Solution to Homework 39

Problem. What can you say about the Kolmogorov complexity of the string 100100... in which the sequence 100 is repeated 2025 times?

Solution. Kolmogorov complexity of a string x is the length of the shortest program that computes this string. The given string x can be generated by the following program:

```
for(i = 1; i <= 2025; i++)
  System.out.print("100");
```

that has length 56. Thus, the Kolmogorov complexity $K(x)$ – i.e., the length of the shortest program for computing this string – must be smaller than or equal to 56: $K(x) \leq 56$.