#include <stdio.h>

#include <stdlib.h>

struct point {

double x,y;

};

struct polygon

{

int num;

struct point \*points;

};

struct polygon \*make\_polygon(void);

void read\_points(struct polygon \*);

double compute\_area(struct polygon \*);

int main(){

struct polygon \*p;

double area;

p=make\_polygon();

area = compute\_area(p);

printf("多角形の面積=%lf\n",area);

free(p->points);

free(p);

return 0;

}

struct polygon \*make\_polygon(){

struct polygon \*p;

p=(struct polygon \*)malloc(sizeof(struct polygon ));

printf("頂点の個数を入力: ");

scanf("%d",&p->num);

p->points = (struct point \*)malloc(p->num \* sizeof(struct point));

read\_points(p);

return p;

}

void read\_points(struct polygon \*p){

int i;

for(i=0;i<p->num;i++){

printf("%d番目の頂点を入力: ",i+1);

scanf("%lf %lf",&p->points[i].x,&p->points[i].y);

}

}

double compute\_area(struct polygon \*p){

double area =0;

//自分でこーでぃんぐ

double area1 =0;

double area2=0;

for(int i=1;i<p->num;i++){

area1 += p->points[i].x \* p->points[i+1].y;

}

area2 += p->num \* (area1) / 2;

area = area2 \* 1/2;

return area;

}

**実行結果**

頂点の個数を入力: 4

1番目の頂点を入力: 1 1

2番目の頂点を入力: 5 3

3番目の頂点を入力: 3 7

4番目の頂点を入力: 2 7

多角形の面積=56.000000