

# Homework 02

## Physics in Animation

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# Programming

Make a movie of particles interacting via gravity.

Read a particle file

Example: test1.prt

## Particle2D

```
pType { id BigWhite area 25.0 gray 230 mass 2.5 }
```

```
pType { id SmallDot area 5.0 gray 130 mass 0.5 }
```

```
particle { x 120.0 y 130.0 vx 0.2 vy 0.1 id BigWhite }
```

```
particle { x 140.0 y 130.0 vx 0.40 vy -0.10 id SmallDot }
```

```
particle { x 135.0 y 135.0 vx 0.39 vy -0.15 id SmallDot }
```

# Programming

Each particleType has a unique ID, less than 1000 characters

Each particleType has a mass, area, gray

Area determines dot size representing particle in image

Each particle has a position, velocity, and ID

ParticleTypes come first in the file, followed by the particles

# Programming

Create a tool to generate pgm frames of an animation

```
particleMovie inFile test.prt frames 100 outFile pFrame  
xRes 200 yRes 180 timeStep 0.1 massConst 0.1
```

**inFile** particle data file

**frames** number of movie frames

**outFile** base filename: pFrame.0000.pgm .. pFrame.0099.pgm

**xRes, yRes** size of image

**timeStep** dt to advance simulation in time

**massConst** coupling constant between masses