

# Scientific Writing

## Permeability of Swiss Cheese

A piece of swiss cheese shall be modelled by a 3-dimensional mesh of cuboid cells (for example, a  $25 \times 25 \times 10$  mesh). Each cell can be either a hole or filled with tasty cheese.

If we pour water on this piece of cheese, we can try to figure out, whether it will run through the entire piece, or whether this piece of cheese is “water-proof”.

To model the piece of cheese in Java, we have written a Java program that can build random cheese blocks from the following input parameters:

1. the dimension of the cheese cube (`sizeX`, `sizeY`, `sizeZ`)
2. the probability that a cell of the cube consists of cheese; the Java program can run different test batches where this “cheese probability” starts with a certain value and is increase by a certain increment from batch to batch.
3. the number of test cubes that are generated and tested for permeability in each batch run.

The program will return a list of the number of permeable cubes in each batch.

## Exercise

You are asked to contribute to the results section of a paper on this ground-breaking numerical experiment:

1. Use the program provided on the course’s webpage to do some numerical tests.
2. Give a (short) list of propositions that state the main results you were able to conclude from your experiments.
3. Generate respective tables and graphs that present your numerical results (with captions, etc.); if possible, you should generate at least one table and one graph.
4. For each statement in your list of propositions, indicate which table or graph supports it.

Deadline for submission: Thursday, Jan 25, 2007