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Addition of two long integers:

CODE:

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#include<string.h>
struct NODE
{
int info;
struct NODE*link;
};
typedef struct NODE*node;
node getnode()
{
node x;
x=(node)malloc(sizeof(struct NODE));
if(x==NULL)
{
printf("out of memory\n");
exit(0);
}
return x;
}
node ins_front(node first,int item)
{
node temp;
temp=getnode();
temp->info=item;
temp->link=first;
return temp;
}
node extract(char *s,node head)
{
        int i,n;
        for(i=0;i<strlen(s);i++)
        {
        n=s[i]-'0';
        head=ins_front(head,n);
        }
        return head;
```

```
}

node addlong(node head1,node head2,node head3)
{
        int temp,sum,carry=0;
        node cur1,cur2;
        cur1=head1;
        cur2=head2;
        while(cur1!=NULL&&cur2!=NULL)
        {
                temp=cur1->info+cur2->info+carry;
                if(temp>9)
                {
                sum=temp%10;
                carry=temp/10;
                }
                else
                {
                sum=temp;
                carry=0;
                }
                head3=ins_front(head3,sum);
                cur1=cur1->link;
                cur2=cur2->link;
        }
        while(cur1!=NULL)
        {
        temp=cur1->info+carry;
        if(temp>9)
        {
        sum=temp%10;
        carry=temp/10;
        }
        else
        {
        sum=temp;
        carry=0;
        }
        head3=ins_front(head3,sum);
        cur1=cur1->link;
        }
 while(cur2!=NULL)
        {
        temp=cur2->info+carry;
```

```
        if(temp>9)
        {
        sum=temp%10;
        carry=temp/10;
        }
        else
        {
        sum=temp;
        carry=0;
        }
        head3=ins_front(head3,sum);
        cur2=cur2->link;
        }

        if(cur1==NULL&&cur2==NULL)
        {
                if(carry==1)
                head3=ins_front(head3,carry);
        }
        return head3;
 }


void display(node first)
{
node cur;
if(first==NULL)
{
printf("Empty\n");
return;
}
cur=first;
while(cur!=NULL)
{
printf("%d\t",cur->info);
cur=cur->link;
}
}
void main()
{
        int ch;
        node head1=NULL;
        node head2=NULL;
        node head3=NULL;
```

```
        char s1[30],s2[30];
        printf("\nEnter first integer\n");
        scanf("%s",s1);
        head1=extract(s1,head1);
        display(head1);
        printf("\nEnter second integer\n");
        scanf("%s",s2);
        head2=extract(s2,head2);
        display(head2);
        head3=addlong(head1,head2,head3);
        printf("\nThe result is\n");
        display(head3);

}
```

OUTPUT: