Creating and Using Objects

Objectives

- Declare, instantiate, and initialize object reference variables
- Compare how object reference variables are stored in relation to primitive variables
- Use a class (the `String` class) included in the Java SDK.
- Use the J2SE class library specification to learn about other classes in this API

Declaring Object Ref. Variables

- The syntax for declaring object reference variables is

  ```
  Classname identifier;
  ```

- The *Classname* is the class or type of object referenced to with the object reference
- The *identifier* is the name you assigned to the variable of type *Classname*
- As with all variables, you should make the identifier reflect the purpose of the variable while following normal identifier naming rules

Instantiating an Object

- After declaring the object reference the object can be created. The syntax is:
  - *`new Classname();`*
- The `new` keyword creates an object instance from a class
- The *`Classname`* is the class or type of object being created.

Initializing Object Ref. Variables

- The final step in creating an object reference variable is to initialize the object reference variable by assigning the newly created object to the variable
  - `identifier = new Classname();`
- Can be done in two or one lines of code
  - `Shirt myShirt;`
  - `myShirt = new Shirt();`
- Or
  - `Shirt myShirt = new Shirt();`

Manipulating data

- You use the dot (.) operator with an object reference to manipulate the values or to invoke the methods of a specific object.
  - `myShirt.colorCode = 'G';`

```
public class ShirtTestTwo {
    public static void main (String args[]) {
        Shirt myShirt = new Shirt();
        Shirt yourShirt = new Shirt();

        myShirt.displayInformation();
        yourShirt.displayInformation();

        myShirt.colorCode = 'R';
        yourShirt.colorCode = 'G';

        myShirt.displayInformation();
        yourShirt.displayInformation();
    }
}
```

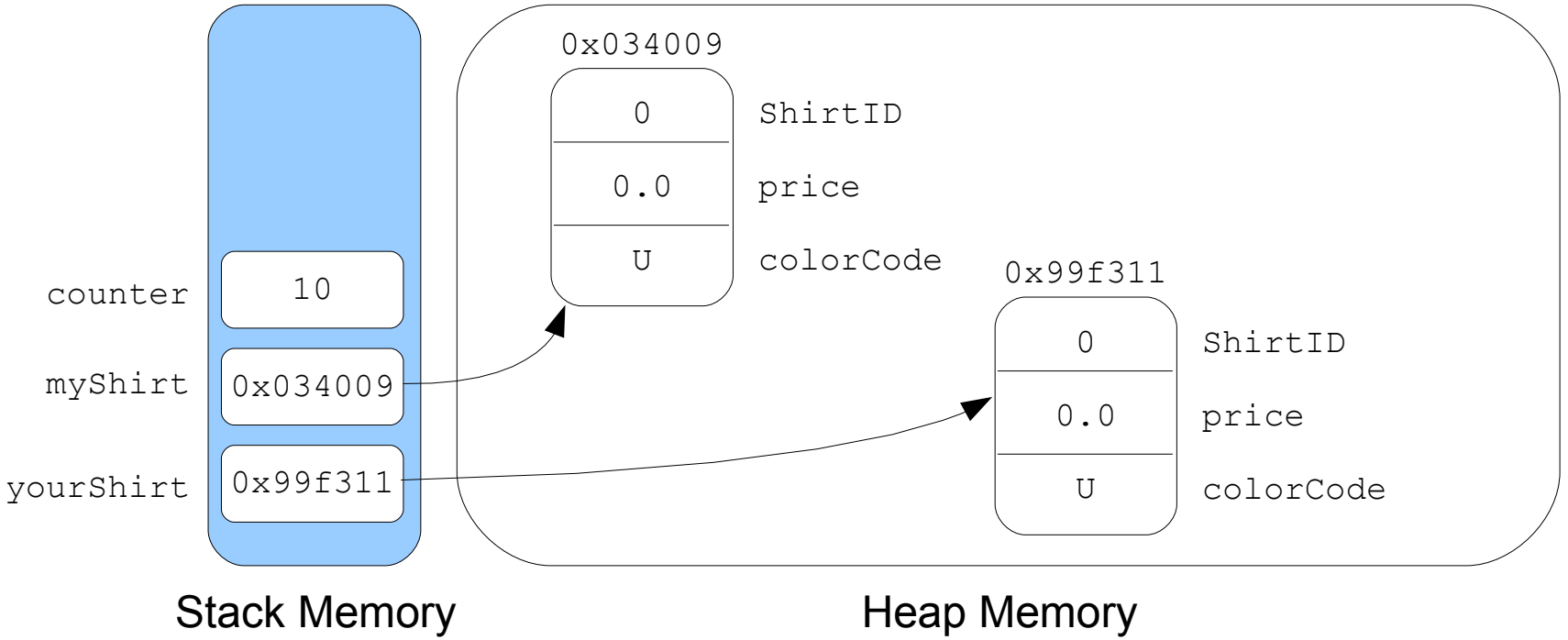
Storing Object Ref. Variables in Memory

- Primitive variables hold values, object reference variables hold the location (memory address) of objects in memory.
  - Addresses are usually written in hexadecimal notation (for example 0x334009) and are unique to each object and assigned when the program runs.

Storing Object Ref. Variables in Memory (2)

- The following figure shows how primitive and object reference variables are stored in memory

```
public static void main (String args[]) {
     int counter;
     counter = 10;
     Shirt myShirt = new Shirt();
}
```



Storing Object Ref. Variables in Memory (3)

- Assigning a Reference from One Variable to Another

```
Shirt myShirt = new Shirt();
Shirt yourShirt = new Shirt();
myShirt = yourShirt;
```