Solutions for exercise 1–3 in the note Systematic Software Test.

1 Exercise 1

Problem: Given a sequence of integers, find their average.

1.1 Test suite for functional test of Average.java

Input data set	Input property
A	No numbers
B	One number
C	Two numbers, average is non-fractional
D	Two numbers, average is fractional

Input data set	Contents	Expected output
A		Usage message
B	5	5.0
C	4 8	6.0
D	1 2	1.5

2 Exercise 2

Write a program to solve the problem from Exercise 1. The program should take the input from the command line.

2.1 The program

```
1   /*
2    * Average.java by Tue B. Jensen
3    * Print the average of a sequence of integers.
4    * Take the input from the command line.
5    */
6   public class Average {
7      public static void main(String[] args) {
8         int total = 0;
9         if (args.length == 0)                          /* 1 */
10            System.out.println("Usage: java Average n1 n2 n3 n4...");
11        else {
12           for (int i = 0; i< args.length; i++)         /* 2 */
13              total += Integer.parseInt(args[i]);
14           System.out.println("Average = "+(1.0*total/args.length));
15        }
16     }
17  }
```

2.2 Results of running the functional test

All tests produced the expected results.

3 Exercise 3

Design a structural test for the program written in Exercise 2.

3.1 Test suites for structural test of Average.java

Choice	Input data set	Input property
1 true	A	No numbers
1 false	B	At least one number
2 zero times	na	Not possible
2 once	B	Exactly one number
2 > once	C	At least two numbers

Input data set	Contents	Expected output
A		Usage message
B	5	5.0
C	4 8	6.0

3.2 Results of running the structural test

All tests produced the expected results.