

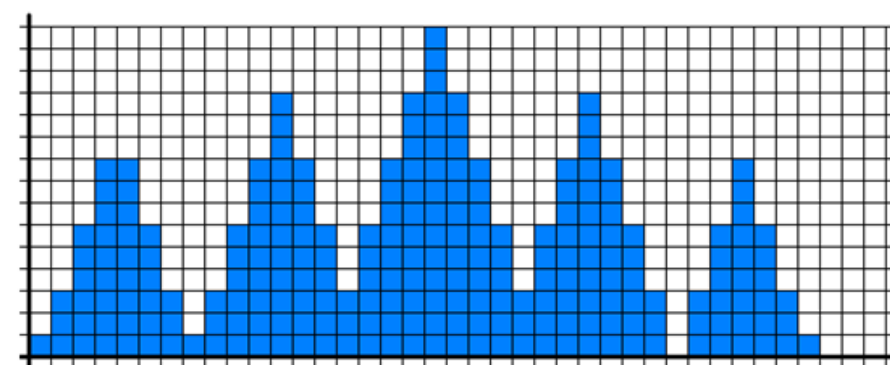
## Multimedia Systems

# Exercise No. 3

### Traffic Shaping and Policing

In the lecture, the “leaky bucket” was defined with the Rate  $r$  and the buckets size  $n$ . The “token bucket” is given by the token rate  $r$  and the buckets size  $n$ .

The following input traffic is given:

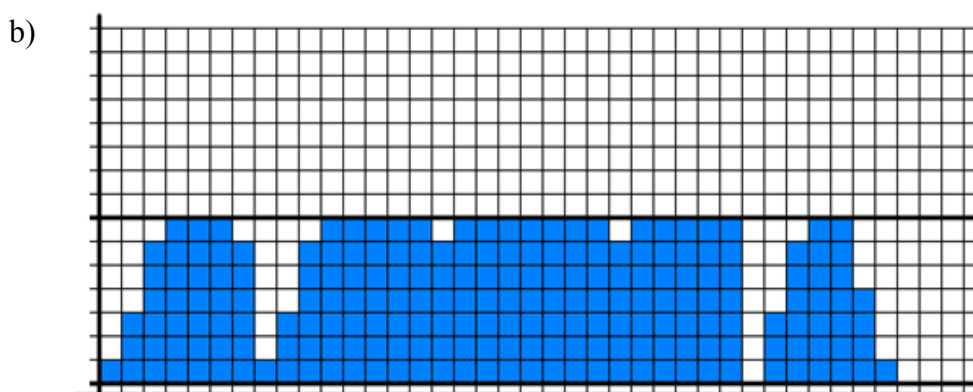
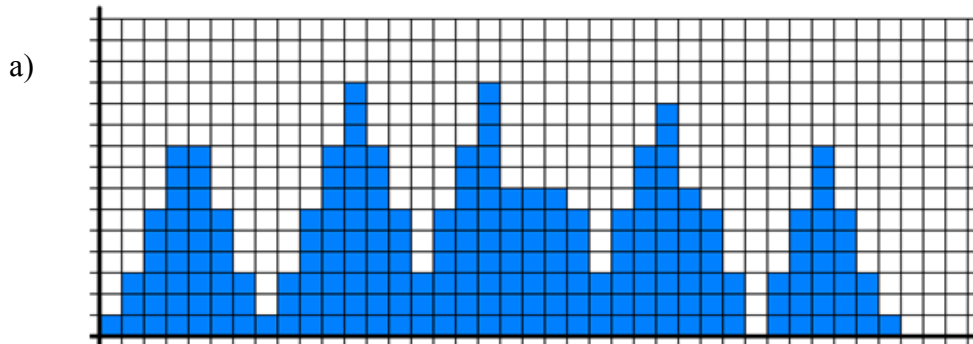


We assume idealized buckets, which are empty at beginning of a transmission. A block in the diagram represents a rate of 1 in vertical and one time unit in horizontal direction.

(please turn the page)

---

1. Given are the following two distributions of output traffic:



- i. What was applied: Shaping or Policing?
- ii. Which bucket types and parameters create this distributions.

2. Suppose a car need 7 hours for a trip between Kaiserslautern and Berlin (~655 km). Tha car has a cargo area of 200 x 100 x 100 cm. It is filled completely with DVDs, each of them contains full 4.3 GB of data. Each DVD needs a space of 12,5 x 12,5 x 0,5 cm.

- a) How many bit per second are transferred?
  - b) Give a (short) statement, based on the definition of end-to-end delay, why such a „network“ is not used is most cases.
-