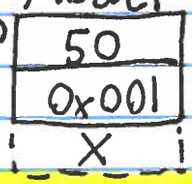
The "stack" is efficient but memory is much more limited and can't be dynamically allocated.

Variable Model

example `int x = 50;`

Allocates on "runtime stack"
Automated deletion by scope



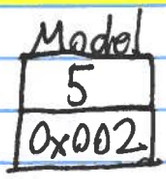
The heap has much more memory available, and can be dynamic.

The 'new' command

creates a variable without an identifier on the "heap".

example `new int(5);`

Allocates on "heap"
Programmer MUST delete



How do we use a variable with no identifier?
'new' returns the address. Try printing it.

example `cout<<new int(5); //printed 0x1d5de70`

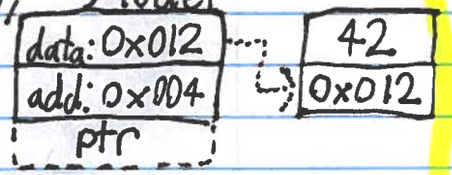
So how do we use/store addresses?

Pointers

are relatively small variables (stack-friendly) which store an address of a variable of a specific type.
(int pointer stores the address of an int)
Pointers are created with the referenced type and an asterisk.

Pointers also have an address where they are stored! All variables do!

example `int *ptr = new int(42);`



Shorthand model