Steps in creating an object

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Creating Objects

- Creating objects of a class is a two-step process.
- ***First***, you must declare a variable of the class type.
  - This variable does not define an object. Instead, it is simply a variable that can refer to (contain the address of) an object.
- ***Second***, you must acquire an actual, physical copy of the object and assign it to that variable.
  - You can do this using the **new** operator.
  - The **new** operator dynamically allocates (that is, allocates at run time) memory for an object and returns a reference to it.
  - This reference is, essentially, the address in memory of the object allocated by **new**.
- This reference is then stored in the variable.
- Thus, in Java, all the objects must be dynamically allocated.

Example : class Box


```
class Box {

        double width;
        double height;
        double depth;

}
```

Refer BoxDemo.java

Explanation

- To declare an object of type Box:
  - Box mybox = new Box();
- It can be rewritten like this to show each step more clearly:
  - Box mybox; // declare reference to object
  - mybox = new Box(); // allocate a Box object

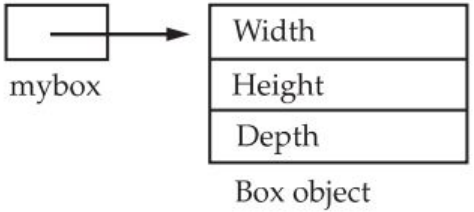
Explanation (continued)

- The first line declares mybox as a reference to an object of type Box.
  - At this point, mybox does not yet refer to an actual object.
- The next line allocates an object and assigns its memory address to mybox.
- After the second line executes, you can use mybox as if it were a Box object.

Explanation (continued)

- Each time you create an instance of a class, you are creating an object that contains its own copy of each instance variable defined by the class.
- Thus, every Box object will contain its own copies of the instance variables **width**, **height**, and **depth**.
- To access these variables, you will use the **dot (.) operator**.
- The dot operator links the name of the object with the name of an instance variable.
- mybox1.width = 10;
- This statement tells the compiler to assign the value of 10 to the copy of width that is contained within the mybox1 object.
- In general, you use the dot operator to access both the instance variables and the methods within an object.

Illustration: Creating an object of type Box

Statement	Effect
Box mybox;	 mybox
mybox = new Box();	 mybox; Width; Height; Depth; Box object