5.Write a C program to check whether a given string belongs to the language defined by a Context Free Grammar (CFG)

S → 0S0 | A A → 1A | ε

Program:

#include <stdio.h>

#include <string.h>

int belongsToLanguage(const char \*str, int start, int end) {

if (start > end) {

return 1;

}

int i;

for (i = start; i <= end; ++i) {

if (str[i] != '1') {

return 0;

}

}

if (str[start] == '0' && str[end] == '0') {

int i;

for (i = start + 1; i <= end - 1; ++i) {

if (belongsToLanguage(str, start + 1, i - 1) && belongsToLanguage(str, i + 1, end - 1)) {

return 1;

}

}

}

return 0;

}

int main() {

char input[100];

printf("Enter a string: ");

scanf("%s", input);

int length = strlen(input);

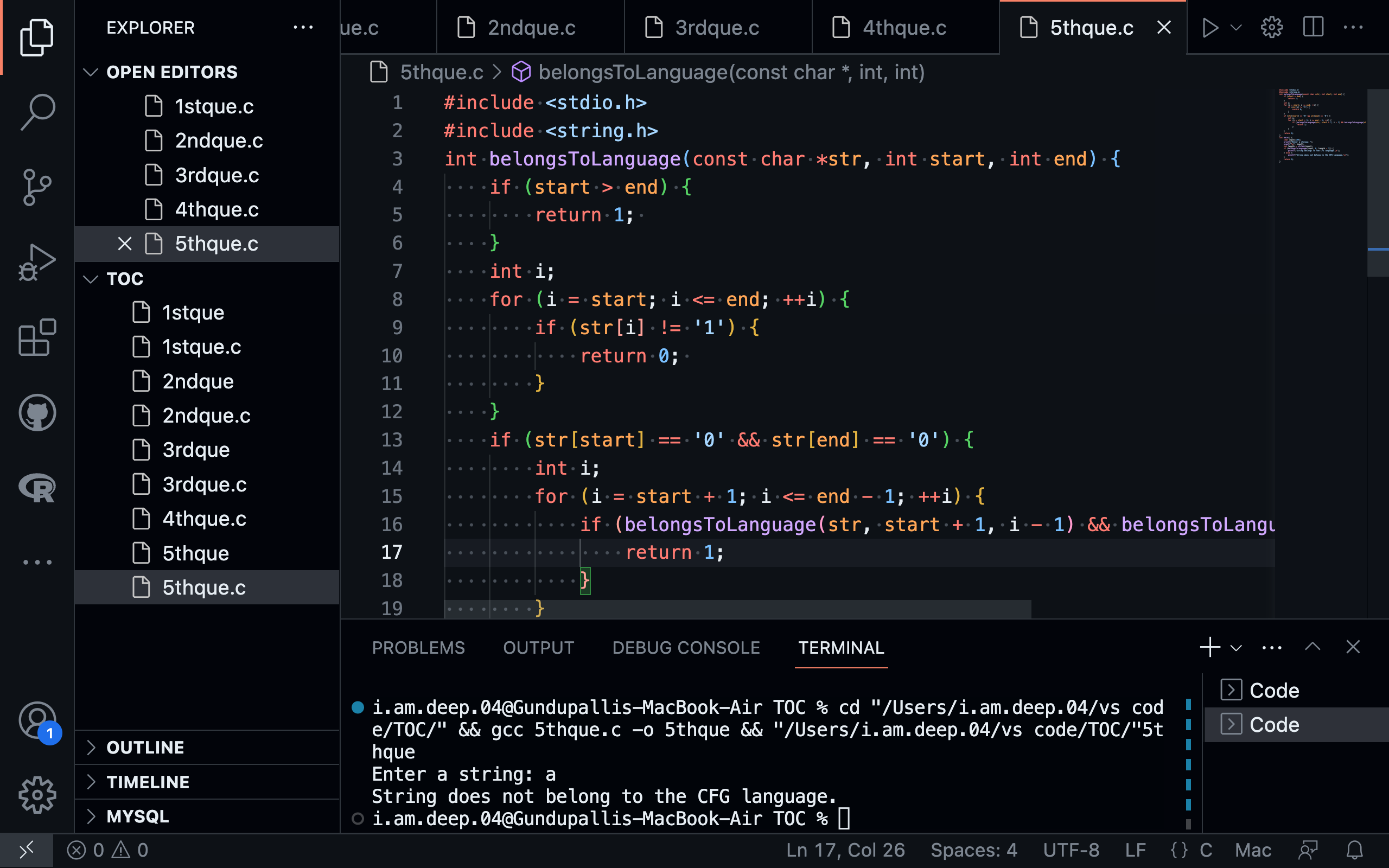
if (belongsToLanguage(input, 0, length - 1)) {

printf("String belongs to the CFG language.\n");

} else {

printf("String does not belong to the CFG language.\n");

}

return 0;

}