Due
10pm, Tuesday, January 31

Goals
- to remind you of our lab environment
- to review your Java skills
- to show off your best programming style
- to become comfortable with this problem
- to practice building test cases

Overview
This is a straightforward assignment to write a simple program in Java that computes the dot product of two vectors. Be sure to meet my requirements. You must complete this on your own, but you may ask others about the problem and our system as well as Java.

Input and Output Specification
All input is from standard input. The first input is one integer representing the length of two vectors. Both vectors are the same length. That integer should be positive and no larger than 100. It will be an integer. If it is not in the range noted, the program should print an error message and quit. You can just return; exception handling is not needed. Do not ask repeatedly; just print and error message and stop. Otherwise, the program should read values of type double to fill the two vectors. Fill the first vector first and then the second. If there are not enough values, fill with zero. Ignore any extra values. You can press return and then type control-D to signal end-of-file before entering enough values.

After input, print a blank line. Then, print each vector on one line with a label at the front. Label each element with its index and have two spaces between elements. Print all real numbers with one digit after the decimal point; `System.out.printf` is handy for that. You have to write the code to print the index; it is not built-in. An output line for a vector would look like:

```
v1: [0] 2.5 [1] -3.0 [2] 1.2
```

Then print the dot product of the two vectors. The dot product is the sum of the products of the elements with the same index. The vectors must be the same length. The summation formula above is another representation of the dot product. Label your answer.

Other Requirements
Your program should be submitted to my `katz330` account by 10pm Tuesday, January 30th. Submit it as the `dotjava` assignment.

Use the default package. The main class should be named `Dot`.

You must use methods throughout this program. Use parameters. Each method should do one thing well (have high cohesion).

You must use normal Java arrays. Their `length` attribute is an integer value. Declare the arrays to be the right size. Do not use the `ArrayList` or `Vector` class.

Declare storage as locally as possible to complete the task. Do not declare global variables.

Use good programming style including appropriate comments. Each method should have a short summary comment describing what it does in terms of its parameters. A summary comment at the top of the program should include your name and the month of creation, a description of the problem, and a description of the inputs and outputs.

Use consistent indenting that reflects the structure of the code. Take the time to do this assignment neatly and correctly.

Testing Requirements
As an additional requirement, include 4 distinct test cases (both input and expected output) in a comment at the bottom of your program. These should be test cases you use to reveal bugs in your code. Consider making those test cases the first thing you create for this assignment.