Memory Types

Stack & Heap

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What is Memory Management?

- Memory management is the process of allocating and deallocating memory during the execution of a program.
- In C#, memory management is primarily handled by the Common Language Runtime (CLR) through its garbage collector.

Stack Memory

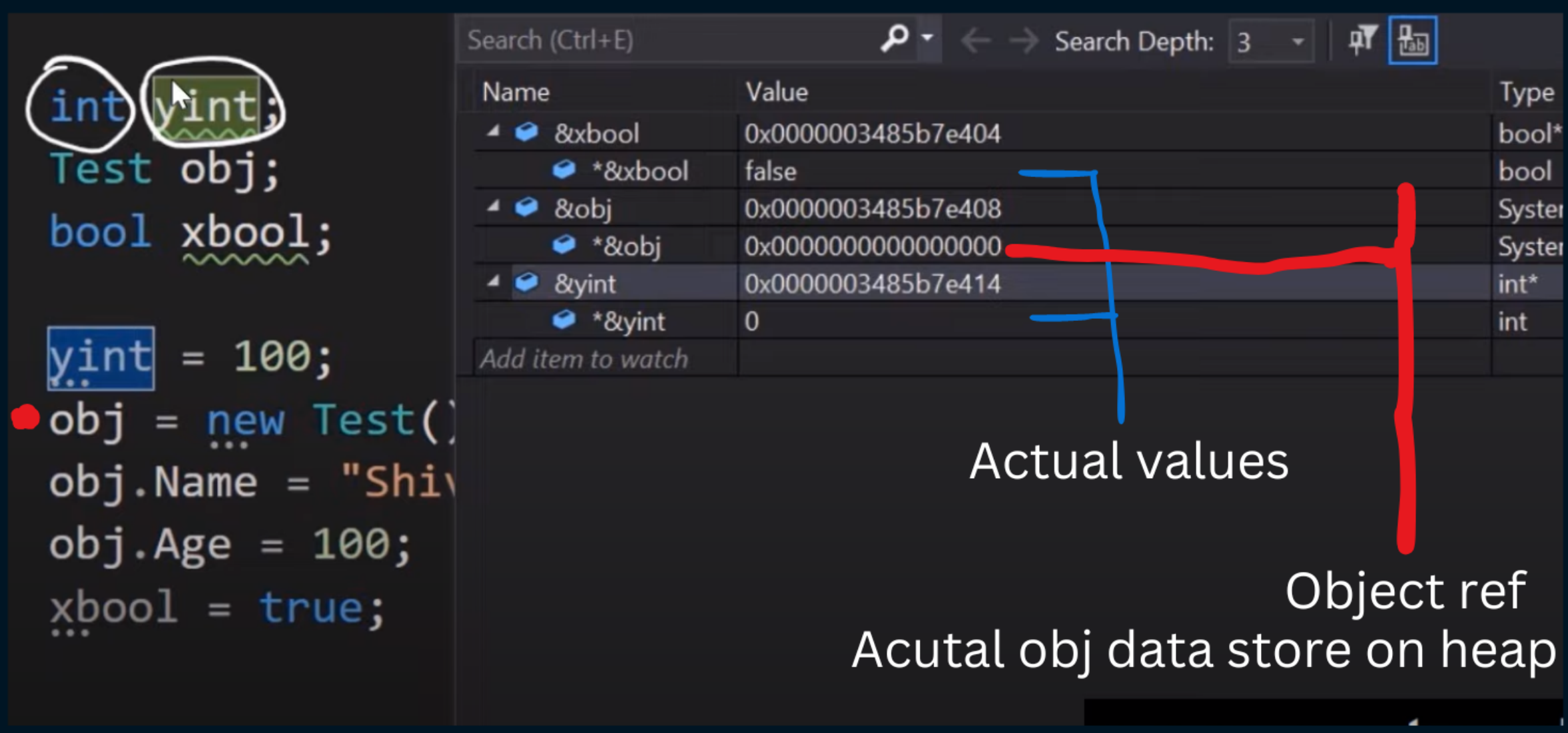
- Stack memory is used for storing method call frames and local variables.
- It operates in a Last-In-First-Out (LIFO) manner.
- Each method call creates a new stack frame, containing parameters, local variables, and the return address.
- When a method completes, its stack frame is removed from the stack.
- Stack memory is fast to allocate and deallocate.
- Perfect for managing method calls and local variables efficiently.

Heap Memory

- Heap memory is used for dynamically allocated objects in C#.
- When you use the new keyword, memory for objects is allocated from the heap.
- The garbage collector is responsible for reclaiming memory from unused objects.
- Garbage collection identifies and releases memory from objects that are no longer in use.
- Heap memory management involves more overhead due to garbage collection.

What goes on stack and what goes on heap?

- Primitive datatypes eg(int,bool,char) and object references are stored on stack
- Actual object data and primitive datatypes (depending on implementation) on heap.



Can primitive data types be stored in heap?

- Yes, if primitive data types are part of an object then it will go on heap.

Explain byVal / copy by value and byRef / copy by ref?

- In byVal and copy by value values are copied and fresh memory address is allocated.
- While in case of byRef / copy by ref they point tp same memory address and so the same ref.

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Tip and Insights

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