



Distributed Simulation by UDP & Distributed Trapeze with Graph (Homework04)

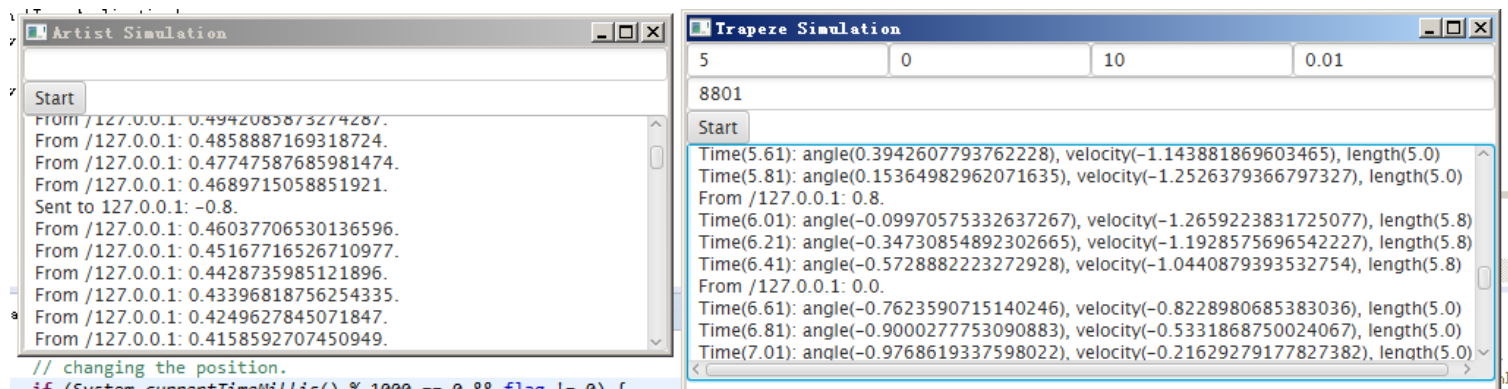
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Distributed Trapeze Simulation - UDP

- **Design:**

- TrapezeSimulation would start a thread to run the simulation and send the data (angle) outside. Before this, it would also start another thread to receive data (position) through UDP.
- ArtistSimulation would start a thread to receive the data (angle). According to the angle, it would change the position and send it back to change the length of the Trapeze.

- **Results:**



Artist Simulation

```
Start  
From /127.0.0.1: 0.4942085873274287.  
From /127.0.0.1: 0.4858887169318724.  
From /127.0.0.1: 0.47747587685981474.  
From /127.0.0.1: 0.4689715058851921.  
Sent to 127.0.0.1: -0.8.  
From /127.0.0.1: 0.46037706530136596.  
From /127.0.0.1: 0.45167716526710977.  
From /127.0.0.1: 0.4428735985121896.  
From /127.0.0.1: 0.43396818756254335.  
From /127.0.0.1: 0.4249627845071847.  
From /127.0.0.1: 0.4158592707450949.  
// changing the position.  
if (System.currentTimeMillis() % 1000 == 0 && flag != 0) {
```

Trapeze Simulation

5	0	10	0.01
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8801

Start

```
Time(5.61): angle(0.3942607793762228), velocity(-1.143881869603465), length(5.0)  
Time(5.81): angle(0.15364982962071635), velocity(-1.2526379366797327), length(5.0)  
From /127.0.0.1: 0.8.  
Time(6.01): angle(-0.09970575332637267), velocity(-1.2659223831725077), length(5.8)  
Time(6.21): angle(-0.34730854892302665), velocity(-1.1928575696542227), length(5.8)  
Time(6.41): angle(-0.572888223272928), velocity(-1.0440879393532754), length(5.8)  
From /127.0.0.1: 0.0.  
Time(6.61): angle(-0.7623590715140246), velocity(-0.8228980685383036), length(5.0)  
Time(6.81): angle(-0.900027753090883), velocity(-0.5331868750024067), length(5.0)  
Time(7.01): angle(-0.9768619337598022), velocity(-0.21629279177827382), length(5.0)
```

Distributed Trapeze with Graph

- **Design**

- 2D: Draw a line as the rope and a circle as the mass point of the artist in a canvas.
- 3D Design: create a virtual universe and a locale. Then create two branch groups for 3D Shapes and View Point. The 3D Shapes include the appearance and the geometry.

- **Results**

