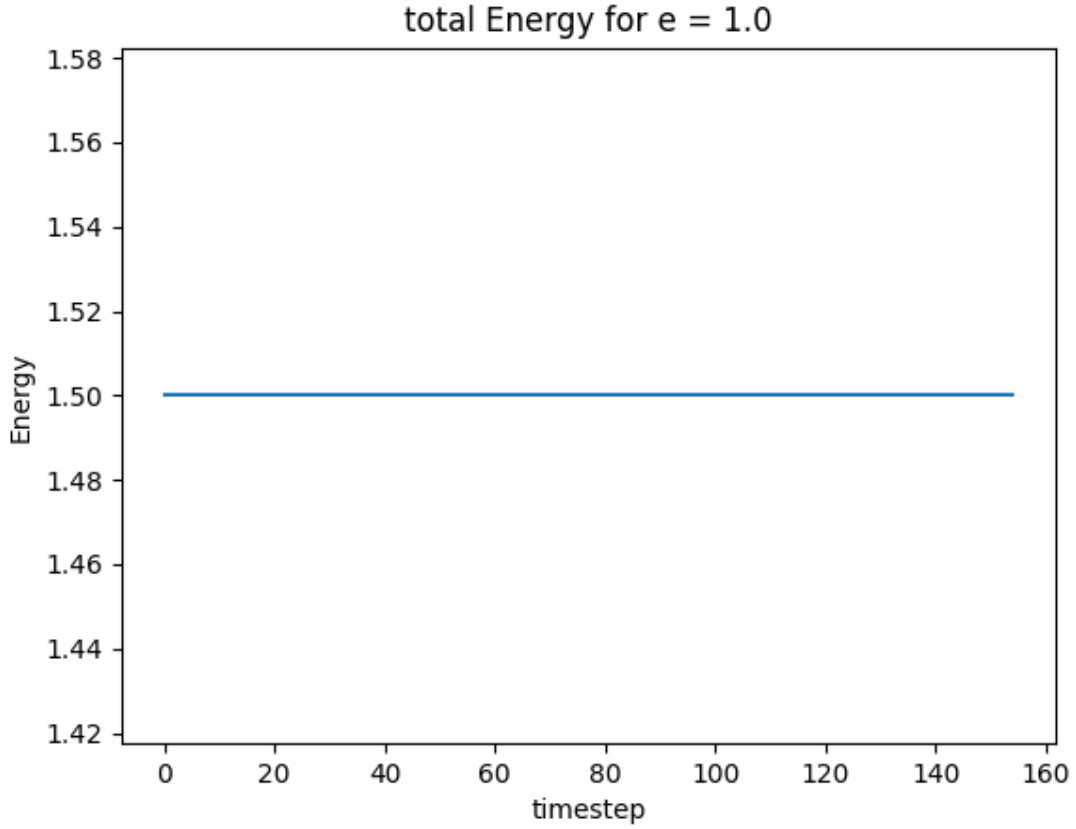
CSP Ex11

Task1: Look at the videos: “animation_1d.mp4” & “animation_2d.mp4”. For 1d I simulated 10 particles & for 2d 25 particles.

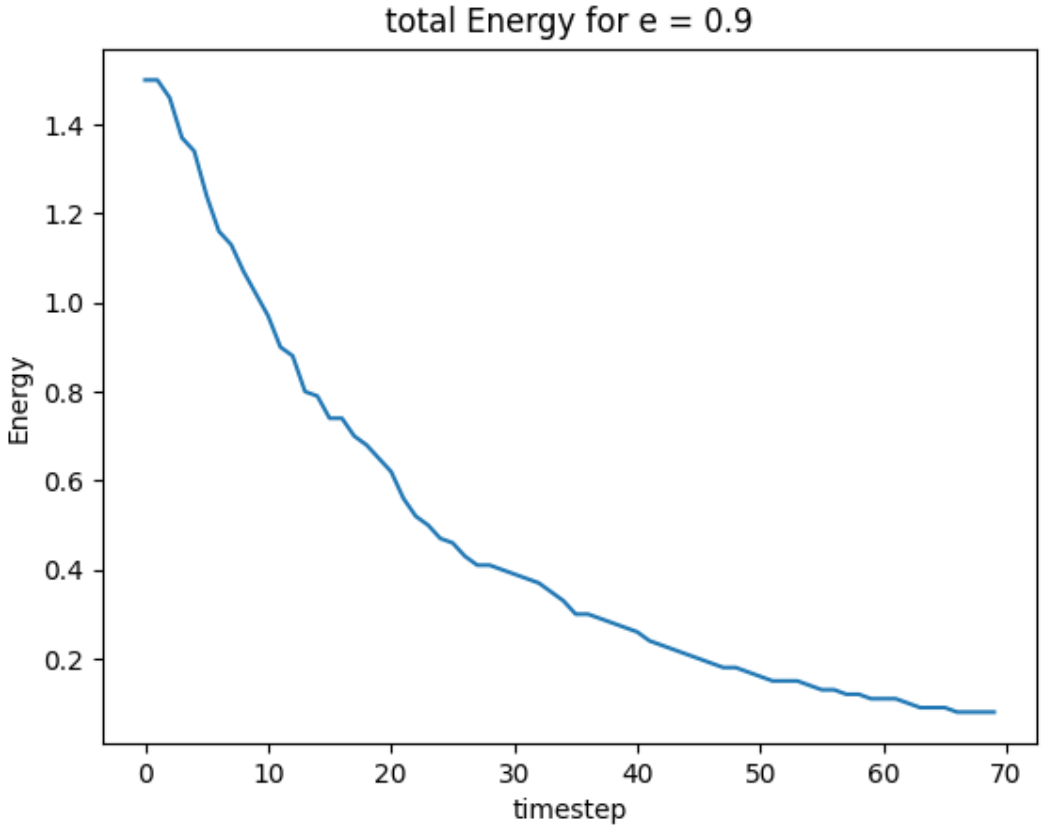
Task2a: for e = 1.0. The energy stays constant. E_tot is the sum(0.5 * m * v^2).

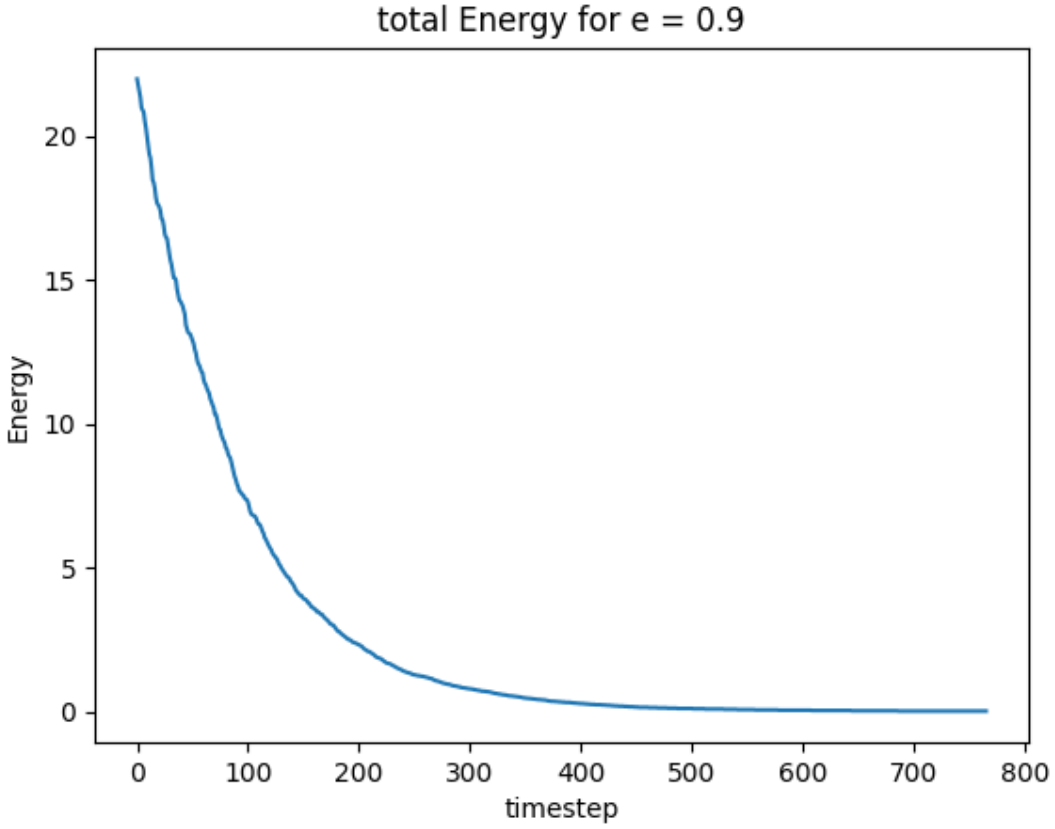


Task2b: with e = 0.9

N	e_eff
10	0.2246
20	0.1183
30	0.0550
40	0.0289
50	~

At N = 50 with R = 1.0 & L = 100. We no longer have enough space. I could not determine e_eff & N_c. Plot below is for N=10. And the last plot is for N = 40 and higher initial velocity which gives e_eff = 0.0170.


total Energy for e = 0.9
Energy
timestep
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
10
20
30
40
50
60
70


total Energy for e = 0.9
Energy
timestep
20
15
10
5
0
0
100
200
300
400
500
600
700
800