

High-level computing languages + Powerful computers

Using the computer as a tool to model, to simulate, and / or to visualize a physical problem.

Some programming is necessary.

Computing in physics is:

Implementing and assessing computational modeling in introductory mechanics

Marcos D. Caballero, 1,* Matthew A. Kohlmyer, 2,† and Michael F. Schatz 1,‡

1 Center for Nonlinear Science and School of Physics, Georgia Institute of Technology, Atlanta, Georgia 30332, USA

2 Department of Physics, North Carolina State University, Raleigh, North Carolina 27695, USA

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```
from future import division
1
   from visual import *
3
4
   craft = sphere(pos = vector(10e7,0,0), color = color.white, radius = 1e6)
   Earth = sphere(pos = vector(0,0,0), color = color.blue, radius = 6.3e6)
5
   trail = curve(color = craft.color)
  G = 6.67e - 11
  mcraft = 1500
10 \text{ mEarth} = 5.97e24
                                                              Initial Conditions
11
12 \text{ vcraft} = \text{vector}(0,2400,0)
13 pcraft = mcraft*vcraft
14
15 t = 0
16 deltat = 60
17 \text{ tf} = 365 \times 24 \times 60 \times 60
18
19 while t < tf:
20
21
       r = craft.pos-Earth.pos
                                                              Force Calculation
22
       rhat = r/maq(r)
23
       Fgrav = -G*mEarth*mcraft/mag(r) **2*rhat
24
                                                         Newton's Second Law
25
       pcraft = pcraft+Fgrav*deltat
                                                                Position Update
26
       craft.pos = craft.pos + pcraft/mcraft*deltat
27
       trail.append(pos = craft.pos)
28
       t = t + deltat
29
30
31 print 'Craft final position: ', craft.pos, 'meters.'
```





Computing in physics is:

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2012

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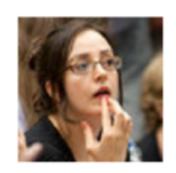






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