12)Write a C program to construct recursive descent parsing for the given grammar?

#include <stdio.h>

#include <stdlib.h>

#include <ctype.h>

#include <string.h>

char lookahead; // Current character in the input

void error() {

printf("Syntax error\n");

exit(1);

}

void match(char expected) {

if (lookahead == expected) {

lookahead = getchar();

} else {

error();

}

}

void E(); // Forward declaration

void E\_prime();

void T();

void T\_prime();

void F();

void E() {

T(); // Parse T

E\_prime(); // Parse E'

}

void E\_prime() {

if (lookahead == '+') {

match('+'); // Match '+'

T(); // Parse T

E\_prime(); // Parse E'

} else if (lookahead == '-') {

match('-'); // Match '-'

T(); // Parse T

E\_prime(); // Parse E'

}

}

void T() {

F(); // Parse F

T\_prime(); // Parse T'

}

void T\_prime() {

if (lookahead == '\*') {

match('\*'); // Match '\*'

F(); // Parse F

T\_prime(); // Parse T'

} else if (lookahead == '/') {

match('/'); // Match '/'

F(); // Parse F

T\_prime(); // Parse T'

}

}

void F() {

if (lookahead == '(') {

match('('); // Match '('

E(); // Parse E

match(')'); // Match ')'

} else if (isalnum(lookahead)) { // Check if it's an identifier

match(lookahead);

} else {

error();

}

}

int main() {

printf("Enter an expression: ");

lookahead = getchar();

E();

if (lookahead == '\n' || lookahead == EOF) {

printf("Input is valid\n");

} else {

error();

}

return 0;

}

