#include <stdio.h>

#include <stdlib.h>

typedef struct Node {

float ax;

int mici;

struct Node\* Next;

}Node;

typedef struct Node\* PNode;

void insertNewPoint\_link(PNode head, PNode qNode)

{

PNode p = head;

PNode h = head;

PNode q;

while (p->Next != NULL)

{

if (p->Next->mici < qNode->mici)

{

qNode->Next = p->Next;

p->Next = qNode;

break;

}

else if (p->Next->mici == qNode->mici)

{

float sum = p->Next->ax + qNode->ax;

if (sum != 0)

{

p->Next->ax = sum;

}

else

{

q = p->Next;

p->Next = p->Next->Next;

free(q);

q = NULL;

}

break;

}

p = p->Next;

}

if (p->Next == NULL)

{

p->Next = qNode;

}

}

void print(PNode head)

{

PNode temp = head->Next;

printf("%fX^%d", temp->ax, temp->mici);

temp = temp->Next;

while (temp != NULL)

if (temp->ax > 0)

printf(" +%fX^%d", temp->ax, temp->mici);

else if (temp->ax < 0)

printf("%fX^%d", temp->ax, temp->mici);

temp = temp->Next;

}

void jia(Node\* pa, Node\* pb)

{

Node\* p = pa->Next;

Node\* q = pb->Next;

Node\* pre = pa;

Node\* u;

while (p != NULL && q != NULL)

{

if (p->mici > q->mici)

{

pre = p;

p = p->Next;

}

else if (p->mici == q->mici)

{

float x = p->ax + q->ax;

if (x != 0)

{

p->ax = x;

pre = p;

}

else

{

pre->Next = p->Next;

free(p);

}

p = pre->Next;

u = q;

q = q->Next;

free(u);

}

else

{

u = q->Next;

q->Next = p;

pre->Next = q;

pre = q;

q = u;

}

}

if (q)

{

pre->Next = q;

}

free(pb);

}

void main()

{

float ax;

int mici;

PNode head1 = (PNode)malloc(sizeof(struct Node));

PNode head2 = (PNode)malloc(sizeof(struct Node));

PNode tem = NULL;

head1->Next = NULL;

head2->Next = NULL;

printf("ax和次数\n");

scanf("%f,%d", &ax, &mici);

while (ax != 0)

{

tem = (PNode)malloc(sizeof(struct Node));

tem->ax = ax;

tem->mici = mici;

tem->Next = NULL;

insertNewPoint\_link(head1, tem);

scanf("%f,%d", &ax, &mici);

}

print(head1);

printf("\n");

printf("ax和幂数\n");

scanf("%f,%d", &ax, &mici);

while (ax != 0)

{

tem = (PNode)malloc(sizeof(struct Node));

tem->ax = ax;

tem->mici = mici;

tem->Next = NULL;

insertNewPoint\_link(head2, tem);

scanf("%f,%d", &ax, &mici);

}

print(head2);

printf("\n");

jia(head1, head2);

printf("\n多项式相加后的结果为：\n");

print(head1);

printf("\n");

}