Dynamic Memory

idea: Allocate memory as the program is running
(it's what vector's push_back(...) will do.

in c++: use new, which ① finds a chunk of memory of whatever size you request
② tells you where to find it (a.k.a. returns a pointer)

Examples:

```
int * p = new int; // allocates 4 bytes.
int * A = new int[100]; // allocates 400 bytes.
```

How to grow an array? (How does vector.push_back work?)

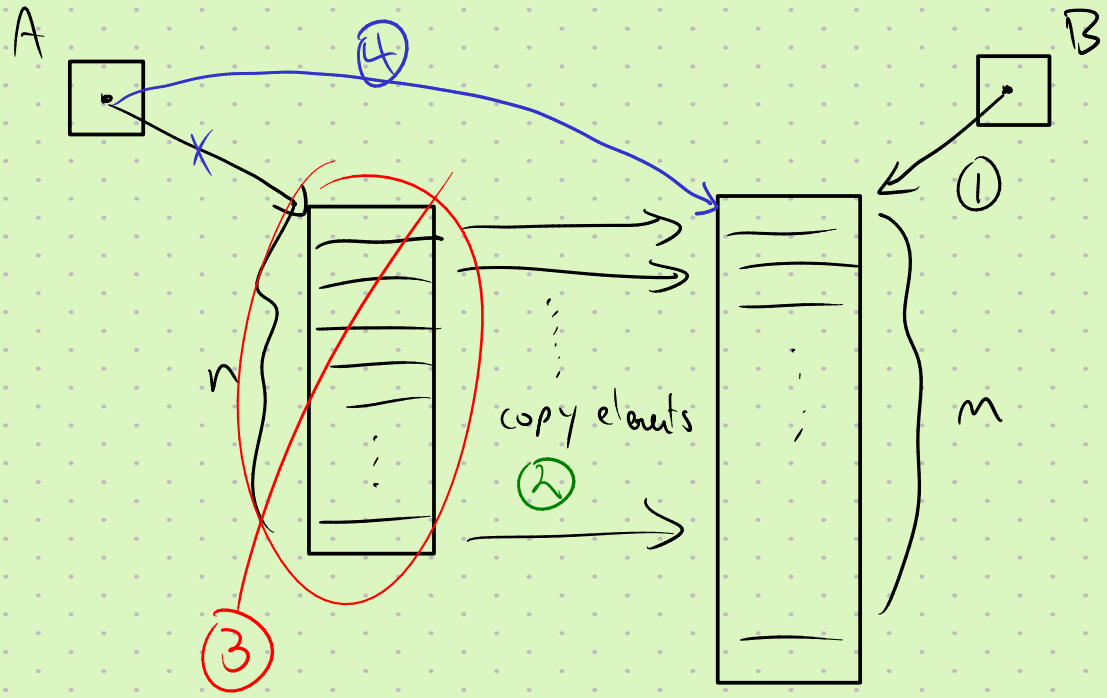
Issue: say array A has n elements:

```
int * A = new int[n];
```

To grow A, memory locations A+n, A+n+1, ... must be available.

In general, we must find a new home for the array.

say $m > n$ is new desired size.



$*A = *B_i$?

would overwrite A[0] w/ B[0]

$A = B_i$ ✓

$X = Y$