

```
1: #include <SFML/Audio.hpp>
2: #include <SFML/Window.hpp>
3: #include <SFML/Graphics.hpp>
4: #include <SFML/System.hpp>
5:
6: #include <iostream>
7: #include <vector>
8: #include <string>
9: #include <memory>
10: #include <math.h>
11:
12: #define G 6.67e-11
13:
14: using namespace std;
15: using namespace sf;
16:
17: class Body : public Drawable {
18: private:
19:     Texture texture;
20:     Vector2u winSize;
21:
22: public:
23:     Sprite sprite;
24:     Vector2f F;
25:     string img_file;
26:     double R, x ,y, xVel, yVel, mass;
27:
28:     Body();
29:
30:     Vector2f getPos();
31:
32:     double getM();
33:
34:     void scale(Vector2u winSize, double R);
35:
36:     virtual void draw(RenderTarget &target, RenderStates states) const;
37:
38:     friend istream &operator>>(istream &in, Body &body);
39:
40:     void time(double time);
41:
42:     void move();
43:
44:     void setV(double ax, double ay, double time);
45:
46:     void setPos(double time);
47:
48:     ~Body();
49: };
50:
51: double getRadius(double body1_pos, double body2_pos);
52:
53: double getForce(double mass1, double mass2, double r);
54:
55: double dirF(double F, double dF, double r);
56:
57:
58:
```