**《程序设计课程实践》设计文档**

# 作业题目2.4

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第\_二\_\_\_\_次作业 (写上第几次作业)

题目\_\_\_\_\_2.4\_\_\_（写上题目号）

提交代码：

#include<stdio.h>

#include<string.h>

struct bigNum {

int num[1000];

int len;

};

struct bigNum toBigNum(char str[]){

struct bigNum bn;

if (str[0]=='-'){

bn.num[0]=-1;

bn.len=strlen(str);

}else{

bn.num[0]=1;

bn.len=strlen(str)+1;

}

//倒置输入

for(int i=1;i<bn.len;i++){

bn.num[i]=str[strlen(str)-i]-'0';

}

return bn;

}

void output(struct bigNum bn){

if(bn.num[0]==1){

for(int i=bn.len-1;i>0;i--){

printf("%d",bn.num[i]);

}

printf("\n");

}else if (bn.num[0]==-1){

printf("-");

for(int i=bn.len-1;i>0;i--){

printf("%d",bn.num[i]);

}

printf("\n");

}

}

struct bigNum numadd(struct bigNum bn1,struct bigNum bn2){

struct bigNum bn;

if(bn1.num[0]==bn2.num[0]){

bn.num[0]=bn1.num[0];

if(bn1.len>=bn2.len) bn.len=bn1.len;

else bn.len=bn2.len;

int temp=0,i=1,j=1;

while(i<bn1.len&&j<bn2.len){

if(bn1.num[i]+bn2.num[i]+temp>=10){

bn.num[i]=(bn1.num[i]+bn2.num[i]+temp)%10;

temp=1;

}else{

bn.num[i]=bn1.num[i]+bn2.num[i]+temp;

temp=0;

}

i++;

j++;

}

//加到最后需要进位

if(temp!=0&&i>=bn1.len&&j>=bn2.len){

bn.len++;

bn.num[i]=temp;

}

if(i<bn1.len) bn1.num[i]+=temp;

if(j<bn2.len) bn2.num[i]+=temp;

while(i<bn1.len){

bn.num[i]=bn1.num[i];

i++;

}

while(j<bn2.len){

bn.num[j]=bn2.num[j];

j++;

}

}else{ //符号不等

if(bn1.len>bn2.len){

bn.len=bn1.len;

bn.num[0]=bn1.num[0];

int temp=0,i=1,j=1;

while(i<bn1.len&&j<bn2.len){

if(bn1.num[i]-bn2.num[j]-temp<0){

bn.num[i]=bn1.num[i]+10-bn2.num[i]-temp;

temp=1;

}else{

bn.num[i] = bn1.num[i]-bn2.num[i]-temp;

temp=0;

}

i++;

j++;

}

if(i<bn1.num[i]) bn1.num[i] = bn1.num[i]-temp;

if(j<bn2.num[i]) bn2.num[j] = bn2.num[j]-temp;

while(i < bn1.len){

bn.num[i] = bn1.num[i];

i++;

}

while(j < bn2.len){

bn.num[j] = bn2.num[j];

j++;

}

}else if(bn1.len<bn2.len){

bn.len = bn2.len;

bn.num[0] = bn2.num[0];

int temp = 0, i = 1, j = 1;

while (i < bn1.len&&j < bn2.len) {

if (bn2.num[i] - bn1.num[j] - temp < 0) {

bn.num[i] = bn2.num[i] + 10 - bn1.num[j] - temp;

temp = 1;

}

else

{

bn.num[i] = bn2.num[i] - bn1.num[j] - temp;

temp = 0;

}

i++;

j++;

}

if (i < bn1.len)bn1.num[i] = bn1.num[i] - temp;

if (j < bn2.len)bn2.num[i] = bn2.num[i] - temp;

while (i < bn1.len) {

bn.num[i] = bn1.num[i];

i++;

}

while (j < bn2.len) {

bn.num[j] = bn2.num[j];

j++;

}

}

else {

for (int i = bn1.len; i > 0; i--) {

if (bn1.num[i] == bn2.num[i]) {

continue;

}

else if(bn1.num[i]>bn2.num[i])

{

bn.len = bn1.len;

bn.num[0] = bn1.num[0];

int temp = 0, i = 1, j = 1;

while (i < bn1.len&&j < bn2.len) {

if (bn1.num[i] - bn2.num[j] - temp < 0) {

bn.num[i] = bn1.num[i] + 10 - bn2.num[j] - temp;

temp = 1;

}

else

{

bn.num[i] = bn1.num[i] - bn2.num[j] - temp;

temp = 0;

}

i++;

j++;

}

if (i < bn1.len)bn1.num[i] = bn1.num[i] - temp;

if (j < bn2.len)bn2.num[i] = bn2.num[i] - temp;

while (i < bn1.len) {

bn.num[i] = bn1.num[i];

i++;

}

while (j < bn2.len) {

bn.num[j] = bn2.num[j];

j++;

}

}

else

{

bn.len = bn2.len;

bn.num[0] = bn2.num[0];

int temp = 0, i = 1, j = 1;

while (i < bn1.len&&j < bn2.len) {

if (bn2.num[i] - bn1.num[j] - temp < 0) {

bn.num[i] = bn2.num[i] + 10 - bn1.num[j] - temp;

temp = 1;

}

else

{

bn.num[i] = bn2.num[i] - bn1.num[j] - temp;

temp = 0;

}

i++;

j++;

}

if (i < bn1.len)bn1.num[i] = bn1.num[i] - temp;

if (j < bn2.len)bn2.num[i ] = bn2.num[i] - temp;

while (i < bn1.len) {

bn.num[i] = bn1.num[i];

i++;

}

while (j < bn2.len) {

bn.num[j] = bn2.num[j];

j++;

}

}

}

}

}

return bn;

}

int main(){

char str1[1000],str2[1000];

scanf("%s%s",str1,str2);

struct bigNum bn1=toBigNum(str1);

struct bigNum bn2 = toBigNum(str2);

output(numadd(bn1,bn2));

bn2.num[0]=bn2.num[0]\*-1;

output(numadd(bn1,bn2));

}

运行结果：

（可以截图）

