

2D Arrays

What are they?

- An array of arrays.
- We call them 2D arrays because they we can view them as a grid.

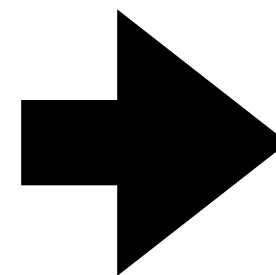
Sample Declaration and Initialisation

number of
1D arrays
(num rows)

number of elements
in each 1D array
(num columns)

```
int grid[4][3] = {  
    {1, 2, 3},  
    {4, 5, 6},  
    {7, 8, 9},  
    {10, 11, 12}  
};
```

remember it's better style to use
#define'd constants for the size



Visualisation

Index	0	1	2
0	1	2	3
1	4	5	6
2	7	8	9
3	10	11	12

grid[2][1]
Note: row number is
indexed first before
column number

Pointer Syntax

What's happening in this code snippet?

```
int n = 42;  
int *p;  
int *q;  
p = &n;  
*p = 5;  
*q = 17;  
q = p;  
*q = 8;
```

Memory

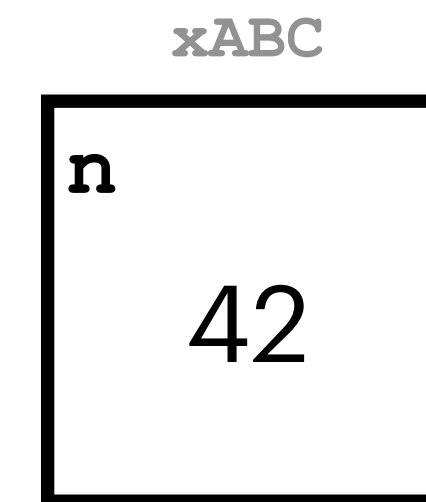


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✓ int n = 42;  
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  *q = 17;  
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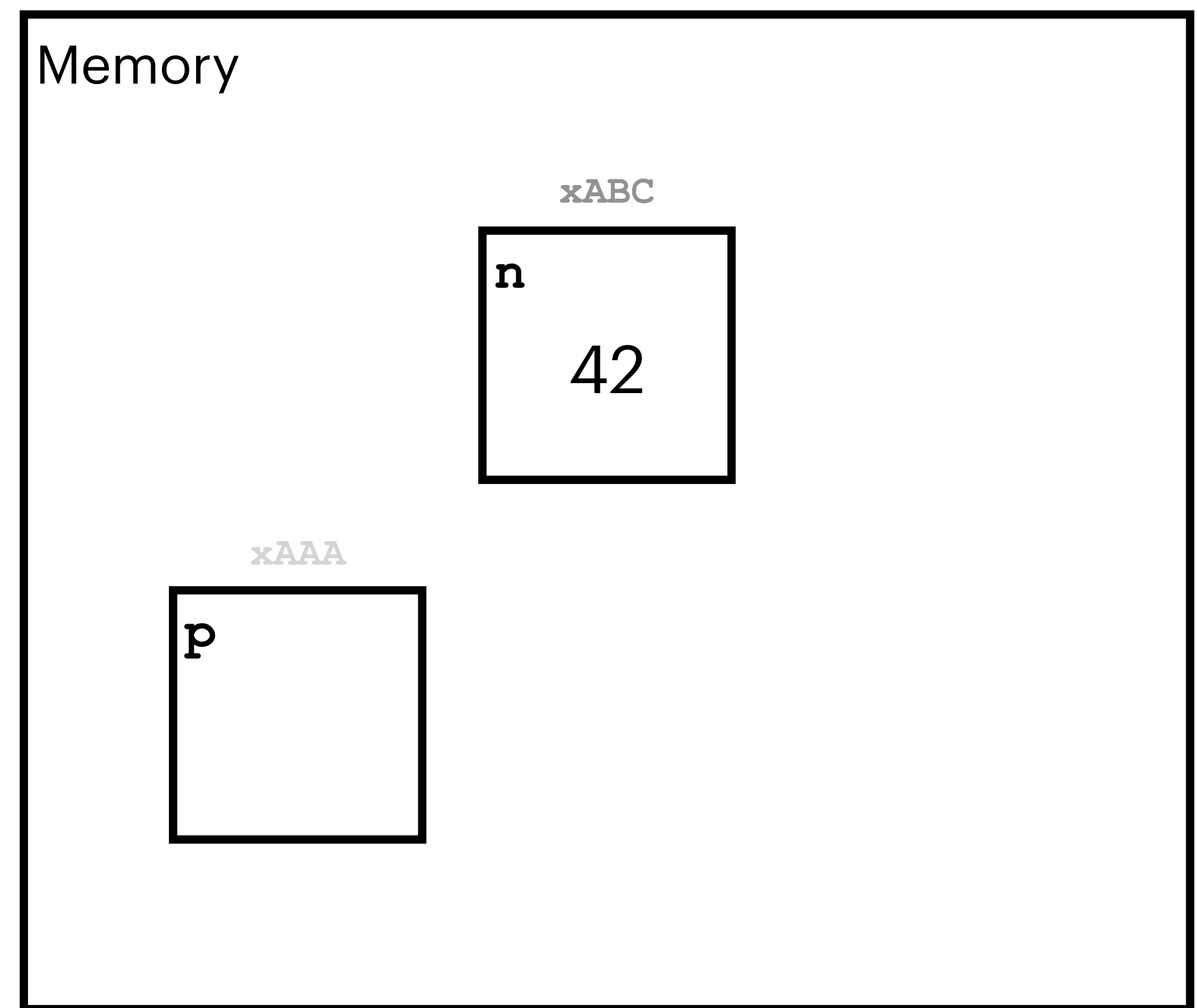
Memory



Pointer Syntax

What's happening in this code snippet?

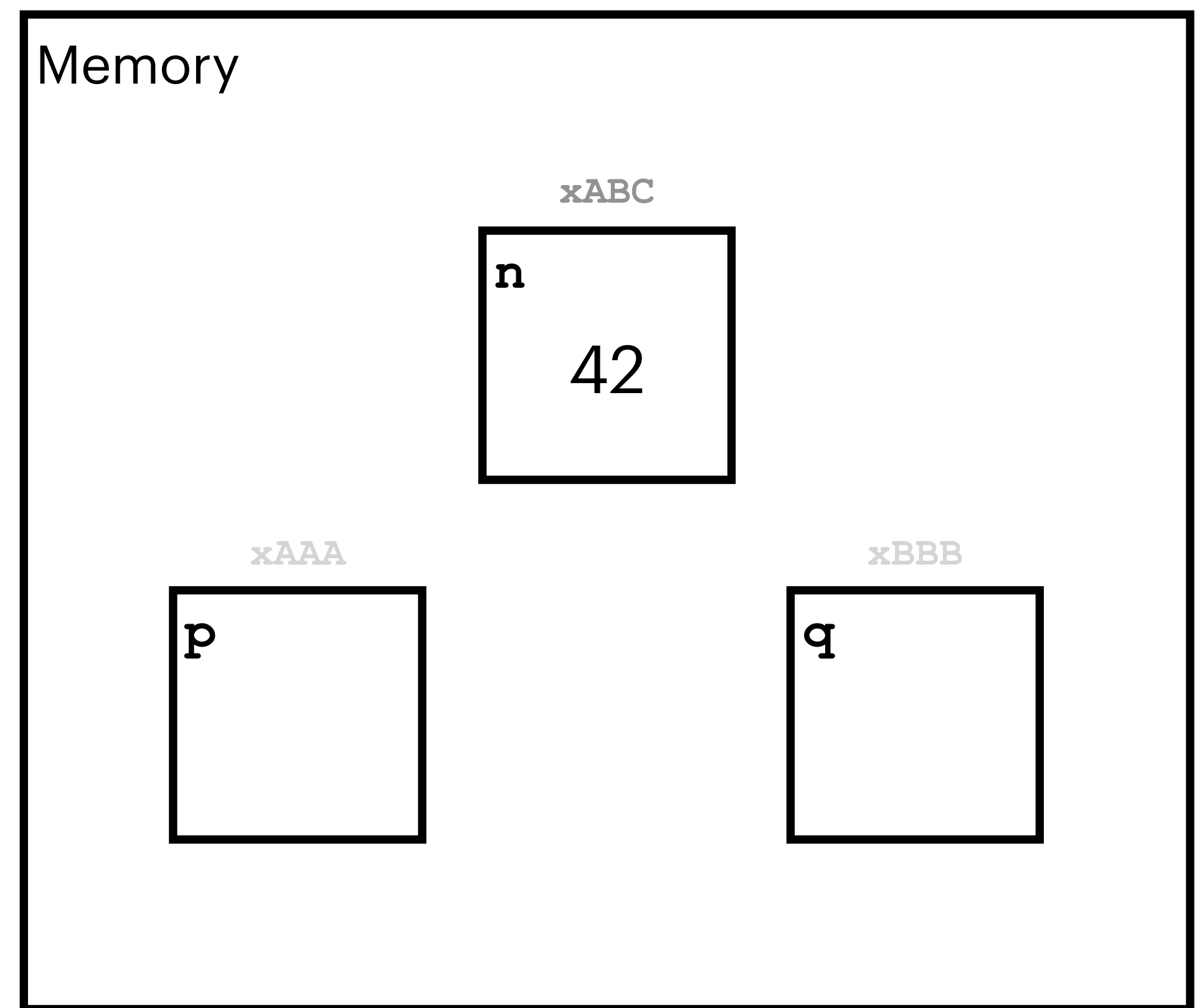
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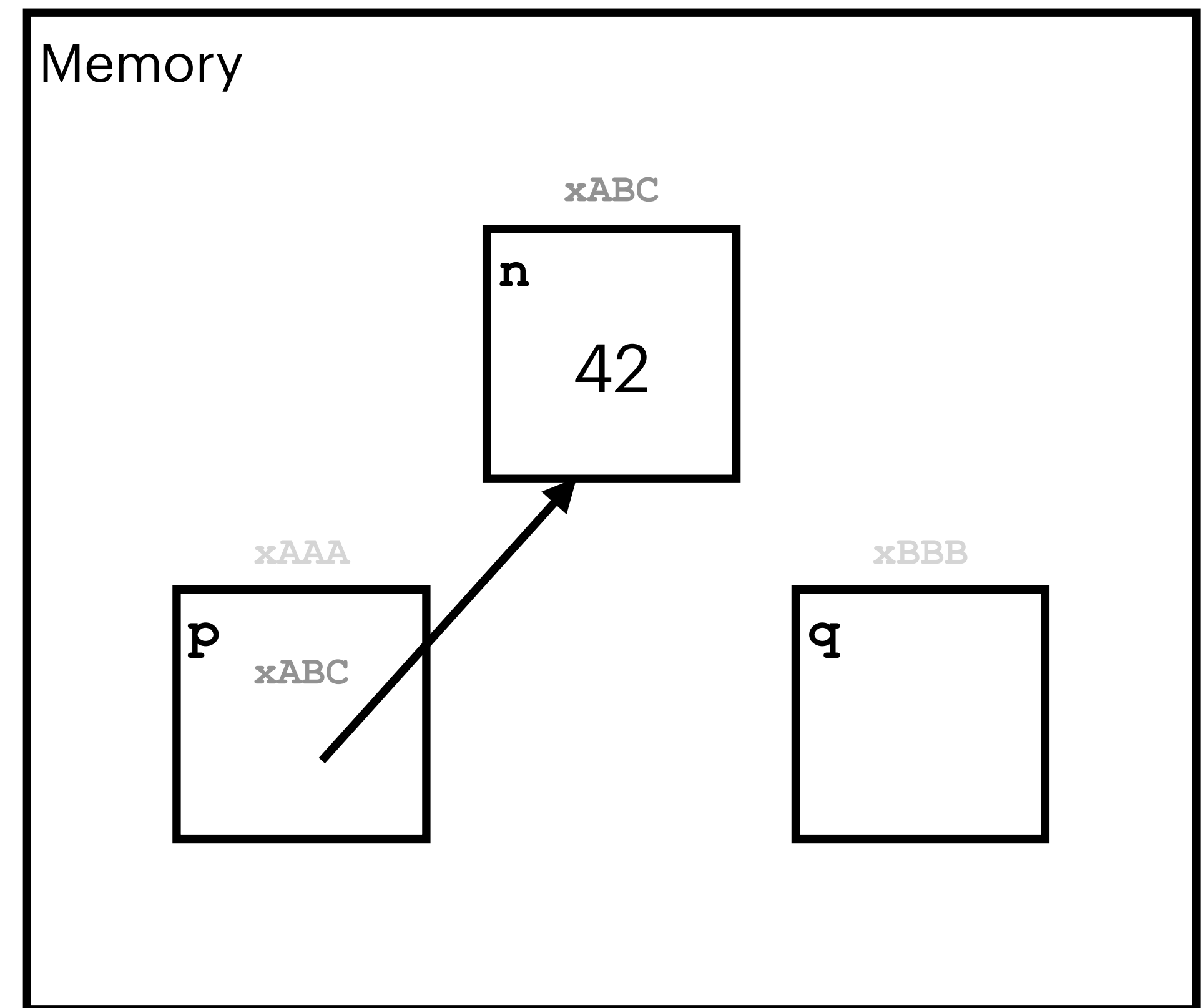
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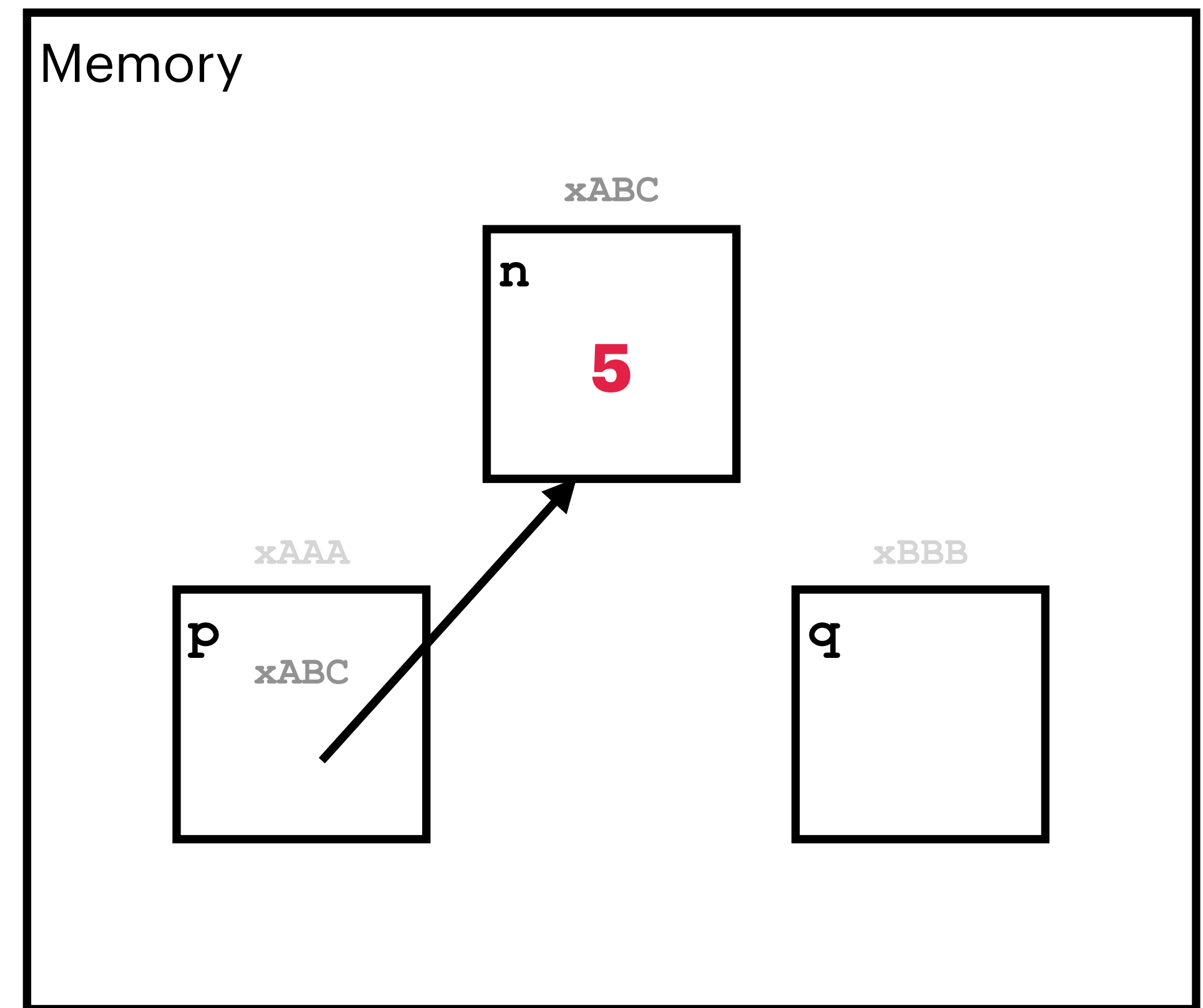
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✓ int *q;  
✓ p = &n;  
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Pointer Syntax

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✓ `int *p;`

✓ `int *q;`

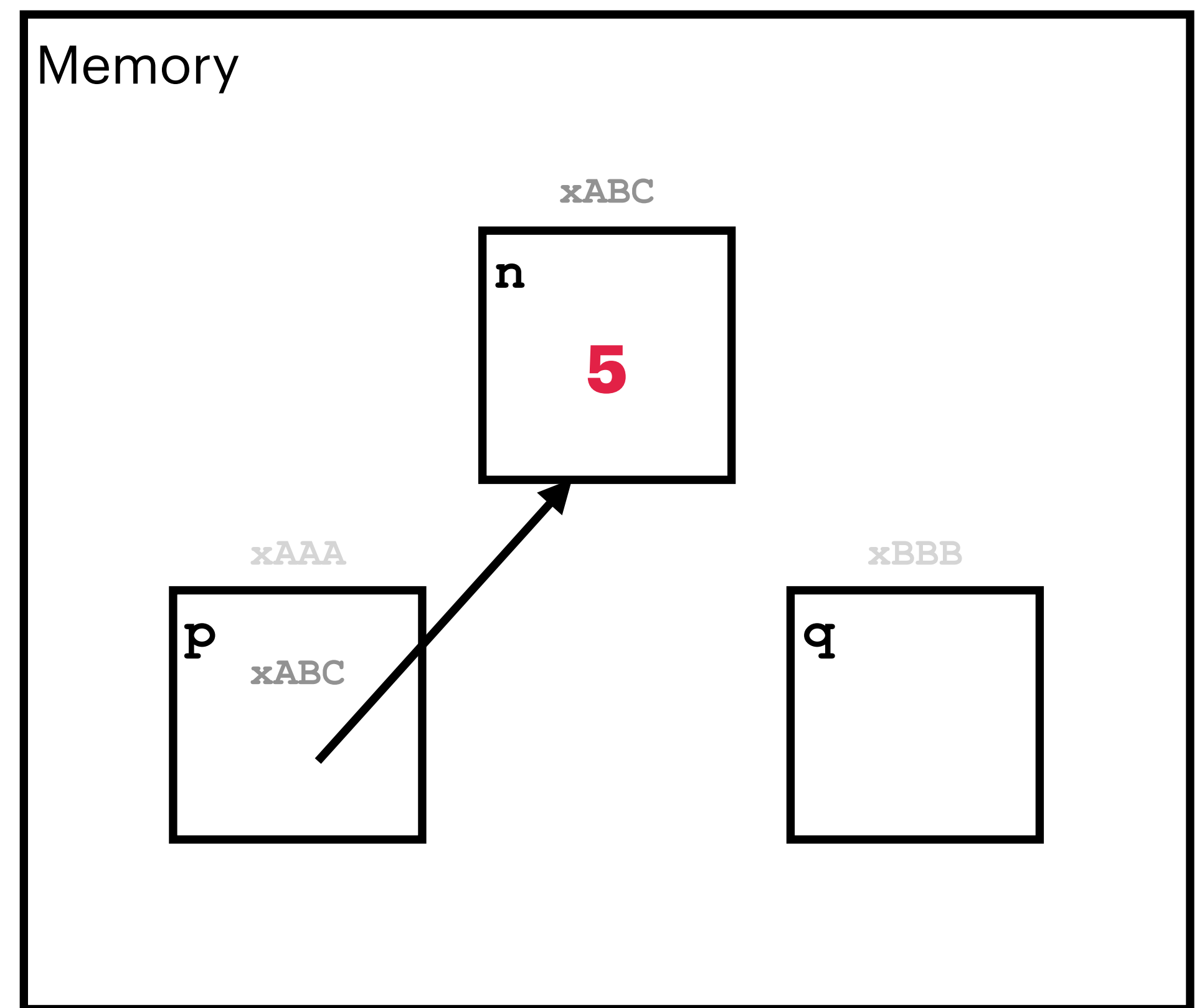
✓ `p = &n;`

✓ `*p = 5;`

✗ `*q = 17;` (q doesn't store an address yet)

`q = p;`

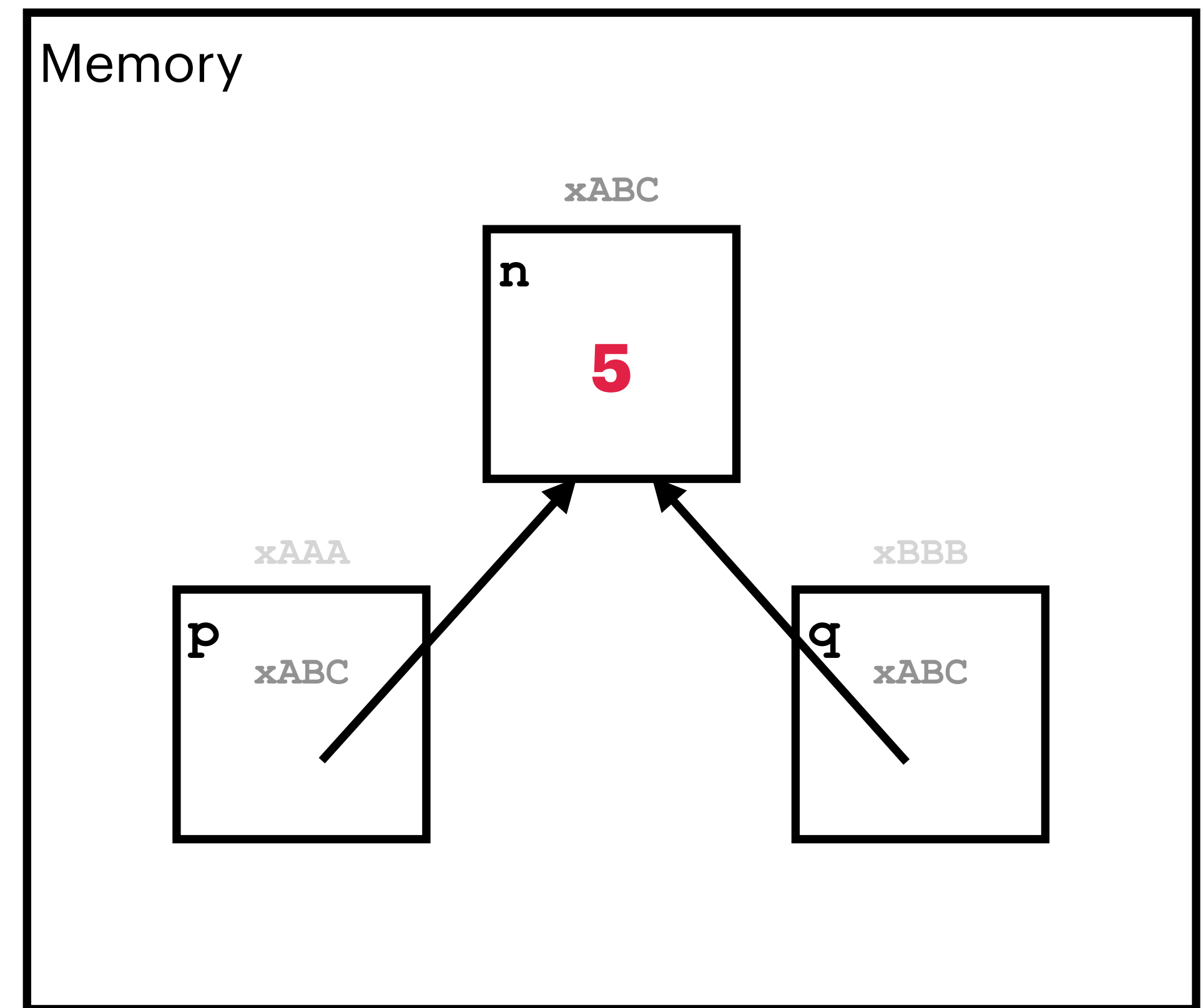
`*q = 8;`



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✓ int *q;  
✓ p = &n;  
✓ *p = 5;  
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