

**Compiler Construction Lab**

**Practical 10**

**Submitted To:**

Dr. Snehlata Wankhade

**Submitted By:**

Suhani Gahukar

22070521084

VIIth sem , C

**PRACTICAL 10**

AIM - Intermediate code (IC) generator for arithmetic expression.

| **file.l**  %{  #include "y.tab.h"  #include <stdlib.h>  #include <string.h>  extern YYSTYPE yylval;  %}  %%  [0-9]+ { yylval.ival = atoi(yytext); return NUM; }  [a-zA-Z\_][a-zA-Z0-9\_]\* { yylval.sval = strdup(yytext); return ID; }  [ \t] ; // skip whitespace  \n return '\n';  "+" return '+';  "-" return '-';  "\*" return '\*';  "/" return '/';  "(" return '(';  ")" return ')';  . return yytext[0];  %%  int yywrap() { return 1; }    **file.y**  %{  #include <stdio.h>  #include <stdlib.h>  #include <string.h>  int yylex(void); // Declare yylex to avoid implicit declaration warning  int tempCount = 1;  char\* createTemp() {  char\* temp = (char\*) malloc(10);  sprintf(temp, "t%d", tempCount++);  return temp;  }  void yyerror(const char\* s) {  fprintf(stderr, "Error: %s\n", s);  }  %}  %union {  int ival;  char\* sval;  }  %token <ival> NUM  %token <sval> ID  %type <sval> expr  %left '+' '-'  %left '\*' '/'  %%  stmt: expr '\n' { printf("\n"); };  expr: expr '+' expr {  char\* temp = createTemp();  printf("%s = %s + %s\n", temp, $1, $3);  $$ = temp;  }  | expr '-' expr {  char\* temp = createTemp();  printf("%s = %s - %s\n", temp, $1, $3);  $$ = temp;  }  | expr '\*' expr {  char\* temp = createTemp();  printf("%s = %s \* %s\n", temp, $1, $3);  $$ = temp;  }  | expr '/' expr {  char\* temp = createTemp();  printf("%s = %s / %s\n", temp, $1, $3);  $$ = temp;  }  | '(' expr ')' {  $$ = $2;  }  | ID {  $$ = $1;  }  | NUM {  char\* temp = (char\*) malloc(10);  sprintf(temp, "%d", $1);  $$ = temp;  }  ;  %%  int main() {  printf("Enter arithmetic expression:\n");  yyparse();  return 0;  } |
| --- |

| suhami@LAPTOP-OTTF73G6:~/CC$ lex ass\_10\_084.l  suhami@LAPTOP-OTTF73G6:~/CC$ yacc -d ass\_10\_084.y  suhami@LAPTOP-OTTF73G6:~/CC$ gcc lex.yy.c y.tab.c -o ass  suhami@LAPTOP-OTTF73G6:~/CC$ ./ass  Enter arithmetic expression:  a+b\*c  t1 = b \* c  t2 = a + t1  ab+c\*  Error: syntax error  suhami@LAPTOP-OTTF73G6:~/CC$ |
| --- |