Trend graph generation

Background

OP5 Monitor is a network monitoring tool. It collects data regarding whether different systems are running. One view of the data shows a timeline, to visualize the system's status over time. Green means that the status was OK and red means that the system had a problem. This view is called a *trend graph.*

The collected data is saved to a list with events in chronological order. Each event contains a point in time (timestamp) and the system's status (True=OK or False=not OK).

In most cases, only a few events are recorded, since most systems have the same state for a long time. However, in some cases, the state can change often which results in hundreds of thousands events.

Task

The programming task is to visualize the trend graph as a SVG image, given a number of events.

You may use any programming language of your choice, as long as the program can be run on a normal Linux installation.

Please include a short overview of the design choices you made when solving the task.

We expect this task to take approximately 4 hours.

Input data

Test data is available in the attached text file. (small, large)

Each line in the file has the following format: Timestamp True\False

True means that the system is OK until the next event
False means that the system has a problem until the next event.

Timestamp is a unix time stamp (seconds since 1970-01-01 00:00:00 UTC

Example:

```
1429002861 False
1429002965 True
1429002978 False
```

Desired output

The program shall process the input data and generate a SVG with rect elements. Each rect element shall be green or red, depending on the state of the system. The size of the SVG shall be 500x50 pixels.

The leftmost position (x=0) is the starting time and the rightmost position (x=500) is the end time.

Each rectangle shall fill the entire height of the graph, from top to bottom.

Example of a svg (can be displayed by opening the file in a web browser)

```
<?xml version="1.0" encoding="utf-8"?>
<svg viewBox="0 0 500 50" version="1.1" xmlns="http://www.w3.org/2000/svg">
   <rect x="0" y="0" width="3" height="50" fill="red" />
   <rect x="3" y="0" width="7" height="50" fill="green" />
   <rect x="10" y="0" width="7" height="50" fill="red" />
   <rect x="17" y="0" width="10" height="50" fill="green" />
   <rect x="27" y="0" width="8" height="50" fill="red" />
   <rect x="35" y="0" width="7" height="50" fill="green" />
  ...
</svg>
```

Program execution

It shall be possible to execute your program in the following manner:

./generate_trend_graph starttime endtime < mydatafile.txt > output.svg

Example:

./generate_trend_graph 1428997804 1429602499 < mydatafile.txt > output.svg

Accepting the input and output data files as command line arguments is also ok.