Practical 6	
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Aim: Intermediate Code Generation: To generate Three Address code for assignment statement.

Code:

```
%{

#include <stdio.h>
#include <stdlib.h>
#include "y.tab.h"

%}

%%
[0-9]+ {yylval.symbol = yytext[0]; return NUMBER;}
[a-zA-z]+ {yylval.symbol=yytext[0]; return LETTER;}

\n {return 0;}

. {return yytext[0];}
%%

yywrap(){
  return 1;
}
```

```
%{

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

void convertToThreeAddressCode();
char addToTable(char,char,char);
int i = 0;
char tmp='1';
struct exp{
  char op1,op2,op;
};

%}

%union
{
```

```
%token <symbol> LETTER NUMBER
%type <symbol> expr
%left '+' '-'
%left '*' '/' '%'
%%

 stmt: LETTER '=' expr ';' {addToTable($1,'=',$3);}
     |expr ';'
     ;

 expr:   expr '/' expr {$$ = addToTable($1,'/',$3);}
     | expr '*' expr {$$ = addToTable($1,'*',$3);}
     | expr '%' expr {$$ = addToTable($1,'%',$3);}
     | expr '+' expr {$$ = addToTable($1,'+',$3);}
     | expr '-' expr {$$ = addToTable($1,'-',$3);}
     | '(' expr ')' {$$ = (char)$2;}
     | NUMBER {$$=$1;}
     | LETTER {$$=$1;}
     ;

%%

yyerror(char *s){
    printf("%s",s);
    exit(0);
}

struct exp code[20];

char addToTable(char op1,char op,char op2){
    code[i].op1=op1;
    code[i].op=op;
    code[i].op2=op2;

    i++;
    return tmp++;
}

void convertToThreeAddressCode(){
    printf("\n\n\t\tTHREE ADDRESS CODE \n\n");
    int cnt=0;

    char tmp='1';
    while(cnt < i){
        if(code[cnt].op != '=')
            printf("\tt%c : = \t",tmp++);

        if(isalpha(code[cnt].op1))
            printf("\t%c\t",code[cnt].op1);
        else if(code[cnt].op1 >='1' && code[cnt].op1 <='9')
            printf("\tt%c\t",code[cnt].op1);

        printf("%c",code[cnt].op);
```

```
        if(isalpha(code[cnt].op2))
            printf("\t%c\n",code[cnt].op2);
        else if(code[cnt].op2 >='1' && code[cnt].op2 <='9')
            printf("\tt%c\n",code[cnt].op2);

        cnt++;
    }
}

main(){
    printf("\nEnter the expression \n");
    yyparse();
    convertToThreeAddressCode();

}
```

Output:

```
Enter the expression
x=a+(b/c*(d+e));


                THREE ADDRESS CODE

        t1 : =          b       /       c
        t2 : =          d       +       e
        t3 : =          t1      *       t2
        t4 : =          a       +       t3
        x       =       t4
```