2-D

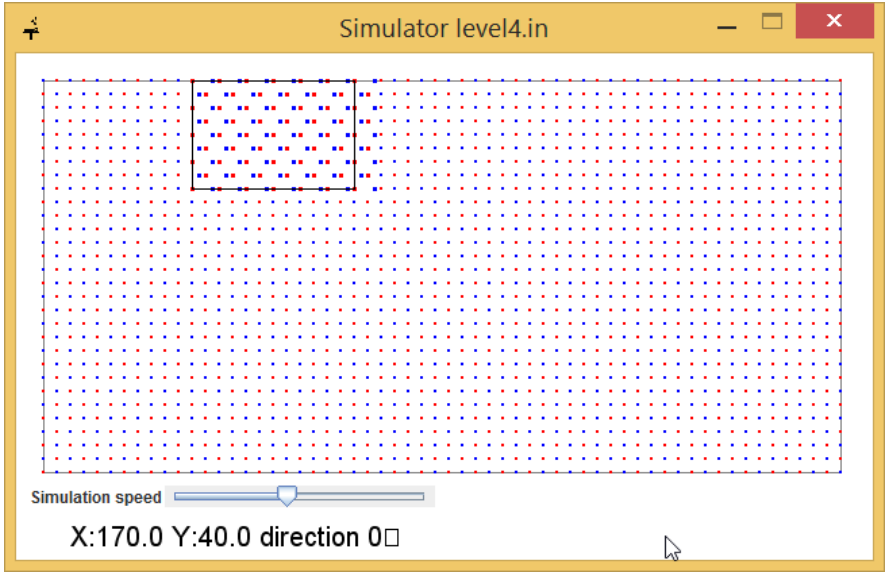
Level-4

Starting with level 4 the rods can be moved forward / backward **and** left / right. The view within the simulator shows the table from the top. The rods are spaced with 10 units in X and Y direction.
X coordinate is from left to right
Y coordinate is from top to bottom

Restrictions:

- The object has to be supported by at least 43% of the rods which are below it‘s shape.
- The shape of the object has to be within the bounds of the operation table at all times. The outline of the operation table is defined by the postion and maximum deviation of the rods at the border.

Goal:
Move the object from the starting position to the right edge onto position x=400, y=40 (+/-3 in X and Y direction). Afterwards move the object to position x=400, y=200 (+/-3 in X and Y direction).



Simulator Communication Protocol

Info

MOVE rodNumberX rodNumberY deviation deviationY {rodNumberX rodNumberY deviation deviationY}

```
rodNumberX := <integer>          the X number of the rod (starting with 1)
rodNumberY := <integer>          thy Y number of the rod (starting with 1)

deviationX := <integer>          move rod in mm on X axis (range from -5 to 5)
deviationY := <integer>          move rod in mm on Y axis (range from -5 to 5)
```

Listed and unlisted rods behave exactly as before.

GET_POSITION
Returns the position (x and y coordinate) of the center of gravity as floating point number
Example:

GET_POSITION
255.23 188.56

Simulator Communication Protocol

Info

GET_NUMBER
Returns the number of rods in X / Y direction
Example:

```
GET_NUMBER
30 30
```

GET_SHAPE
Returns the outline of the object / body (List of X / Y coordinates)
Example:

```
GET_SHAPE
0 0 0 100 40 100 40 0
```

GET_ROTATION
Returns the rotation of the object / body relative to the initial position (in radiant)
Example:

```
GET_ROTATION
3.14159
```