Review of Objects

The 3 Characteristics of Objects

_____ - the data or things an object knows

_____ - what an object can do, implemented as methods

_____ - objects are distinct, even if they have same data (attributes)

The 3 Characteristics of Objects

state -   the data or things an object knows

behavior -   what an object can do,
                implemented as methods

identity -   objects are distinct, even if they
                have same data (attributes)

Where do attributes go?

Where do you declare attributes? A or B ?

```
public class GuessingGame {

    private int secret;   // A

    /** Constructor for GuessingGame */

    public GuessingGame() {

        private int count; // B
```

How to write "get" method?

Write a method to "get" a hint

```
public class GuessingGame {

    private int secret;

    private String hint;

    /** Get a hint. */

    public _____ _____( ) {

        return hint;

    }
```

How to write "set" method?

Write a method to "set" a hint

```
public class GuessingGame {

    private int secret;

    private String hint;

    /** Set a hint. */

    public _____ _____( ) {

        _____ = _____;

    }
```

Purpose of the Constructor?

The purpose of a constructor is:

a) create a new object

b) allocate memory for a new object

c) initialize attributes of a new object

d) test a new object

Answer: c

Define a Constructor

Define a constructor for GuessingGame. It has one parameter named maxValue. I.e.

// make a game with secret number 1 - 100

GuessingGame game = new GuessingGame(100);

```
public class GuessingGame {

    private int max;

    /** constructor with param */

    _____(          maxValue) {

        _____

    }
```

Define a Coin

Coin has a value and a currency. Ex: 5 Baht, 0.25 Baht

```java
public class Coin {
  // what are the attributes?

  _____ ;

  _____ ;

  public Coin(        value,        curr) {

       _____ = _____;

       _____ = _____;

  }
```

Value of a Coin Never Changes

(a) no "setValue" method, (b) "final" attribute

```java
public class Coin {
    private final double value;
    private String currency;
    public Coin(double value,String curr) {
        this.value = value;
        this.currency = curr;
    }
    public double getValue() {
        return value;
    }
    //NO: void setValue(double newvalue)
```

Find the errors (at least 6)

```java
public class coin {
  private double value;
  private String currency;
  public void Coin(double avalue) {
      double value = avalue;
      String currency = "Baht";
  }
  public getValue() { return value; }
  public String toString() {
      System.out.printf("%d %s",
                        value, currency);
  }
```

Collection of Coins

Create a List of Coins. Add 1, 5, and 10 Baht to list.

```
// list of coins

List<_____> _____ = _____;

String curr = "Baht";

// add 1, 5, 10 Baht to list

coins.add( _____ );

coins.add( _____ );

coins.add( _____ );
```

How much money?

Compute the total value of coins in list. Ignore currency.
Make the code as short as possible (but readable).

```java
List<Coin> money = Bank.getCoins( );

double total = 0.0;
// can you do it in 1 line?
_____


System.out.println("Total value "+total);
```