

nbody

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Chapter 1

File Index

1.1 File List

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

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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 initialised
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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