PolyhedronSimulation

Problem:

1. The shape of the concave polyhedron is revised.
2. The positions of two polyhedrons are changed too.
3. Line 668, rigidContactor3D: The calculation method assumes that the body is convex!!

version20230207

bug: this code could change the raw data in gen_sample.py and Computation.py.

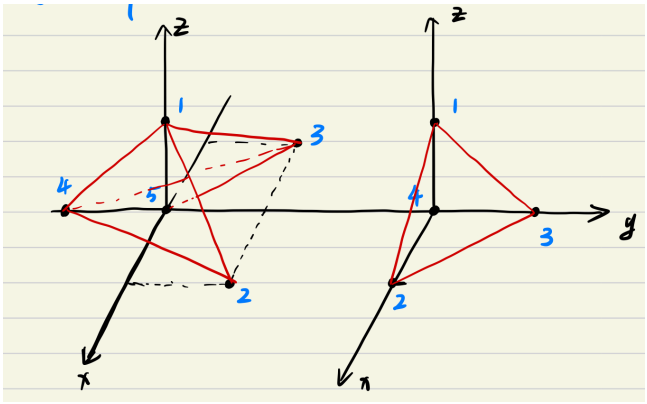
tries: I tried to input my raw data before 'poly1 = rigidPolyhedron()' in line 51 of gen_sample.py. I also tried to input the raw data in BODIES.DAT in DATBOX directory.

The raw data and configuration which I want to create are shown below.

~~BODIES.DAT~~ × ~~DOF.INI~~ ~~apophis_v233s7_vert2_new.mod.wf~~

Users > hai > Desktop > PhD > Research > Granular_Sim_Test > PolyhedronSimulation > DATBOX > ~~BODIES.DAT~~

```
$bdyty
 RBDY3      1
$blmty
 PLAIN      1  behav  STONE  avrd= 3.4139203E+00
                              I1  = 1.0416667E+03  I2  = 1.0416667E+03  I3  = 1.6666667E+03
$nodty
 NO6xx      1              coo1= 2.5000000E+00  coo2= 5.2500000E+01  coo3= 2.5000000E+00
                           coo4= 0.0000000E+00  coo5= 0.0000000E+00  coo6= 0.0000000E+00
$tacty
 POLYR      1  color  BLEUx  nb_vertex=      4    nb_faces=      4
                              coo1= 0.0000000E+00  coo2= 5.0000000E+01  coo3= 1.0000000E+01
                              coo1= 1.0000000E+01  coo2= 5.0000000E+01  coo3= 0.0000000E+00
                              coo1= 0.0000000E+00  coo2= 6.0000000E+01  coo3= 0.0000000E+00
                              coo1= 0.0000000E+00  coo2= 5.0000000E+01  coo3= 0.0000000E+00
                              ver1=      1         ver2=      2         ver3=      3
                              ver1=      1         ver2=      2         ver3=      4
                              ver1=      1         ver2=      3         ver3=      4
                              ver1=      2         ver2=      3         ver3=      4
$$$$$$
$bdyty
 RBDY3      2
$blmty
 PLAIN      1  behav  STONE  avrd= 4.9237251E+00
                              I1  = 6.2223090E+03  I2  = 8.1009265E+03  I3  = 1.0954542E+04
$nodty
 NO6xx      1              coo1= 8.3333333E-01  coo2= 3.3333333E+00  coo3= 2.5000000E+00
                           coo4= 0.0000000E+00  coo5= 0.0000000E+00  coo6= 0.0000000E+00
$tacty
 POLYR      1  color  BLEUx  nb_vertex=      5    nb_faces=      6
                              coo1= 0.0000000E+00  coo2= 0.0000000E+00  coo3= 1.0000000E+01
                              coo1= 1.0000000E+01  coo2= 1.0000000E+01  coo3= 0.0000000E+00
                              coo1=-1.0000000E+01  coo2= 1.0000000E+01  coo3= 0.0000000E+00
                              coo1= 0.0000000E+00  coo2=-1.0000000E+01  coo3= 0.0000000E+00
                              coo1= 0.0000000E+00  coo2= 5.0000000E+00  coo3= 0.0000000E+00
                              ver1=      1         ver2=      2         ver3=      3
                              ver1=      1         ver2=      2         ver3=      4
                              ver1=      1         ver2=      3         ver3=      5
                              ver1=      1         ver2=      4         ver3=      5
                              ver1=      2         ver2=      3         ver3=      5
                              ver1=      2         ver2=      4         ver3=      5
$$$$$$
```



But, the results got from the LMGC90 code are

Comparing these results and raw data, we can find two considerable differences. **1. The shape of the concave polyhedron is revised. 2. The positions of two polyhedrons are changed too**.

In 'rigidContactor3D.py', some lines from 668 change the positions of vertices, but it can't explain the different values in BODIES.DAT. These lines compute the barycenter and inertial momentum matrix, and vertices positions are updated w.r.t the barycenter.

The largest problem is **Line 668, rigidContactor3D: The calculation method assumes that the body is convex!!**