#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include <ctype.h>

int isKeyword(char buffer[]) {

char keywords[32][10] = {"auto", "break", "case", "char", "const", "continue", "default", "do",

"double", "else", "enum", "extern", "float", "for", "goto", "if",

"int", "long", "register", "return", "short", "signed", "sizeof", "static",

"struct", "switch", "typedef", "union", "unsigned", "void", "volatile", "while"};

for (int i = 0; i < 32; i++) {

if (strcmp(keywords[i], buffer) == 0) {

return 1;

}

}

return 0;

}

int main() {

char ch, buffer[15], operators[] = "+-\*/%=<>!&|^~", specialch[] = "(){}[];,.:?";

FILE \*fp;

int i, j = 0, k = 0;

fp = fopen("program.txt", "r");

if (fp == NULL) {

printf("Error while opening the file...\n");

exit(1);

}

while ((ch = fgetc(fp)) != EOF) {

// Check for operators

for (i = 0; i < strlen(operators); i++) {

if (ch == operators[i]) {

printf("%c is an operator\n", ch);

break;

}

}

// Check for special characters

for (i = 0; i < strlen(specialch); i++) {

if (ch == specialch[i]) {

printf("%c is a special character\n", ch);

break;

}

}

// Check for alphabetic characters (identifiers/keywords)

if (isalpha(ch)) {

buffer[j++] = ch;

}

else if ((isdigit(ch) || ch == '.') && j > 0) {

buffer[j++] = ch;

}

else if (j > 0) {

buffer[j] = '\0';

j = 0;

if (isKeyword(buffer)) {

printf("%s is a keyword\n", buffer);

}

else {

printf("%s is an identifier\n", buffer);

}

}

// Check for numeric constants

if (isdigit(ch)) {

buffer[k++] = ch;

}

else if (ch == '.' && k > 0) {

buffer[k++] = ch;

}

else if (k > 0) {

buffer[k] = '\0';

k = 0;

printf("%s is a constant\n", buffer);

}

}

// Handle any remaining buffer content

if (j > 0) {

buffer[j] = '\0';

if (isKeyword(buffer)) {

printf("%s is a keyword\n", buffer);

}

else {

printf("%s is an identifier\n", buffer);

}

}

if (k > 0) {

buffer[k] = '\0';

printf("%s is a constant\n", buffer);

}

fclose(fp);

return 0;

}