EXPERIMENT NO. 6

AIM:

Program to generate Quadruple table for the given postfix String

POSTLAB ASSIGNMENT:

Q1. Translate the following statements into triple and quadruple representation:-

1. a=b[i]+c[j]

Ans. Three address code:

```
t1 = &b
t2 = sizeof(int)
t3 = i * t2
t4 = t1 + t3
t5 = &c
t6 = sizeof(int)
t7 = j * t6
t8 = t5 + t7
t9 = *t4
t10 = *t8
t11 = t9 + t10
a = t11
```

Triple			
Position	Operator	Operand1	Operand2
(0)	&	b	
(1)	sizeof()	int	
(2)	*	i	(1)
(3)	+	(0)	(2)
(4)	&	c	
(5)	sizeof()	int	
(6)	*	j	(5)
(7)	+	(4)	(6)
(8)	*	(3)	
(9)	*	(7)	

(10)	+	(8)	(9)
(11)	=	(10)	

Quadruple			
Operator	Operand1	Operand2	Result
&	b		t1
sizeof()	int		t2
*	i	t2	t3
+	t1	t3	t4
&	c		t5
sizeof()	int		t6
*	j	t6	t7
+	t5	t7	t8
*	t4		t9
*	t8		t10
+	t9	t10	t11
=	t11		a

2. x=*p+&y

Ans. Three address code:

t1 = *p
t2 = &y
t3 = t1 + t2
x = t3

Triple

Position	Operator	Operand1	Operand2
(0)	*	p	
(1)	&	y	
(2)	+	(0)	(1)
(3)	=	(2)	

Quadruple			
Operator	Operand1	Operand2	Result
*	p		t1
&	y		t2
+	t1	t2	t3
=	t3		x

Q2. Three address code is abstract representation of _____

A. Target program B. Source Program C. Intermediate Code D. B and C

Ans. B

CONCLUSION:

I have successfully implemented quadruple table which is one of the three data structures used to represent three address codes. While quadruple tables have 4 columns, the same can be implemented using the triple representation, having 3 columns. However, the code represented by quadruple tables is more optimal than triple tables. These are used in the intermediate code generation phase of the compiler.