This quiz is to be taken by yourself with closed books, closed notes, no calculators.

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

```java
public class Mystery
{
    public static void main( String[] args )
    {
        Mystery ref = new Mystery();
        System.out.println( ref.mystery( 5 ) );
    }

    private int mystery( int a )
    {
        int b = a + 2;
        if ( b >= 5 )
        {
            System.out.println( b );
            b = a + mystery( a - 1 );
            System.out.println( a );
        }
        else
        {
            System.out.println( "Whoa!" );
            b = a;
            System.out.println( a );
        }
        return b;
    }
}
```

Output
Write the equivalent for loop for the following code without using any integer constant (like 101) other than 0 to set the loop variant i.

```java
int[] a = new int[101];
ext i;

i = 0;
while ( i < 101 )
{
a[i] = i * i;
++i;
}
```

What is the value of i when the loop terminates? _________

What is the value of a[20]? _________

A typical operation performed on arrays is sorting the elements in the array in a particular order. As part of many sorting algorithms, two array elements must be swapped with each other. Complete the following swap() method to swap two elements in the array locArray indexed by a and b using a temporary local variable as an intermediate storage location.

```java
void swap( Location[] locArray, int a, int b )
{
    _____________ tmp;
    tmp = _______________________;
    ______________________ = locArray[b];
    ______________________ = tmp;
}
```

Given the following code fragment, rewrite it to use a do-while loop instead. Use the same comments to indicate various actions/tests. Don't forget the semicolon at the end of the do-while statement.

```java
System.out.println( "Enter an int between 1 and 10" );
// read input from user

while ( /* User input is not valid */ )
{
    System.out.println( "Enter an int between 1 and 10" );
    // read input from user
}