

Assignment 4

1. There are n bulbs that are initially off. You first turn on all the bulbs, then you turn off every second bulb. On the third round, you toggle every third bulb (turning on if it's off or turning off if it's on). For the i -th round, you toggle every i bulb. For the n th round, you only toggle the last bulb.

Design a Java program using Swing to show the result of every round where n is given by the user. You may limit it to $n < 10$ for better clarity.

2. Consider the problem from Assignment 2 again.

An integer array representing height of length n is given as input. There are n vertical lines drawn from the array such that the two endpoints of the i th line are $(i, 0)$ and $(i, \text{height}[i])$. Any two lines along with the x -axis form a container that can hold water. Find the largest container that can hold maximum water.

Write a Java program using Swing where the no. of lines(n) to consider are taken through a textbox or any suitable GUI widget and the final result will be shown graphically. The heights of the lines could be read from a file containing say, 100 different heights where $n < 100$.