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Class: ISTA 220

HW 8

1. What is the difference between a deep copy and a shallow copy?

Through a shallow copy a new object is created that has an exact copy of the values in the original object. The thing to keep in mind is that if any of the fields of the object are references to other objects, just the reference address (memory address) is copied.

In a deep copy occurs the object is copied along with the objects to which it refers.

1. What is a value of a reference after you declare and initialize it?

The value is Null. The reference to the block of the memory where it holds the data.

1. How do you declare a value type?

By using the New keyword.

1. How do you declare a reference type?

By using the New operator keyword.

1. Does C # allow you to assign NULL to value type?

Null is itself a reference, thereby cannot be assigned to a value type.

1. Can you assign a nullable value type to a non nullable variable of the same type? Why or why not?

You can not assign a nullable value to a non nullable variable of the same type. This is because a value type variable or non nullable variable can not contain null.

1. What is the difference between stack and the heap?

Value type is stored in stack, and reference type is stored in heap. The reference of where the reference type is stored in the memory(heap) is stored in stack.

1. What does it mean when we say all classes are specialized types?
2. What do ref do?

If a parameter is prefixed by the ref keyword then the C# compiler will generate code that passes a reference to the actual argument rather than a copy of the argument.

1. What does out do?

An out keyword can be used if the user wants the method itself to initialize the parameter. The parameter needs to be prefixed with the out keyword. While using the out keyword, whatever changes apply to the parameter will also apply to the original argument.

1. Describe boxing and unboxing in your own words?

Boxing is the automatic copying of an item from the stack to the heap.

For example: i = 42; object o = i.

Since object o is a reference type and is storing its value in i which is a value type, the program automatically allocates a space in heap where it copies the value of i, and refers the object o to this copy.

Unboxing extracts the value type from the object. It extracts the value type from where it is stored in heap, and brings it to stack.

1. What does cast do?

It obtains the value of the boxed copy.