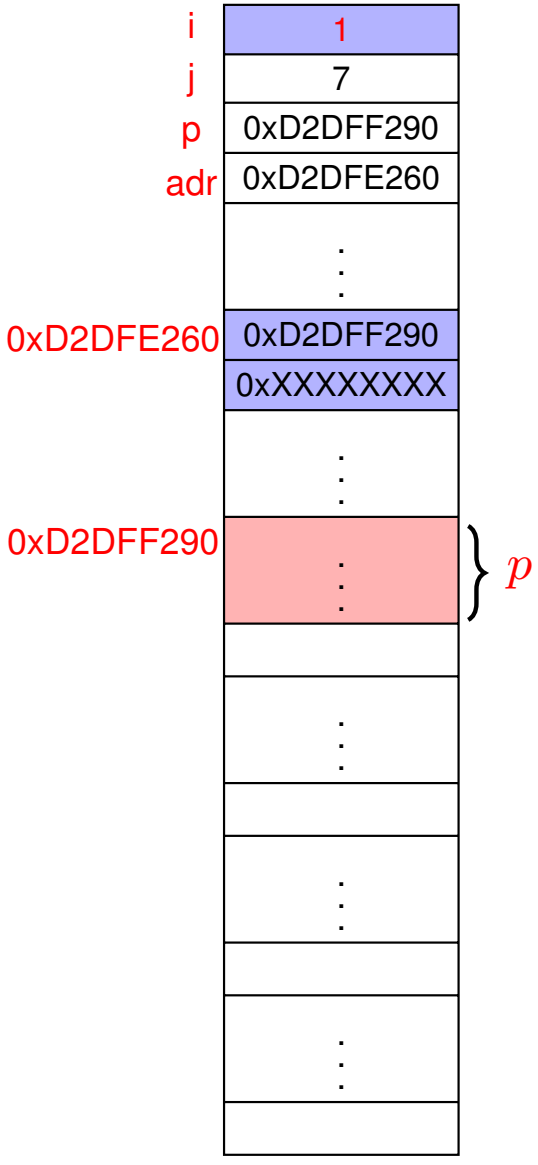
$char\ nombres[256]$

c	a	r	l	o	s	'\0'								

0xD2DFF290

c	a	r	l	o	s	'\0'

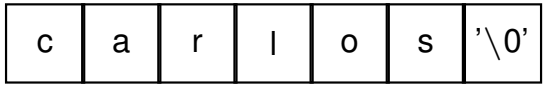
malloc y realloc en Arquitectura X86-32 bits



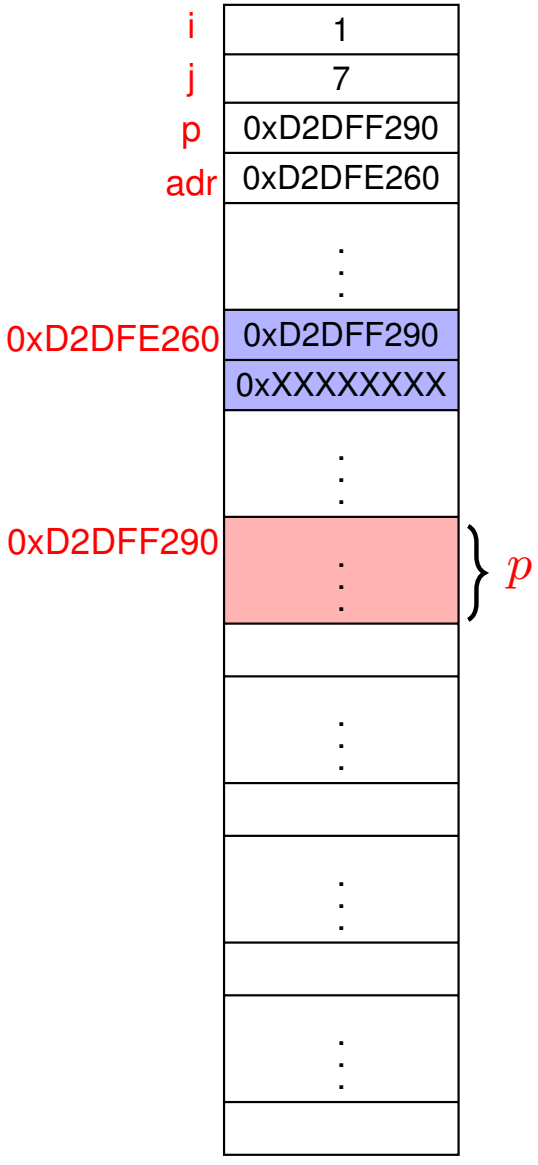
i++;

$char\ nombres[256]$

0xD2DFF290



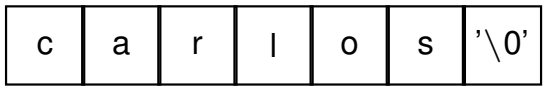
malloc y realloc en Arquitectura X86-32 bits



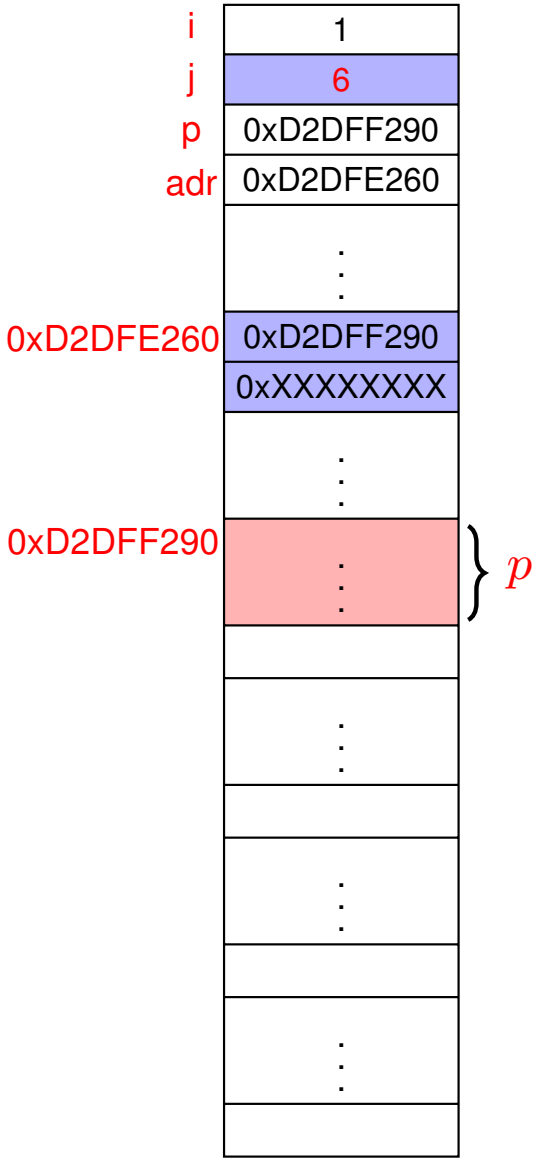
fgets(nombres , 256 , stdin);

$char\ nombres[256]$

0xD2DFF290



malloc y realloc en Arquitectura X86-32 bits



j = strlen(nombres);

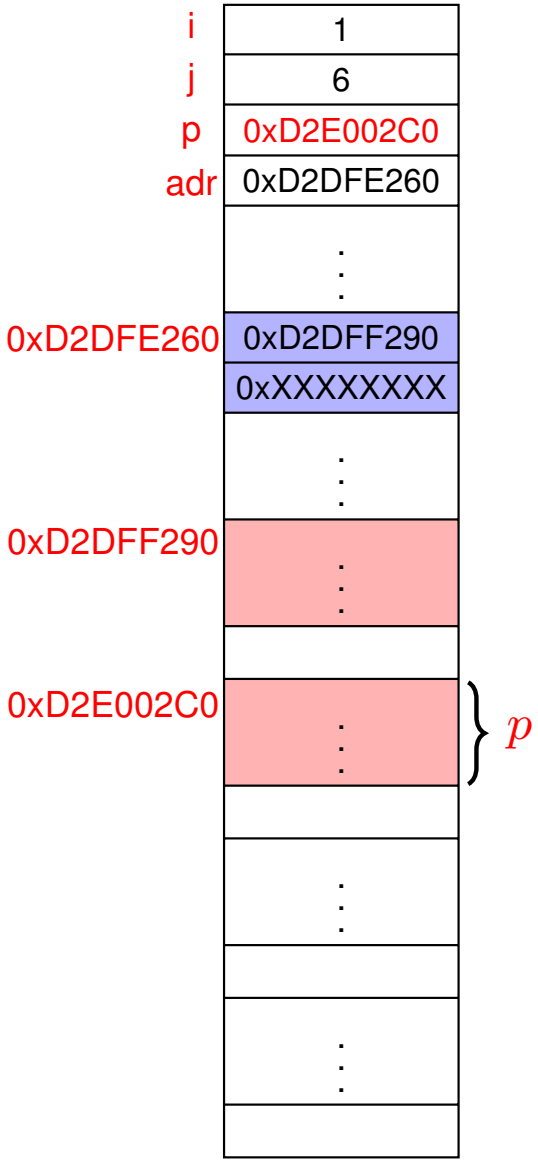
$char\ nombres[256]$

p	e	d	r	o	'\0'								

0xD2DFF290

c	a	r	l	o	s	'\0'

malloc y realloc en Arquitectura X86-32 bits



p = (char *) malloc (j * **sizeof**(char));

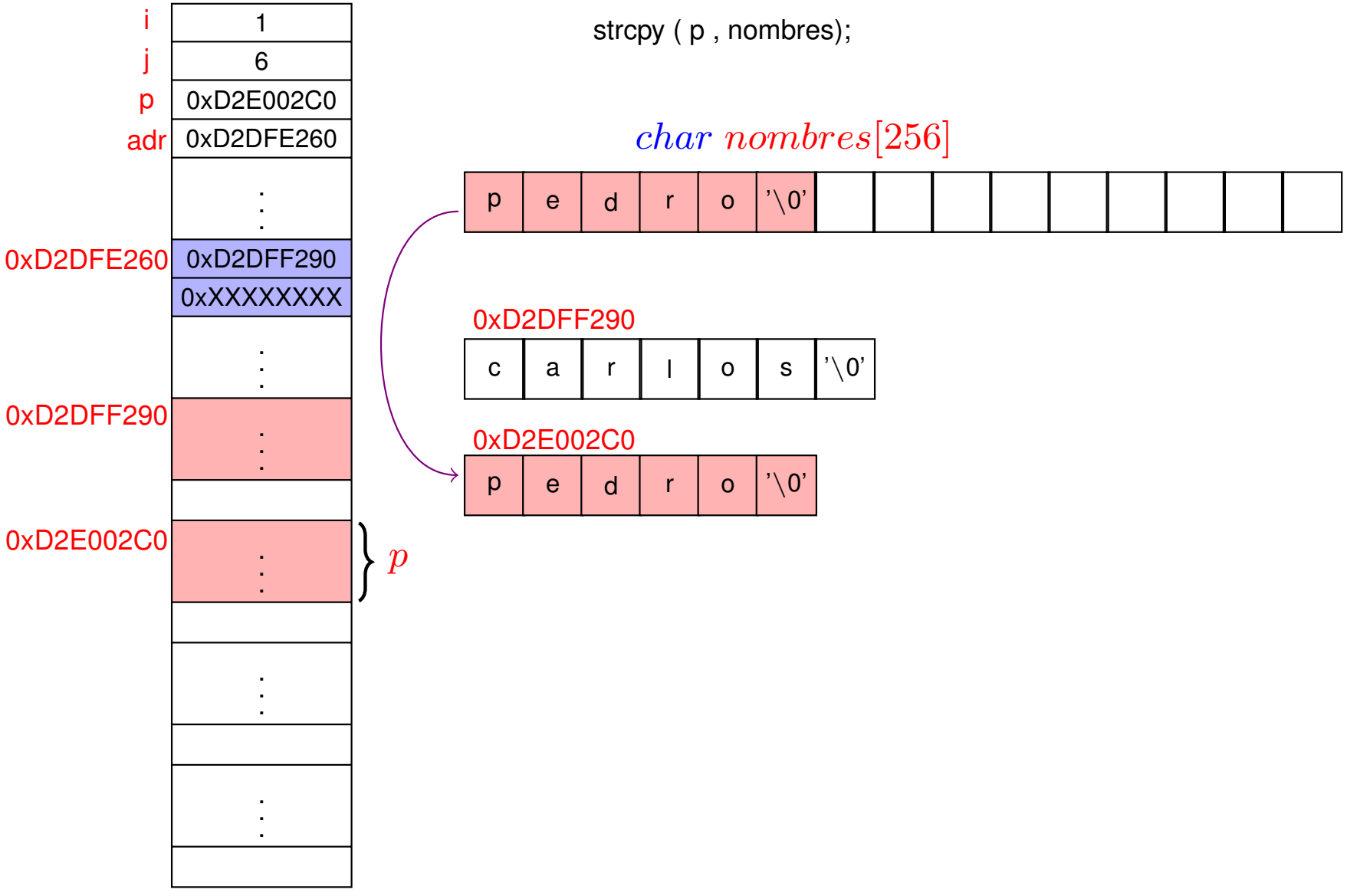
$char\ nombres[256]$

p	e	d	r	o	'\0'								

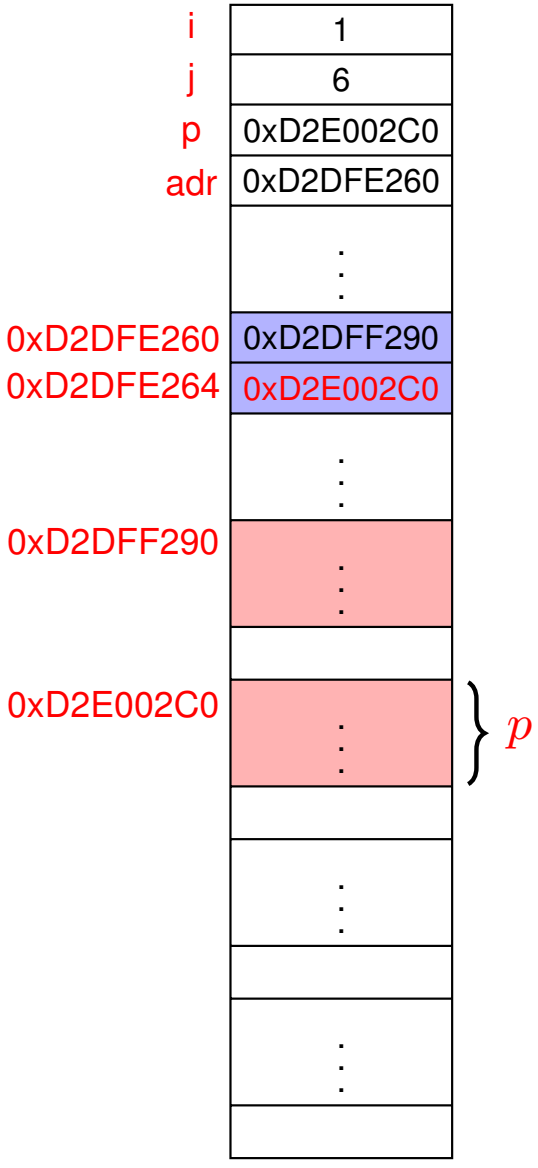
0xD2DFF290

c	a	r	l	o	s	'\0'

malloc y realloc en Arquitectura X86-32 bits



malloc y realloc en Arquitectura X86-32 bits



*(adr + i) = p;

$char\ nombres[256]$

p	e	d	r	o	'\0'								

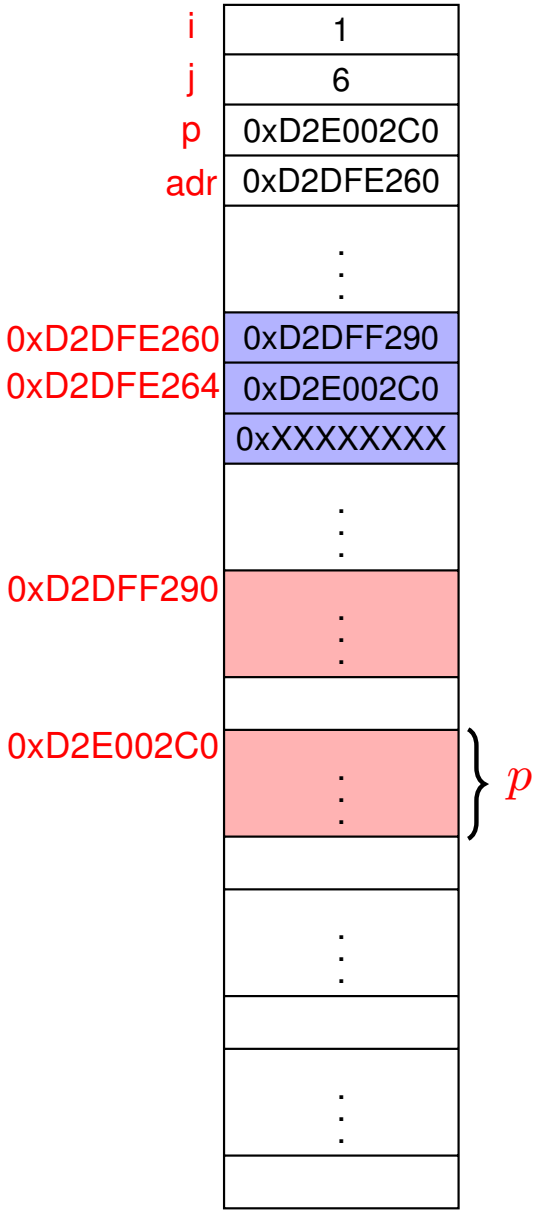
0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

malloc y realloc en Arquitectura X86-32 bits



*(*(adr+i)) contiene al primer caracter y como es != @

adr = (char **) realloc(adr , (i+2) * **sizeof**(char *))

$char\ nombres[256]$

p	e	d	r	o	'\0'								

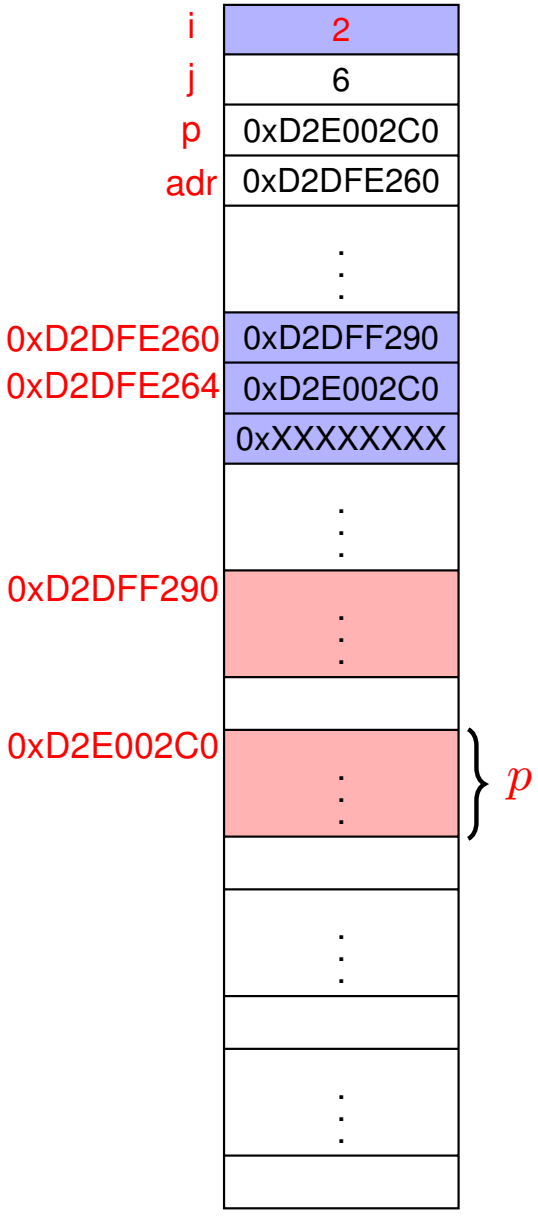
0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

malloc y realloc en Arquitectura X86-32 bits



i++;

char nombres[256]

p	e	d	r	o	'\0'								

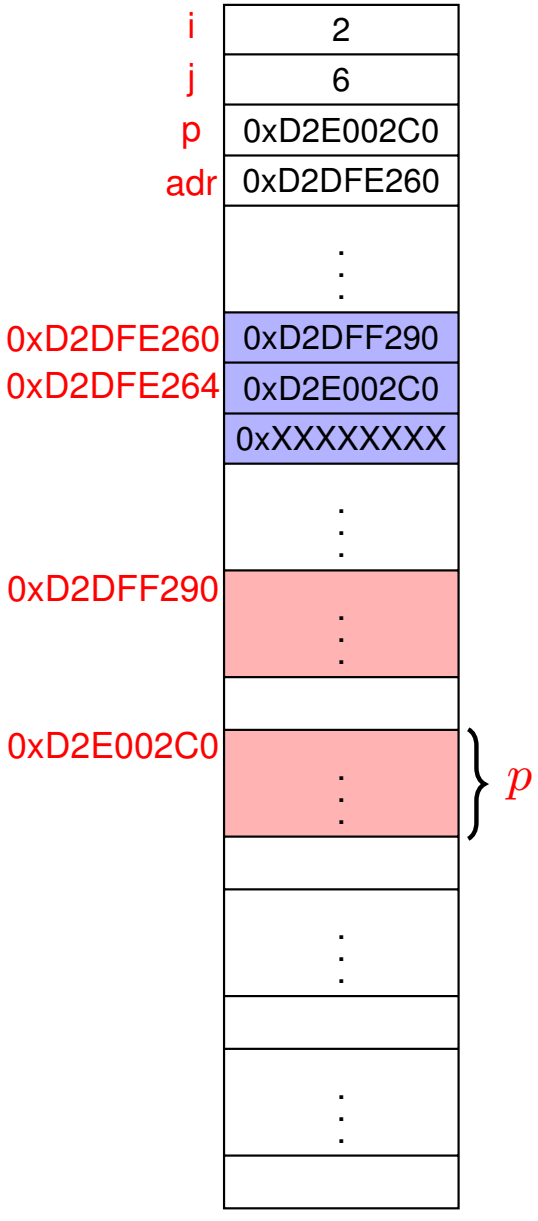
0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

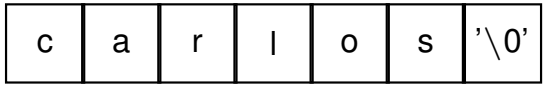
malloc y realloc en Arquitectura X86-32 bits



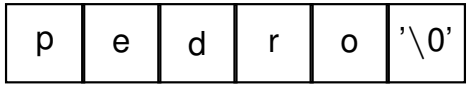
fgets(nombres , 256 , stdin);

$char\ nombres[256]$

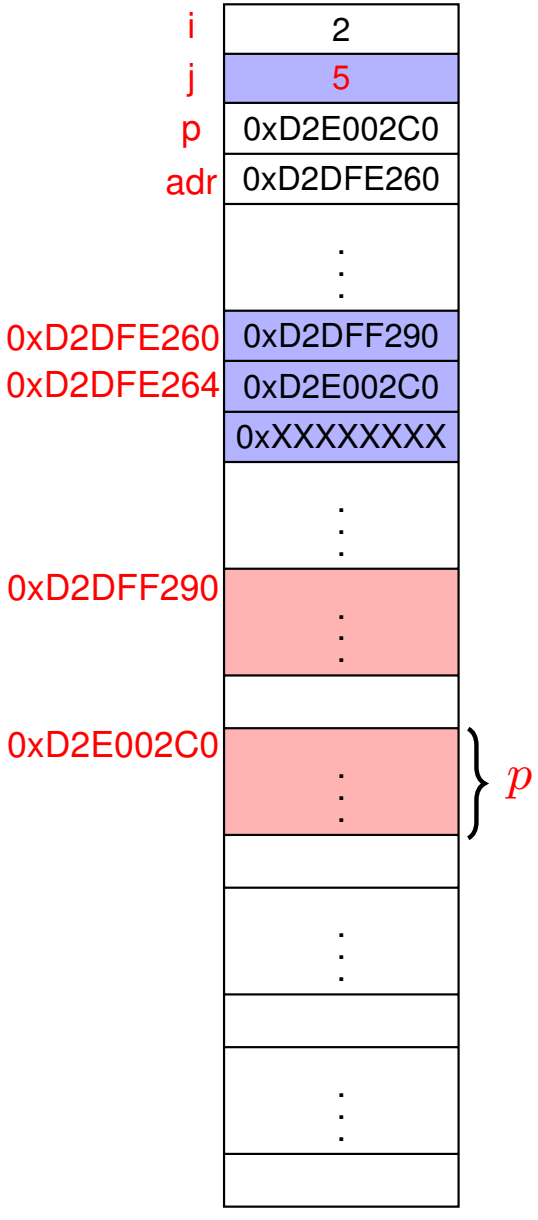
0xD2DFF290



0xD2E002C0



malloc y realloc en Arquitectura X86-32 bits



j = strlen(nombres);

$char\ nombres[256]$

j	o	s	e	'\0'									

0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

malloc y realloc en Arquitectura X86-32 bits


```
p = (char *) malloc ( j * sizeof(char) );
```

$char\ nombres[256]$

j	o	s	e	'\0'									

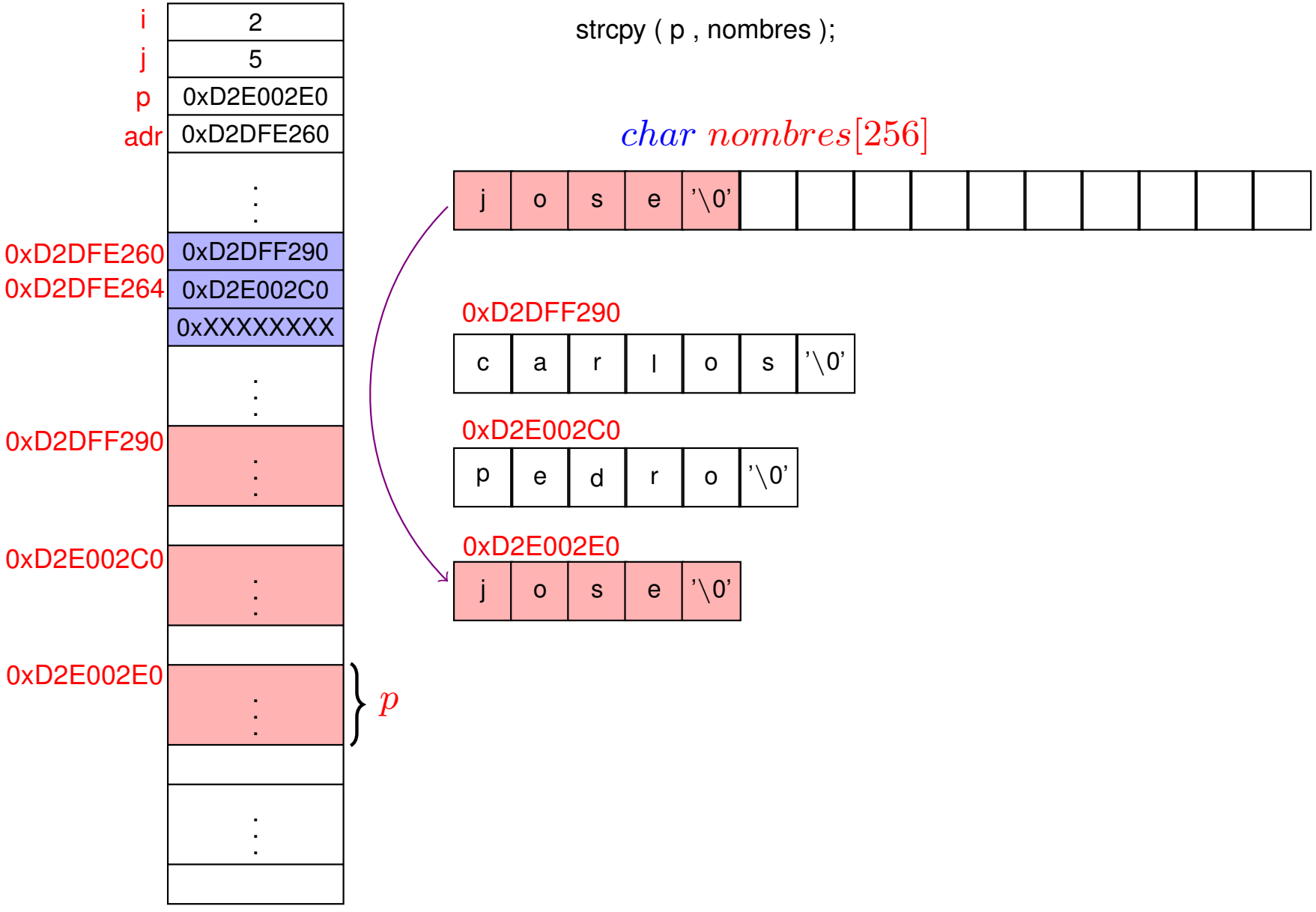
0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

malloc y realloc en Arquitectura X86-32 bits

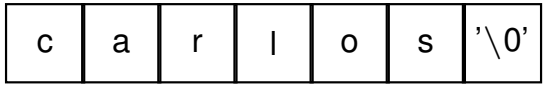


malloc y realloc en Arquitectura X86-32 bits

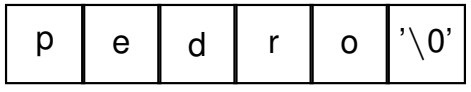
*(adr + i) = p;

$char\ nombres[256]$

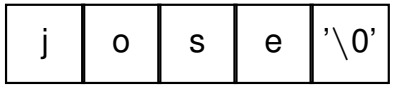
0xD2DFF290



0xD2E002C0



0xD2E002E0



malloc y realloc en Arquitectura X86-32 bits

*(*(adr+i)) contiene al primer caracter y como es != @

adr = (char **) realloc(adr , (i+2) * **sizeof**(char *))

$char\ nombres[256]$

j	o	s	e	'\0'										

0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

0xD2E002E0

j	o	s	e	'\0'

malloc y realloc en Arquitectura X86-32 bits

i++

char nombres[256]

j	o	s	e	'\0'										

0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

0xD2E002E0

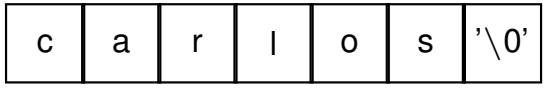
j	o	s	e	'\0'

malloc y realloc en Arquitectura X86-32 bits

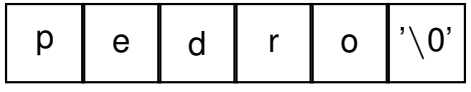
fgets(nombres , 256 , stdin);

char nombres[256]

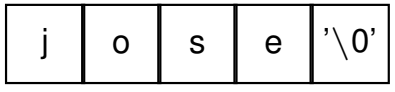
0xD2DFF290



0xD2E002C0



0xD2E002E0



malloc y realloc en Arquitectura X86-32 bits

j = strlen(nombres);

char nombres[256]

@	c	l	a	'\0'										

0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

0xD2E002E0

j	o	s	e	'\0'

malloc y realloc en Arquitectura X86-32 bits


```
p = (char *) malloc ( j * sizeof(char) );
```

$char\ nombres[256]$

@	c	l	a	'\0'										

0xD2DFF290

c	a	r	l	o	s	'\0'

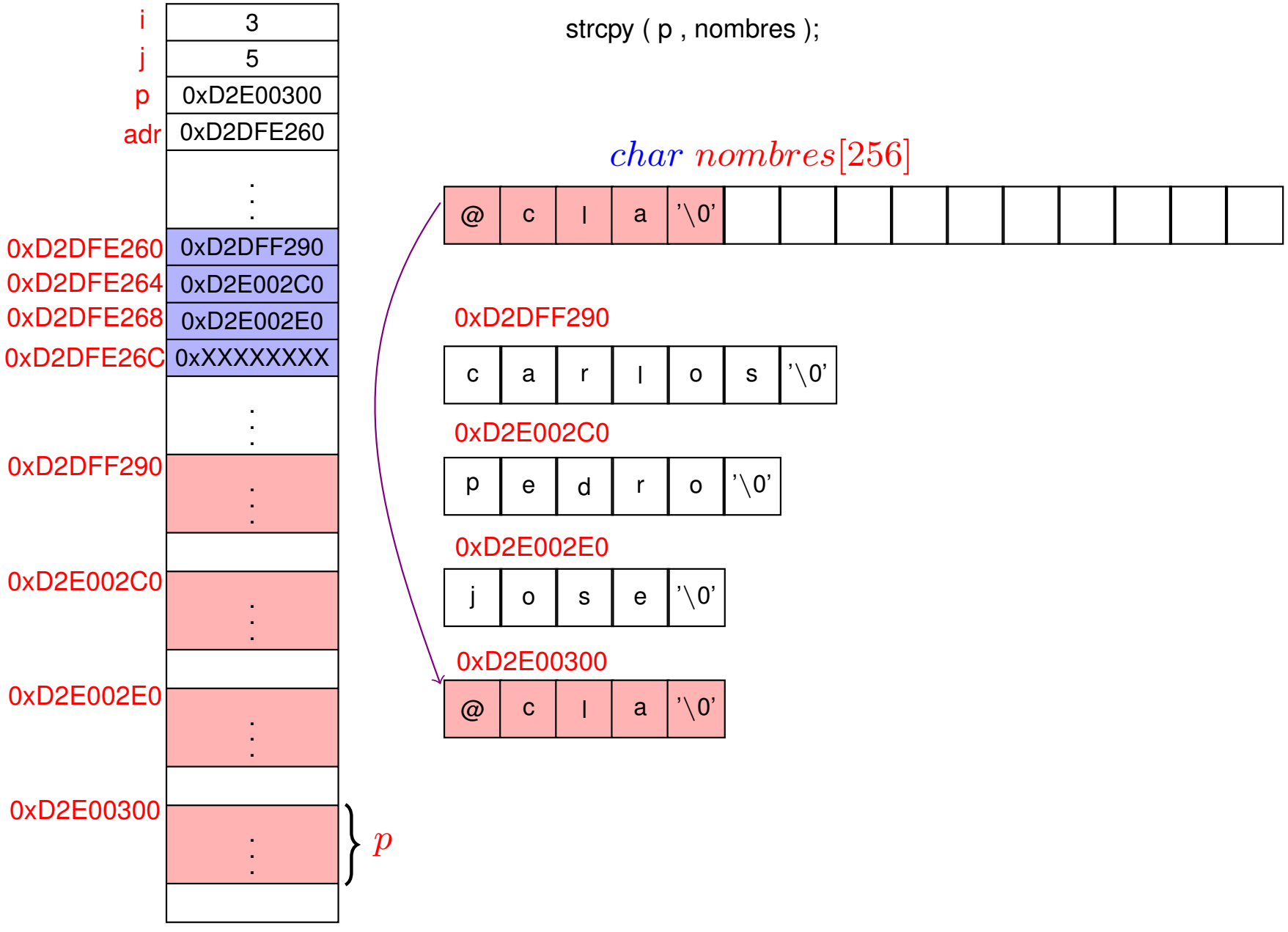
0xD2E002C0

p	e	d	r	o	'\0'

0xD2E002E0

j	o	s	e	'\0'

malloc y realloc en Arquitectura X86-32 bits



malloc y realloc en Arquitectura X86-32 bits

*(adr + i) = p;

char nombres[256]

@	c	l	a	'\0'										

0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

0xD2E002E0

j	o	s	e	'\0'

0xD2E00300

@	c	l	a	'\0'

malloc y realloc en Arquitectura X86-32 bits

*(*(adr+i)) contiene al primer caracter y es @, salimos del loop

free(p);

char nombres[256]

@	c	l	a	'\0'										

0xD2DFF290

c	a	r	l	o	s	'\0'

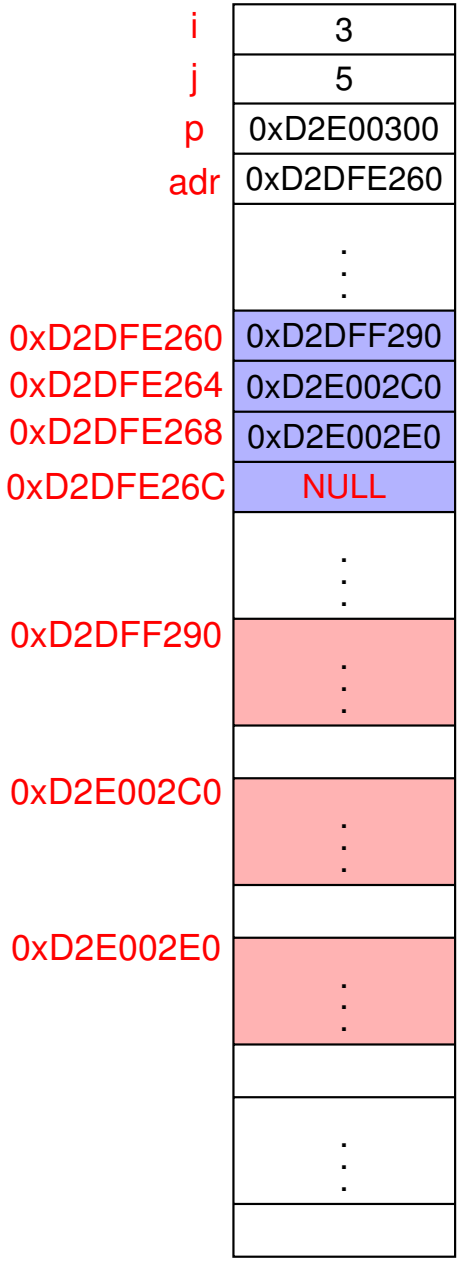
0xD2E002C0

p	e	d	r	o	'\0'

0xD2E002E0

j	o	s	e	'\0'

malloc y realloc en Arquitectura X86-32 bits



*(adr + i) = NULL;

$char\ nombres[256]$

@	c	l	a	'\0'										

0xD2DFF290

c	a	r	l	o	s	'\0'

0xD2E002C0

p	e	d	r	o	'\0'

0xD2E002E0

j	o	s	e	'\0'

malloc y realloc en Arquitectura X86-32 bits

i	3
j	5
p	0xD2E00300
adr	0xD2DFE260
	. . .
0xD2DFE260	0xD2DFF290
0xD2DFE264	0xD2E002C0
0xD2DFE268	0xD2E002E0
0xD2DFE26C	NULL
	. . .
0xD2DFF290	. . .
0xD2E002C0	. . .
0xD2E002E0	. . .
	. . .

Por último imprimme los nombres ingresados
y libera los bloque de memoria reservado

$char\ nombres[256]$

@	c	l	a	'\0'										