Homework Project 2

Given 10/10/2018, Due 11/05/2018

The aim of the project is to move two robots (orange and blue) through a set of line-segment obstacles, in a path that tries to minimize the total length travelled. You receive a sequence of request points, and after receiving a request point, you move one of the two robots there, on the shortest path from his current position to the request position, while avoiding the obstacles. You keep track of the total distance travelled by each robot, and choose the next robot to move in such a way that the difference between the orange total distance and the blue total distance is minimized.

Your program takes one command line argument, which is the name of the file that contains the obstacles. Your program gives an error message if it is called without command line argument, or the file has the wrong format. The obstacles in the file are given one per line, in the format

```
(15,10)-(139,200)
```

this represents a line segment obstacle with endpoints $(15, 10)$ and $(139, 200)$. All coordinates are integers. The program then opens a window, using the `xlib` system, and displays the obstacles, allowing some space around them as frame. It also shows the initial positions of the two robots in diagonal opposite corners of the window. Then you receive requests as left mouseclicks; for each request you choose either the orange or the blue robot, and move it on the geometric shortest path from his current position to the request position. You display for both robots the entire path (blue and orange), from the beginning, and all request points (green); in case of an expose or resize event, you redraw the entire configuration: obstacles, request points, paths. A right mouseclick ends the program.