Java - Objects

Objects

Everything in Java is an object.
Well ... almost.

Object lifecycle:

1) creation
2) usage
3) destruction

Object Creation

A variable s is declared to refer to the objects of type/class String:

String s;

The value of s is null; it does not yet refer to any object.

A new String object is created in memory with initial "*abc*" value:

String s = new String("abc");

Now s contains the address of this new object.

Object Usage

Objects are used mostly through variables.

Four usage scenarios:

1) one variable, one object

2) two variables, one object

3) two variables, two objects

4) one variable, two objects

One Variable, One Object

One variable, one object:

String s = new String(“abc”);

What can you do with the object addressed by s?

1. Check the length: s.length() == 3 2)
2. Return the substring: s.substring(2) 3)
3. etc.

Depending what is allowed by the definition of String.

Two Variable, One Object

Two variables, one object:

```
String s1 = new String("abc");
String s2;
```

Assignment copies the address, not value:

```
s2 = s1;
```

Now s1 and s2 both refer to one object. After

```
s1 = null;
```

s2 still points to this object.

Two Variables, Two Objects

Two variables, two objects:

String s1 = new String(“abc”);

String s2 = new String(“abc”);

s1 and s2 objects have initially the same values:

s1.equals(s2) == true

But they are not the same objects:

(s1 == s2) == false

They can be changed independently of each other.

One Variable, Two Objects

One variable, two objects:

String s = new String(“abc”);

s = new String(“cba”);

The “abc” object is no longer accessible through any variable.

Object Destruction

A program accumulates memory through its execution.
Two mechanism to free memory that is no longer need by the program:

1) manual – done in C/C++
2) automatic – done in Java In Java,

when an object is no longer accessible through any variable, it is eventually removed from the memory by the garbage collector.

Garbage collector is parts of the Java Run-Time Environment.

Break 10 minutes

Questions?

Thank you for your attention!