```
#include <iostream>
#include "Body.hpp"
#include <SFML/Graphics/CircleShape.hpp>
#include <SFML/Graphics/RectangleShape.hpp>
#include <sstream>
#include <vector>
#include <cmath>

using namespace std;

int main(int argc, const char * argv[])
{
    if(argc != 3)
    {
        cout << "Wrong number of arguments" << endl;
        return -1;
    }

    double total_t = atof(argv[1]);
    double delta_t = atof(argv[2]);
    double t = 0;

    int num_body;
    double universe_radius;

    cin >> num_body >> universe_radius;

    int window_size = 500;
    sf::RenderWindow window(sf::VideoMode(window_size, window_size), "Universe");
    window.setFramerateLimit(1);

    vector<Body*> body;

    for(int i = 0; i < num_body; i++)
    {
        body.push_back(new Body);
        cin >> (*body[i]);
        (*body[i]).setWindowSize(window_size);
        (*body[i]).setUnivSize(universe_radius);
    }

    double gravity = 6.67e-11;

    while (window.isOpen())
    {
        sf::Event event;
        while (window.pollEvent(event))
        {
            if (event.type == sf::Event::Closed){
                window.close();
            }
        }

        if (t < total_t)
        {
            for(int i = 0; i < num_body; i++)
            {
                double force_x = 0;
                double force_y = 0;

                for(int j = 0; j < num_body; j++)
                {
                    if(i != j)
                    {
                        double delta_x = body[j]->getPosX() - body[i]->getPosX();
```

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   66:                         double delta_y = body[j]->getPosY() - body[i]->getPosY();
   67:                         double r = sqrt(pow(delta_x, 2) + pow(delta_y, 2));
   68:                         double force = ((gravity * body[i]->getMass() * body[j]->
getMass())
   69:                          / pow(r, 2));
   70:
   71:                         force_x = force_x + force * delta_x / r;
   72:                         force_y = force_y + force * delta_y / r;
   73:                     }
   74:                 }
   75:                 body[i]->step(delta_t, force_x, force_y);
   76:             }
   77:             t += delta_t;
   78:         }
   79:
   80:         window.clear(sf::Color::Black);
   81:         for(int i = 0; i < num_body; i++)
   82:         {
   83:             window.draw(*body[i]);
   84:         }
   85:         window.display();
   86:     }
   87:
   88:     for (int i = 0; i < num_body; i++)
   89:     {
   90:         cout << (*body[i]) << endl;
   91:     }
   92:
   93:     return 0;
   94: }
   95:
```