What is the output produced by the following program? (Hint: draw stack frames)

```java
public class Swap {
    private int a;

    public Swap(int a) {
        this.a = a;
    }

    public void swap(int a, int b) {
        int tmp;
        tmp = a;
        a = b;
        b = tmp;
    }

    public void swap(Swap ref) {
        Swap tmp;
        tmp = ref;
        ref = this;
        tmp.a = ref.a;
    }

    public static void swap(Swap ref1, Swap ref2) {
        int tmp;
        tmp = ref1.a;
        ref1.a = ref2.a;
        ref2.a = tmp;
    }

    public static void main(String[] args) {
        int a = 42; Swap ref1;
        int b = 64; Swap ref2;
        ref1 = new Swap(7);
        ref2 = new Swap(2);
        Swap.swap(ref1, ref2);
        System.out.println(ref1.a);
        System.out.println(ref2.a);

        ref1 = new Swap(7);
        ref2 = new Swap(2);
        ref1.swap(a, b);
        System.out.println(a);
        System.out.println(b);

        ref1 = new Swap(7);
        ref2 = new Swap(2);
        ref1.swap(ref2);
        System.out.println(ref1.a);
        System.out.println(ref2.a);
    }
}
```

Output

```java
...
What is the initial value of each array element in the following arrays?

```java
int[] a = new int[5];

boolean[] c = new boolean[7];

Boolean[] b = new Boolean[3];

double[] d = new double[4];
```

Given the following array declaration:

```java
int[] a = { 1, 1, 2, 3, 5, 8, ... }; // You do not know how many values are in the initializer list
```

Fill in the blanks to print out each element:

```java
for ( int i = ___________ ; i < _______________ ; ___________ )
    System.out.println( ___________ );
```

Now do the same using a foreach (enhanced for) loop:

```java
___________ ( int i ___________ ___________ )
    System.out.println( ___________ );
```

Now do the same using a while loop (any loop variable change do on a separate line):

```java
___________
while ( _________________ )
{
    _________________
    _________________
}
```

If you need to directly swap all the i-th and i+1-th elements in an array of 100 elements without using any auxiliary data structure, which type of loop would not be appropriate to use? _____

A) standard for loop  
B) while loop  
C) foreach/enhanced-for loop  
D) do-while loop

Use the letters associated with possible answers in the box to the right to answer the following questions. Letters may be used more than once.

_____ Only Java data structure that can directly store primitive data type values.  
_____ Type of the formal parameter of the equals() method.  
_____ Use with == for exact type equivalence checks for objects.  
_____ The immediate superclass of array objects.  
_____ Type a primitive int value is autoboxed into when an object (vs. a primitive type) is needed.  
_____ Has both a capacity and a size, and can dynamically expand when inserting items into it.  
_____ Used for within type hierarchy (is-a) equivalence checks for objects.  
_____ Defines the default implementations of equals(), hashCode(), and toString() that are automatically inherited from this type into all subclass types.

A) getClass()  I) ==  
B) instanceof  J) Object  
C) Type cast  K) array  
D) int  L) Integer  
E) ArrayList  M) hashCode()  
F) Class  N) toString()  
G) boolean  O) Int  
H) equals()  P) Array