nbody

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1.1 File List

Here is a list of all documented files with brief descriptions:

Chapter 2

File Documentation

2.1 main-iter.c File Reference

```
#include <math.h>
#include <stdlib.h>
#include <stdio.h>
#include <time.h>
#include <assert.h>
```

Data Structures

- struct **body**

Defines

- #define **prec** float

Functions

- static prec newRand ()
- static void resetForce (body *b)
- static void update (body *a, prec dt)
- static void addForce (body *a, body *b)
- void init (int *N, body *star)
- static void updateForces (int N, body *star)
- int main (int argc, char *argv[ ])

Variables

- static prec **gdt** = 0.001

2.1.1 Detailed Description

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2.1.2 Function Documentation

2.1.2.1 static void addForce (body * *a*, body * *b*) [static]

Calculates the gravitational forces between two bodies and updates their forces accordingly

Parameters:

a the first body
b the second body

2.1.2.2 void init (int * *N*, body * *star*)

Initialise a number of bodies in an array of bodies

Parameters:

N number of bodies to be initalised
star array of bodies

2.1.2.3 int main (int *argc*, char * *argv*[ ])

Start simulation of bodies in space Prints time, number of bodies and number of iterations

Parameters:

argc number of arguments
argv[ ] array of arguments

Returns:

0 when finished

2.1.2.4 static prec newRand () [static]

Randomise a float number between 1 and 0

Returns:

randomised number

2.1.2.5 static void resetForce (body * *b*) [static]

Set the force of a body to 0

Parameters:

b the affected body

2.1.2.6 static void update (body * *a*, prec *dt*) [static]

Update position and force of a body in a timespan

Parameters:

a the affected body

dt timespan

2.1.2.7 static void updateForces (int *N*, body * *star*) [static]

Updates forces and positions of bodies

Parameters:

N number of bodies to be updated

star array of bodies to be updated

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