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#include<stdio.h>
#include<string.h>
#include<ctype.h>

void input();
void output();
void change(int p,char *res);
void constant();

struct expr
{
    char op[2],op1[5],op2[5],res[5];
    int flag;
}arr[10];
int n;
void main()
{

    input();
    constant();
    output();

}
void input()
{
    int i;
    printf("\n\nEnter the maximum number of expressions : ");
    scanf("%d",&n);
    printf("\nEnter the input : \n");
    for(i=0;i<n;i++)
    {
        scanf("%s",arr[i].op);
        scanf("%s",arr[i].op1);
        scanf("%s",arr[i].op2);
        scanf("%s",arr[i].res);
        arr[i].flag=0;
    }
}
void constant()
{
    int i;
    int op1,op2,res;
    char op,res1[5];
    for(i=0;i<n;i++)
    {
        if(isdigit(arr[i].op1[0]) && isdigit(arr[i].op2[0]) || strcmp(arr[i].op,"")==0)
            /*if both digits, store them in variables*/
        {
            op1=atoi(arr[i].op1);
            op2=atoi(arr[i].op2);
            op=arr[i].op[0];
            switch(op)
            {
                case '+':
                    res=op1+op2;
                    break;
                case '-':
                    res=op1-op2;
                    break;
                case '*':
                    res=op1*op2;
                    break;
                case '/':
                    res=op1/op2;
                    break;
                case '=':

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res=op1;
break;
}
sprintf(res1, "%d", res);
arr[i].flag=1;
change(i, res1);
}
}
}
void output()
{
int i=0;
printf("\nOptimized code is : ");
for(i=0; i<n; i++)
{
if(!arr[i].flag)
{
printf("\n%s %s %s %s", arr[i].op, arr[i].op1, arr[i].op2, arr[i].res);
}
}
}
void change(int p, char *res)
{
int i;
for(i=p+1; i<n; i++)
{
if(strcmp(arr[p].res, arr[i].op1)==0)
strcpy(arr[i].op1, res);
else if(strcmp(arr[p].res, arr[i].op2)==0)
strcpy(arr[i].op2, res);
}
}
```