AULA – 09
ALOCAÇÃO DINÂMICA DE MEMÓRIA

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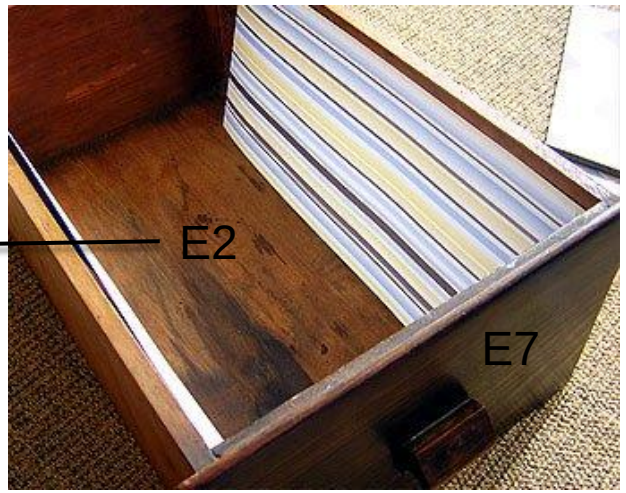
Pointeiros - Analogia

Cada gaveta possui um objeto (variavéis comum)

Gaveta possui um endereço (Ponteiro)

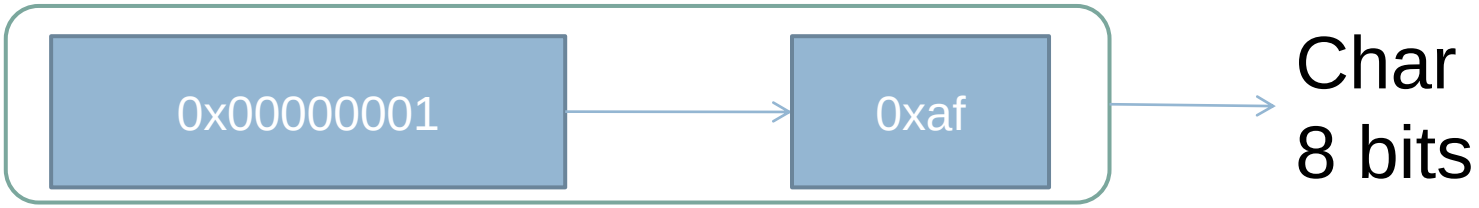


Gavetas endereçadas

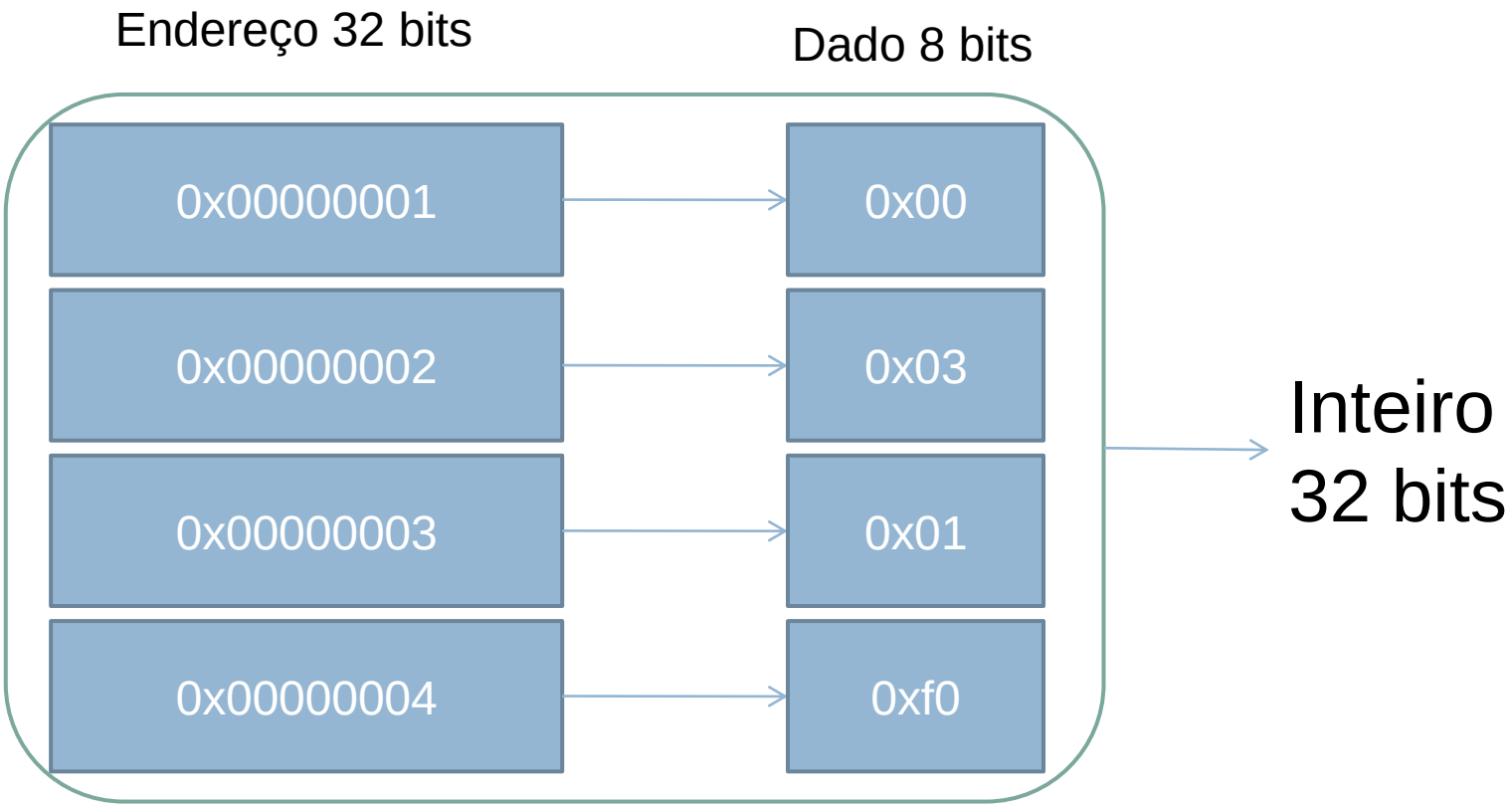
Memória

Endereço 32 bits

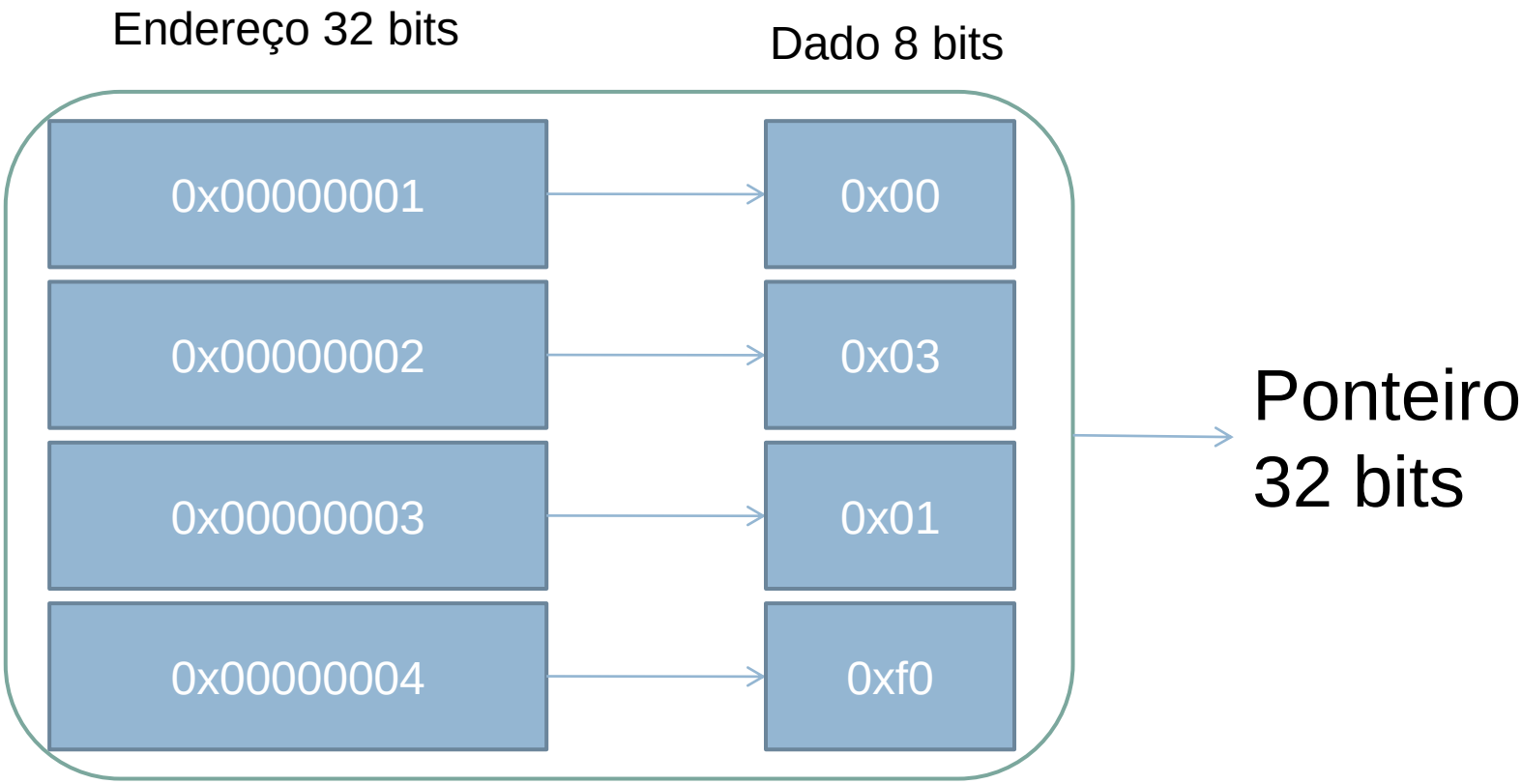
Dado 8 bits



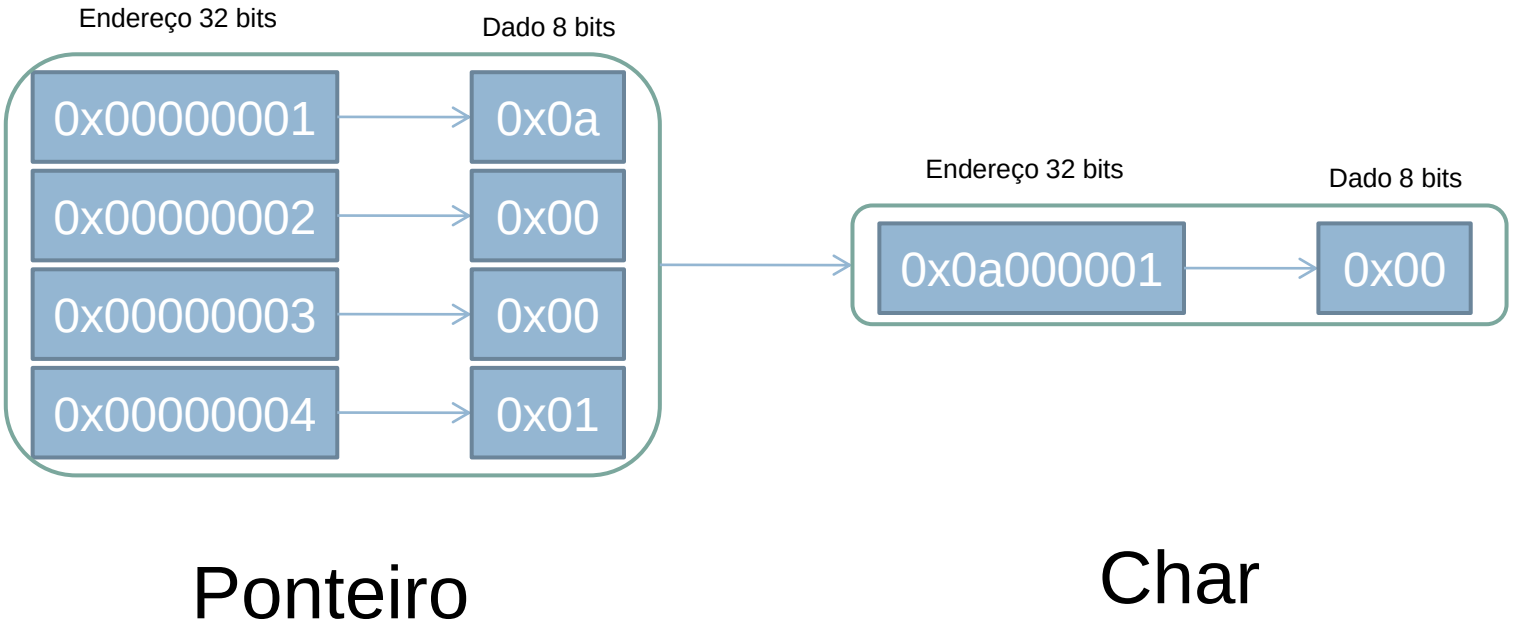
Memória


Endereço 32 bits
Dado 8 bits
0x00000001
0x00
0x00000002
0x03
0x00000003
0x01
0x00000004
0xf0
Inteiro
32 bits

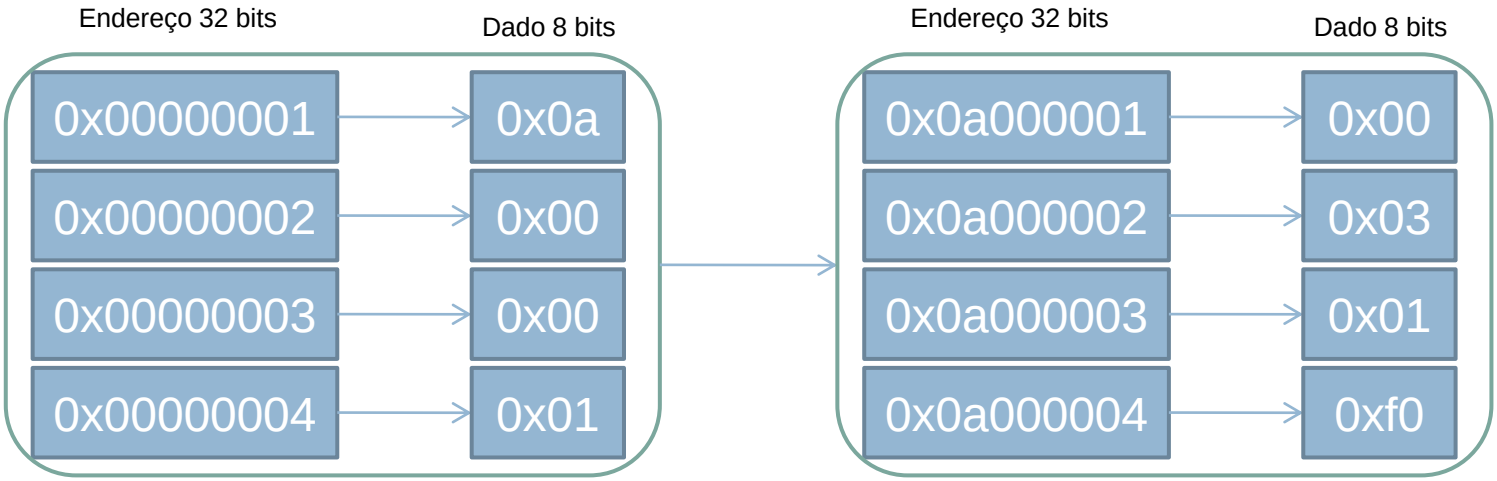
Memória


Endereço 32 bits
Dado 8 bits
0x00000001
0x00
0x00000002
0x03
0x00000003
0x01
0x00000004
0xf0
Ponteiro
32 bits

Memória


Endereço 32 bits
Dado 8 bits
0x00000001
0x0a
0x00000002
0x00
0x00000003
0x00
0x00000004
0x01
Endereço 32 bits
Dado 8 bits
0x0a000001
0x00
Ponteiro
Char

Memória



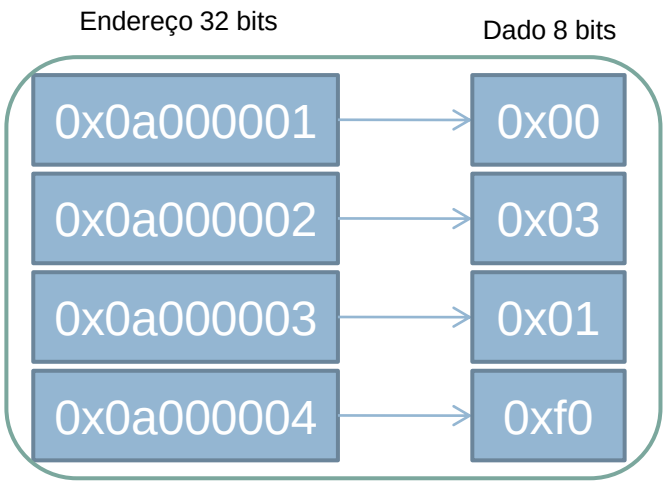
Ponteiro

Inteiro

Programação

```
int dado;
printf("%d\n", dado);
printf("%x", &dado);
```

```
197104
0x0a000001
```

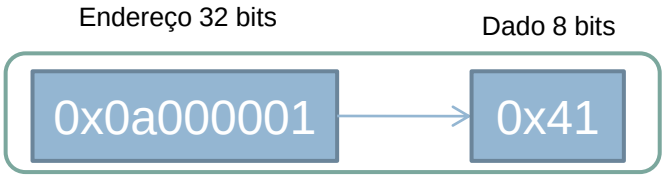


Inteiro

Programação

```
char dado;
printf("%c\n", dado);
printf("%x", &dado);
```

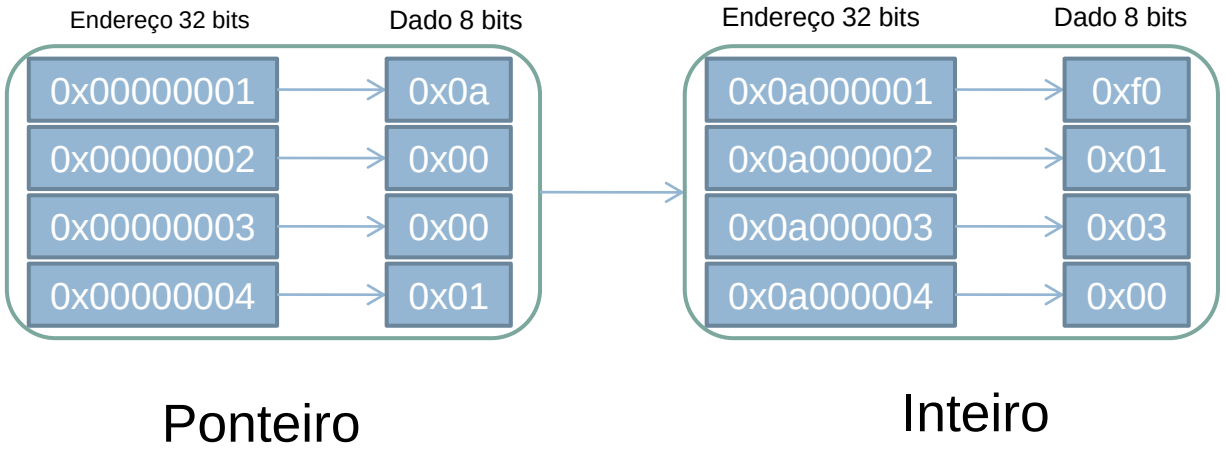
```
A
0x0a000001
```



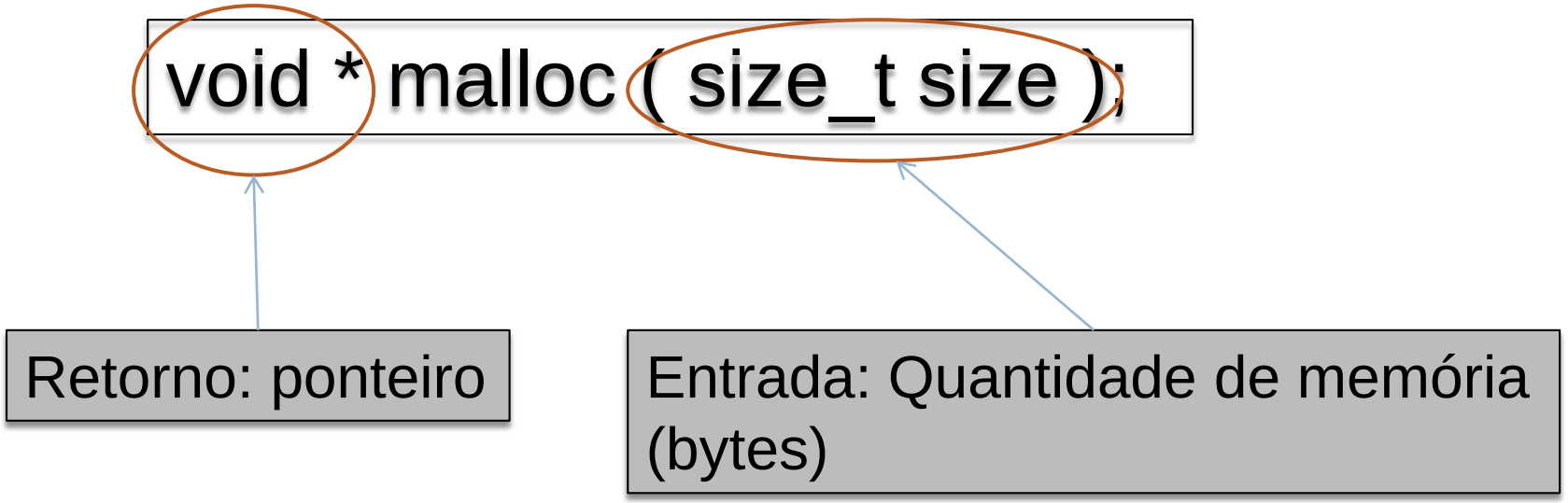
Programação

```
int dado;
int * ponteiro;
ponteiro = &dado;
printf("%d\n", dado);
printf("%x\n", &dado);
printf("%x\n", ponteiro);
printf("%x", &ponteiro);
```

```
197104
0x0a000001
0x0a000001
0x00000001
```

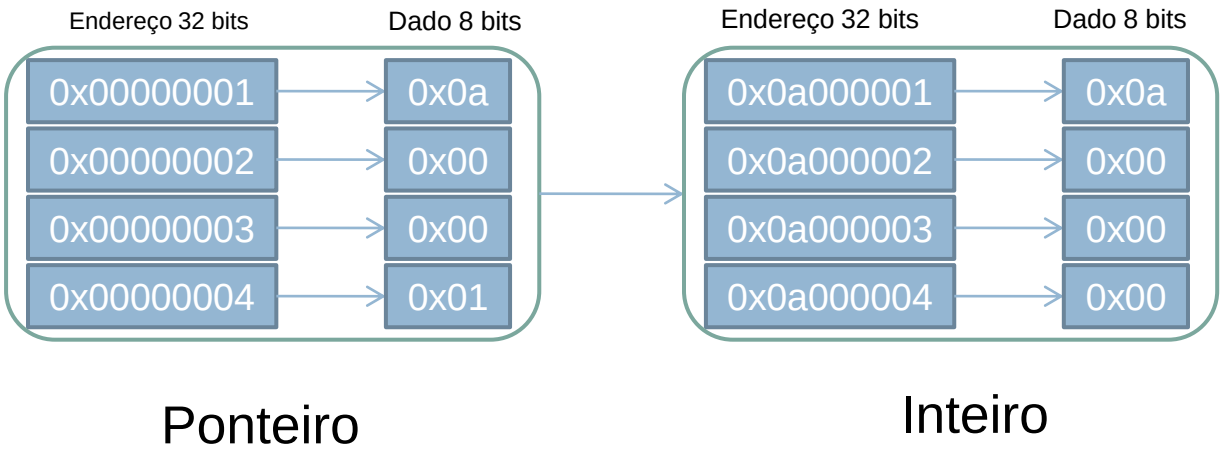


Função malloc



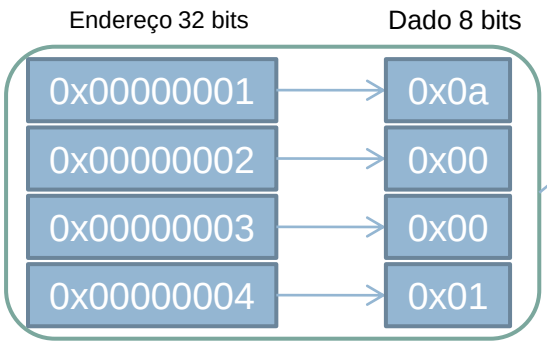
Programação

```
int * ponteiro;
ponteiro = (int *) malloc(sizeof(int));
*pointeiro = 10;

printf("%d", *ponteiro);
```

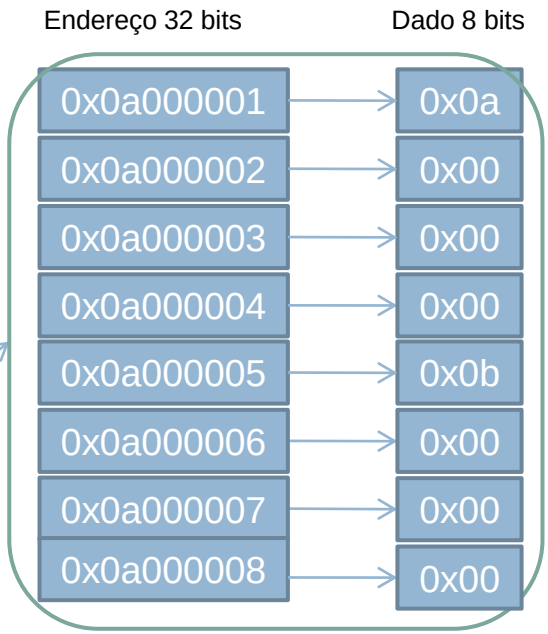


Programação

```
int * ponteiro;
ponteiro = (int *) malloc(2 * sizeof(int));
pointeiro[0] = 10;
ponteiro[1] = 11;

printf(“%d”, *ponteiro); // == ponteiro[0]
printf(“%d”, *(ponteiro+1)); // == ponteiro[1]
```



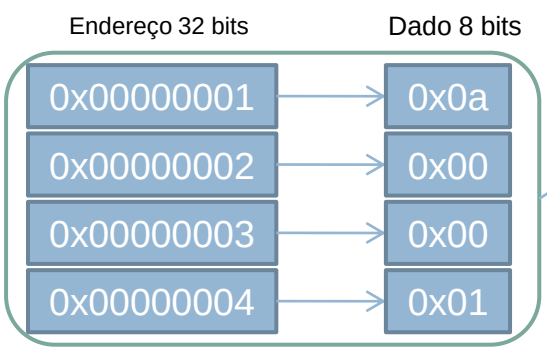
Ponteiro



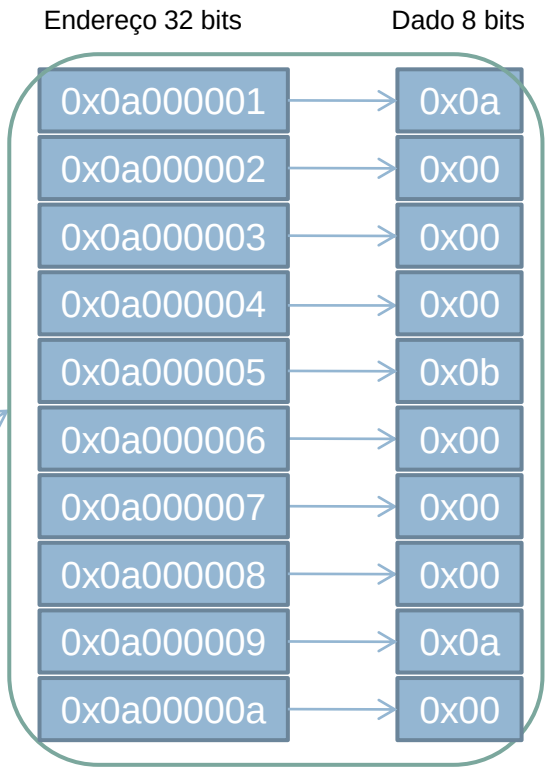
2 Inteiros

Programação

```
char * ponteiro;
ponteiro = (char *) malloc(10);

gets(ponteiro);
printf("%s", ponteiro);
```



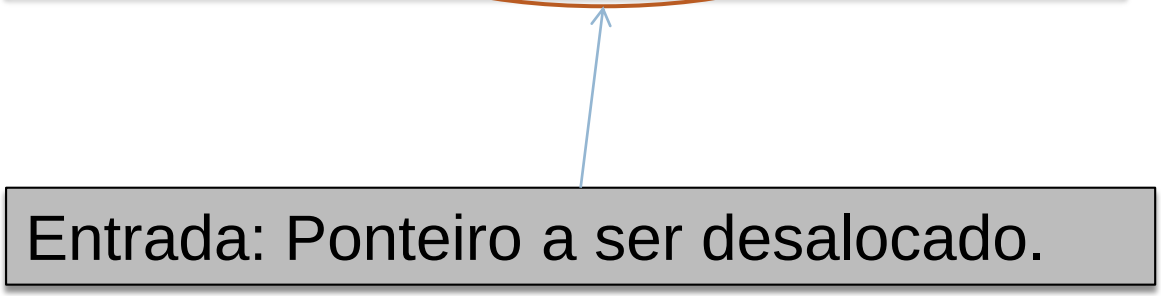
Ponteiro



10 char

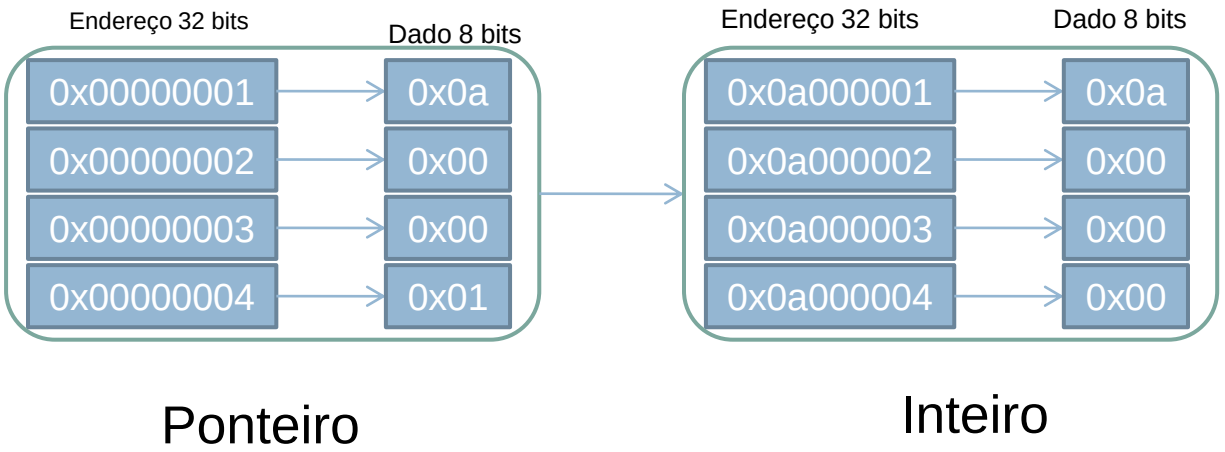
Função free

```
void free ( void * ptr );
```



Programação

```
int * ponteiro;
ponteiro = (int *) malloc(sizeof(int));
*pointeiro = 10;

printf("%d", *ponteiro);

free(ponteiro);
```



Exercício

- wiki.icmc.usp.br