```
#ifndef _space
#define _space

#include <SFML/Graphics.hpp>
#include <SFML/System.hpp>
#include <SFML/Window.hpp>
#include <iostream>
#include <string>
#include <vector>

using namespace std;
using namespace sf ;

class body : public Drawable {
  double nsx, nsy;
  double xpos, ypos, xvel, yvel, mass, radfromsun;
  double unir, cenx, ceny, winsiz, fnx, fny;
  string fname;
  Sprite sprite;
  Texture texture;

public :
  body(double spacer, double winsize);
  body():xpos(0), ypos(0), xvel(0), yvel(0), mass(0), fname("") {};

  void center(double);
  void setrSun();
  void setfnx(double);
  void setfny(double);
  void setnsx(double);
  void setnsy(double);
  void setNotScaledPos(double, double);
  void setV(double, double);

  double grav(double, double, double);
  double getfnx();
  double getfny();

  double gspx();
  double gspy();

  double getnsx();
  double getnsy();
  double getposx();
  double getposy();

  double getxvel();
  double getyvel();

  double getmass();
  double getrad();
  string getfname();

  void newpos();
  void setpos();
  void setpos(double, double);
  void setImage();

  friend istream &operator >> (istream &input, body *S) {
    input >> S->xpos >> S->ypos >> S->xvel >> S->yvel >> S->mass >> S->fname
;
```

```
    S->setrSun();
    S->setpos();
    S->setImage();
    return input;
  }
private:
  virtual void draw(RenderTarget& target, RenderStates states) const{
    target.draw(sprite, states);
  };
};

double pl(vector< body* > &x, double y, double z);
#endif
```