

```
1: #ifndef NBODY_H
2: #define NBODY_H
3:
4:
5: #include <SFML/Graphics.hpp>
6: #include <SFML/Window.hpp>
7: #include <SFML/Audio.hpp>
8: #include <iostream>
9: #include <string>
10: #include <vector>
11: #include <sstream>
12: #include <cmath>
13:
14: class Body : public sf::Drawable
15: {
16: private:
17:     double _time;
18:     sf::Vector2f _position;
19:     sf::Vector2f _velocity;
20:     sf::Vector2f _acceleration;
21:     double _mass;
22:     std::string _filename;
23:     sf::Vector2f _netforce;
24:     int _numberOfPlanets;
25:     sf::Vector2f _updatedAcceleration;
26:     sf::Vector2f _updatedPosition;
27:     sf::Vector2f _updatedVelocity;
28:
29: public:
30:     Body(double xCoord, double yCoord, double xVelocity, double yVelocity, double mass, std::string fileName);
31:
32:     Body();
33:     //friend istream &operator>>( istream &input, const Body &B);
34:     virtual void draw(sf::RenderTarget &target, sf::RenderStates states) const
35: ;
36:
37:     //input stream overloader
38:     friend std::istream& operator>>(std::istream& in, Body& Body);
39:
40:     void step(double t_time);
41:
42:     void setNetforce(sf::Vector2f sNetforce);
43:     sf::Vector2f getNetforce();
44:
45:     void setNumPlanets(int sNoplanets);
46:     int getNumPlanets();
47:
48:     void setupdatePos(sf::Vector2f sUpdatepos);
49:     sf::Vector2f getupdatePos();
50:
51:     /*void Body::setupdateVel(sf::Vector2f sUpdateVel);
52:     sf::Vector2f getupdateVel();*/
53:
54:     /*void setupdatedAccel(sf::Vector2f sUpdatedAccel);
55:     sf::Vector2f getupdatedAccel();*/
56:
57:     void setTime(double sTime);
58:     double getTime();
59:
60:     void setPosition(sf::Vector2f sPosition);
```

```
60:     sf::Vector2f getPosition();
61:
62:     void setVel(sf::Vector2f sVel);
63:     sf::Vector2f getVel();
64:
65:     void setAccel(sf::Vector2f sAccel);
66:     sf::Vector2f getAccel();
67:
68:     void setMass(double sMass);
69:     double getMass();
70:
71:     void setFilename(std::string sFile);
72:     std::string getFilename();
73:
74:     ~Body();
75: };
76:
77: #endif
```