

12. The main function of the Intermediate code generation is producing three address code statements for a given input expression. The three address codes help in determining the sequence in which operations are actioned by the compiler. The key work of Intermediate code generators is to simplify the process of Code Generator. Write a C Program to Generate the Three address code representation for the given input statement.

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>

void pm();
void plus();
void div();

int i, ch, j, l, addr = 100;
char ex[10], exp[10], exp1[10], exp2[10], id1[5], op[5], id2[5];

int main() {
    while (1) {
        printf("\n1.assignment\n2.arithmetic\n3.Exit\nEnter the choice:");
        scanf("%d", &ch);
        switch (ch) {
            case 1:
                printf("\nEnter the expression with assignment operator:");
                scanf("%s", exp);
                l = strlen(exp);
                exp2[0] = '\0';
                i = 0;
                while (exp[i] != '=') {
```

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        i++;
    }
    strncat(exp2, exp, i);
    strrev(exp);
    exp1[0] = '\0';
    strncat(exp1, exp, l - (i + 1));
    strrev(exp1);
    printf("Three address code:\ntemp=%s\n%s=temp\n", exp1, exp2);
    break;

```

case 2:

```

    printf("\nEnter the expression with arithmetic operator:");
    scanf("%s", ex);
    strcpy(exp, ex);
    l = strlen(exp);
    exp1[0] = '\0';

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for (i = 0; i < l; i++) {
    if (exp[i] == '+' || exp[i] == '-') {
        if (exp[i + 2] == '/' || exp[i + 2] == '*') {
            pm();
            break;
        } else {
            plus();
            break;
        }
    }
    } else if (exp[i] == '/' || exp[i] == '*') {
        div();
        break;
    }
}

```

```

        }
    }
    break;

    case 3:
        exit(0);
    }
}
return 0;
}

```

```

void pm() {
    strrev(exp);
    j = l - i - 1;
    strncat(exp1, exp, j);
    strrev(exp1);
    printf("Three address code:\ntemp=%s\ntemp1=%c%cctemp\n", exp1, exp[j + 1], exp[j]);
}

```

```

void div() {
    strncat(exp1, exp, i + 2);
    printf("Three address code:\ntemp=%s\ntemp1=temp%c%c\n", exp1, exp[i + 2], exp[i + 3]);
}

```

```

void plus() {
    strncat(exp1, exp, i + 2);
    printf("Three address code:\ntemp=%s\ntemp1=temp%c%c\n", exp1, exp[i + 2], exp[i + 3]);
}

```

```
E:\c program\Untitled1.exe
1.assignment
2.arithmetic
3.Exit
Enter the choice:1

Enter the expression with assignment operator:a=b+c
Three address code:
temp=b+c
a=temp

1.assignment
2.arithmetic
3.Exit
Enter the choice:2

Enter the expression with arithmetic operator:a-b/c
Three address code:
temp=b/c
temp1=a-temp

1.assignment
2.arithmetic
3.Exit
Enter the choice:
```