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//Programme Labo: systÃme auto-gravitant en deux dimensions
#include <stdio.h>
#include <stdlib.h>
#include <math.h>

#define nat 8000

int main()
{
FILE *pfl;

    int i;
    double R,V,*rx,*ry,*vx,*vy;

    double vo=1.0;
    srand48(time(NULL));
    pfl=fopen("CONF.IN","w");

    rx=malloc(nat*sizeof(double));
    ry=malloc(nat*sizeof(double));
    vy=malloc(nat*sizeof(double));
    vx=malloc(nat*sizeof(double));

    i=0.0;
    rx[i]=0.0;
    ry[i]=0.0;
    vx[i]=0.0;
    vy[i]=0.0;

    while(i<nat)
    {
        rx[i]=(drand48()-0.5)*2.0;
        ry[i]=(drand48()-0.5)*2.0;
        //printf("%lf\n",rx[i]);
        R=sqrt(rx[i]*rx[i]+ry[i]*ry[i]);
        if(R<1.0) { i+=1;}
    }
    i=0.0;
    while(i<nat)
    {
        vx[i]=(drand48()-0.5)*2.0*vo;
        vy[i]=(drand48()-0.5)*2.0*vo;
        V=sqrt(vx[i]*vx[i]+vy[i]*vy[i]);
        if(V<vo) {i+=1;}
    }

    for(i=0.0;i<nat;i++)
        fprintf(pfl,"%lf %lf %lf %lf\n",rx[i],ry
[i],vx[i],vy[i]);

close(pfl);

return 0;
}

```