

## Annika Simovart Lab 4 Critical Thinking

I would use the Matryoshka dolls to explain the concept of nesting as used in both conditional statements and while loops.

For each, I would have set of dolls labeled with different statement. For the if statement, the outside of the top piece would define variables  $x = 3.46$  and  $y = 8.03$  and have the if statement "if  $x \leq 5$  {". The bottom would have the ending curly brace and a print statement to print both  $x$  and  $y$ . When you open the first doll there will be a slip of paper redefining  $x = x + 2$ . This trend would continue change both  $x$  and  $y$ . At the end the students would have to figure out what will print as  $x$  and  $y$ .

For the while loops, about the say thing but each iteration would add to the variables. I would start with the variables  $n = 1$ ,  $k = 0$ , and  $i = 0$  on the top of the first doll. The first loop would be a for loop that increments  $n = 1$  by 1 each time until it reaches 100. The bottom of the first piece will have the end curly brace and the print statements to print each variable. The second nesting doll would be while  $n$  is between 10 and 50,  $k$  will increment by 1 as well. This will continue throughout the dolls.

I will explain that each doll opened so far is within the scope of the program.