BIL105E

Introduction to Scientific and Engineering Computation

CRN: 21831

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Homework 3

Implementing some character sequences (i.e., string) operations by using pointers and functions.

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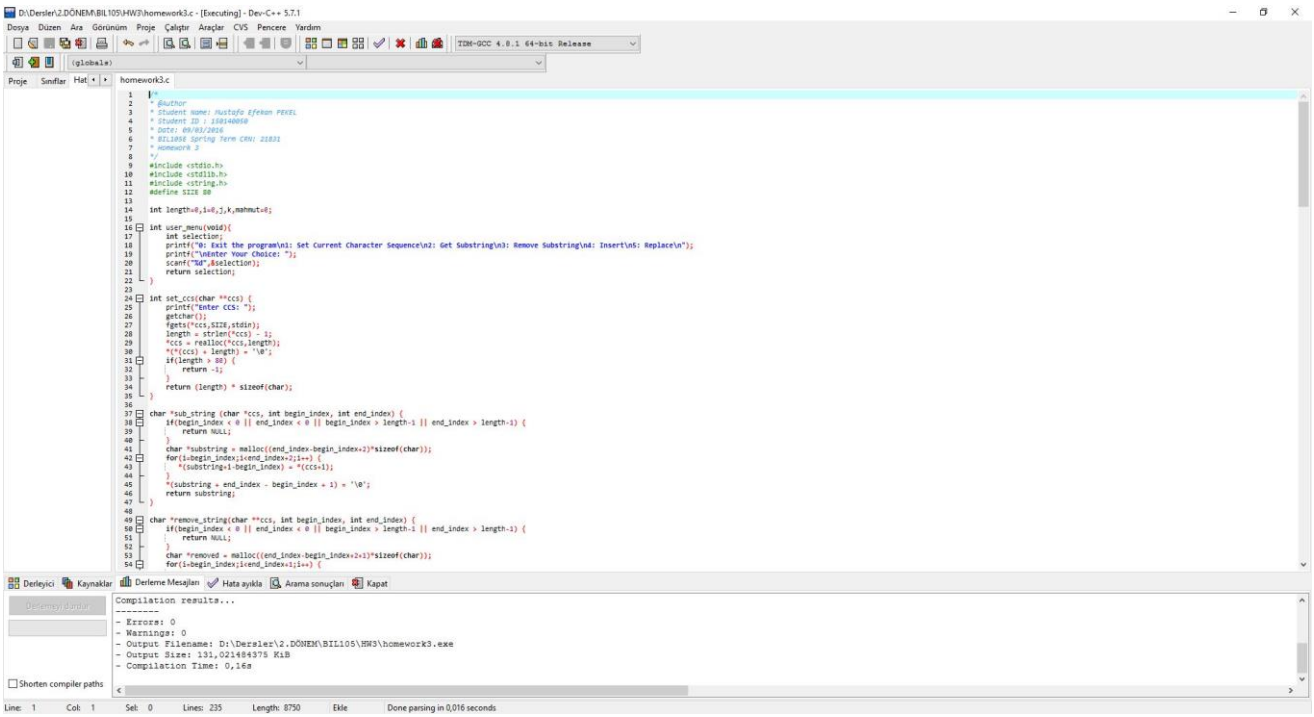
Date of Submission: 01.05.2016

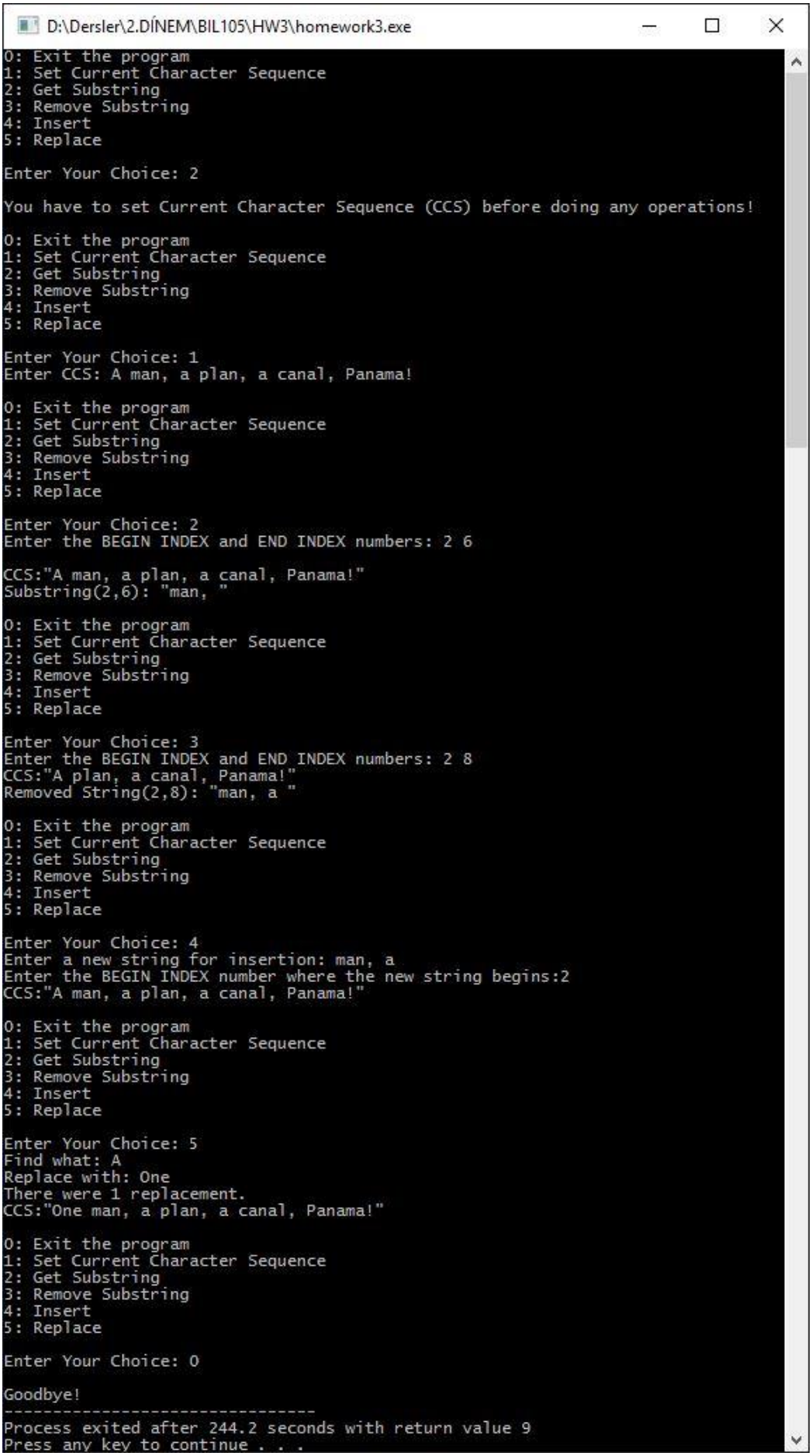
1. Introduction Section

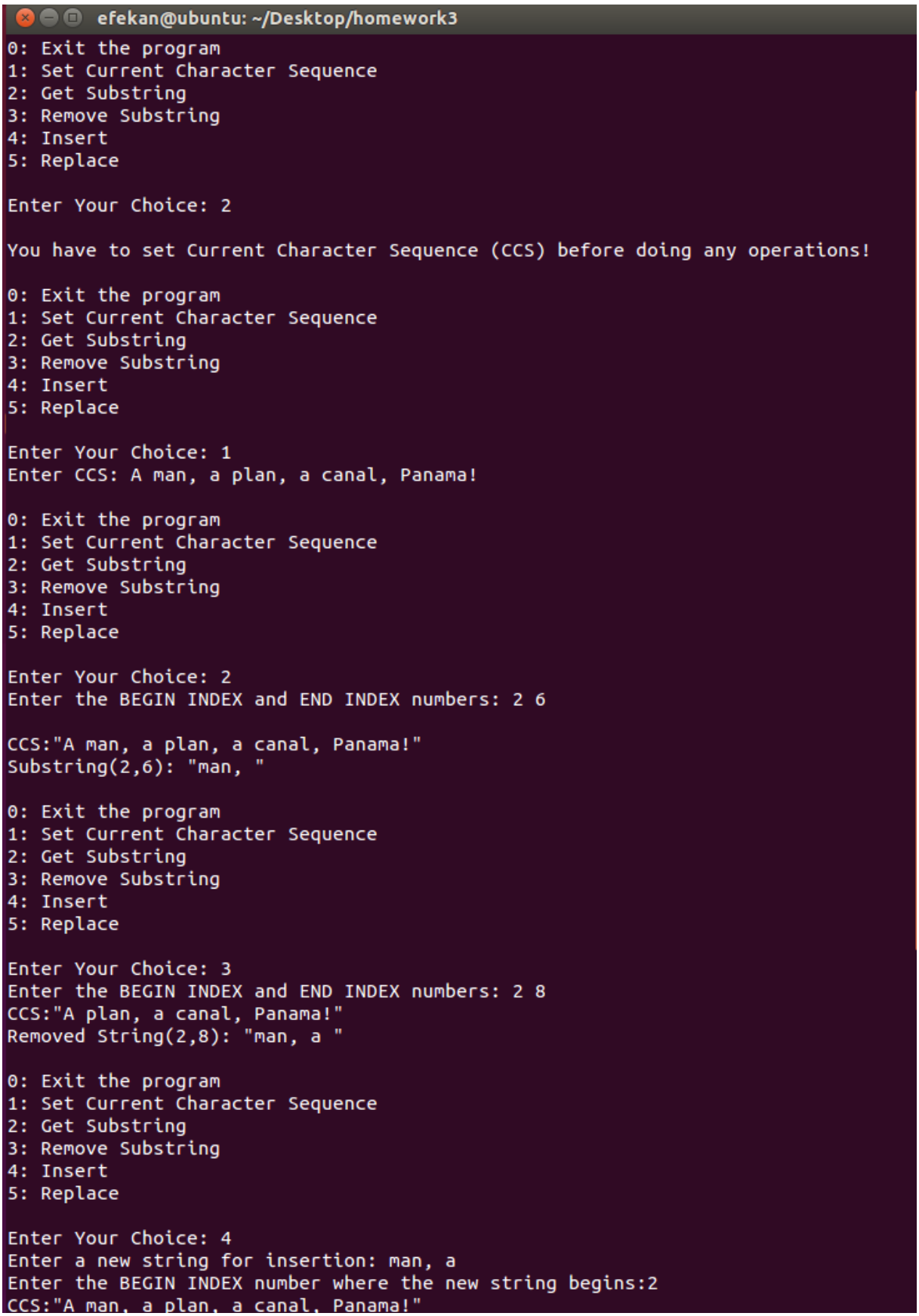
The homework want us to implement some character sequence (i.e., string) operations by using pointers and functions. A menu is presented to the user and the selected operation is executed on a character sequence.

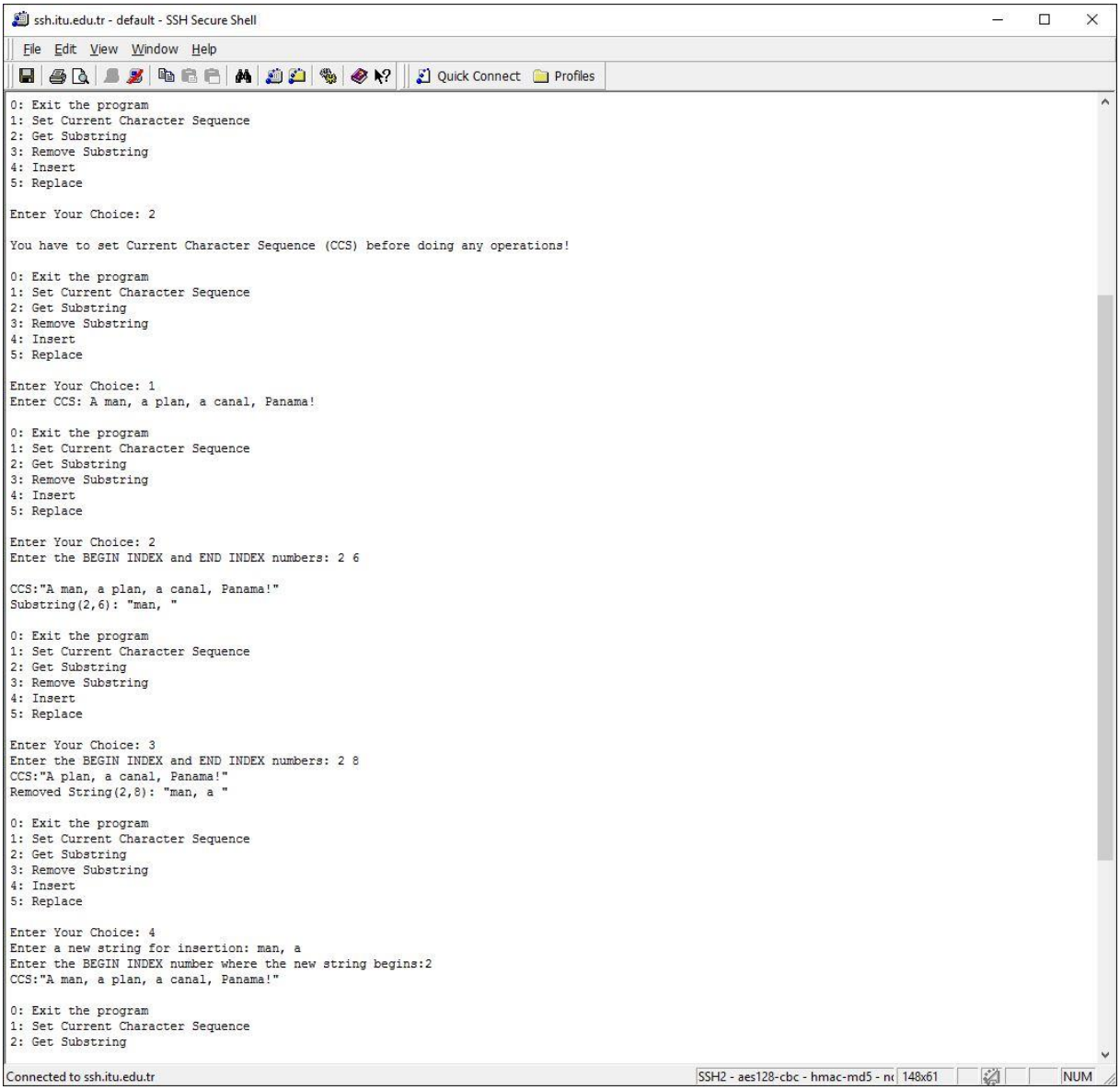
2. Development Environment

My homework has one C file 150140050.c. The application is written on a Microsoft Windows 10 machine with using Dev-C++ 5.7.1 program and TDM-GCC 4.8.1 64-bit Release compiler. Then the program tested in both Windows and Linux Ubuntu distribution. Then finally compiled at ITU SSH server successfully. I compiled my homework with CodeBlocks on Windows. I compiled my homework using Terminal by the command gcc homework3.c –o homework3.out




D:\Dersler\2.DÍNEM\BIL105\HW3\homework3.exe
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 2
You have to set Current Character Sequence (CCS) before doing any operations!
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 1
Enter CCS: A man, a plan, a canal, Panama!
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 2
Enter the BEGIN INDEX and END INDEX numbers: 2 6
CCS:"A man, a plan, a canal, Panama!"
Substring(2,6): "man, "
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 3
Enter the BEGIN INDEX and END INDEX numbers: 2 8
CCS:"A plan, a canal, Panama!"
Removed String(2,8): "man, a "
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 4
Enter a new string for insertion: man, a
Enter the BEGIN INDEX number where the new string begins:2
CCS:"A man, a plan, a canal, Panama!"
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 5
Find what: A
Replace with: One
There were 1 replacement.
CCS:"One man, a plan, a canal, Panama!"
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 0
Goodbye!
Process exited after 244.2 seconds with return value 9
Press any key to continue . . .


efekan@ubuntu: ~/Desktop/homework3
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 2
You have to set Current Character Sequence (CCS) before doing any operations!
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 1
Enter CCS: A man, a plan, a canal, Panama!
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 2
Enter the BEGIN INDEX and END INDEX numbers: 2 6
CCS:"A man, a plan, a canal, Panama!"
Substring(2,6): "man, "
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 3
Enter the BEGIN INDEX and END INDEX numbers: 2 8
CCS:"A plan, a canal, Panama!"
Removed String(2,8): "man, a "
0: Exit the program
1: Set Current Character Sequence
2: Get Substring
3: Remove Substring
4: Insert
5: Replace
Enter Your Choice: 4
Enter a new string for insertion: man, a
Enter the BEGIN INDEX number where the new string begins:2
CCS:"A man, a plan, a canal, Panama!"



3. Data Structures and Variables

Homework uses three library which are stdio.h, stdlib.h, string.h.

length: length of current character set

length_insert: length of insertion string

selection: selection of user to choose operation

begin_index: starting index

end_index: last index

replacement: the number of replacements

length_find: the length of find string

length_replace: the length of replace string

*substring: the product of sub_string function

*removed: the part of ccs to remove which is user's input

*insert: the addition part to ccs which is user's input

*find: user's input string to find in ccs

*replace: user's input string to replace with *find in ccs

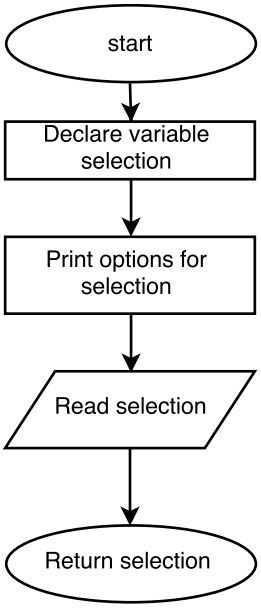
4. Conclusions

I used if-else statements, strings, functions, pointers, dynamic memory allocation operations(malloc, free, realloc) , while and for loops. It was good practice to learn strings and dynamic memory allocation operations. Owing to homework, I saw a lot of my mistakes. I learn dynamic memory allocations.

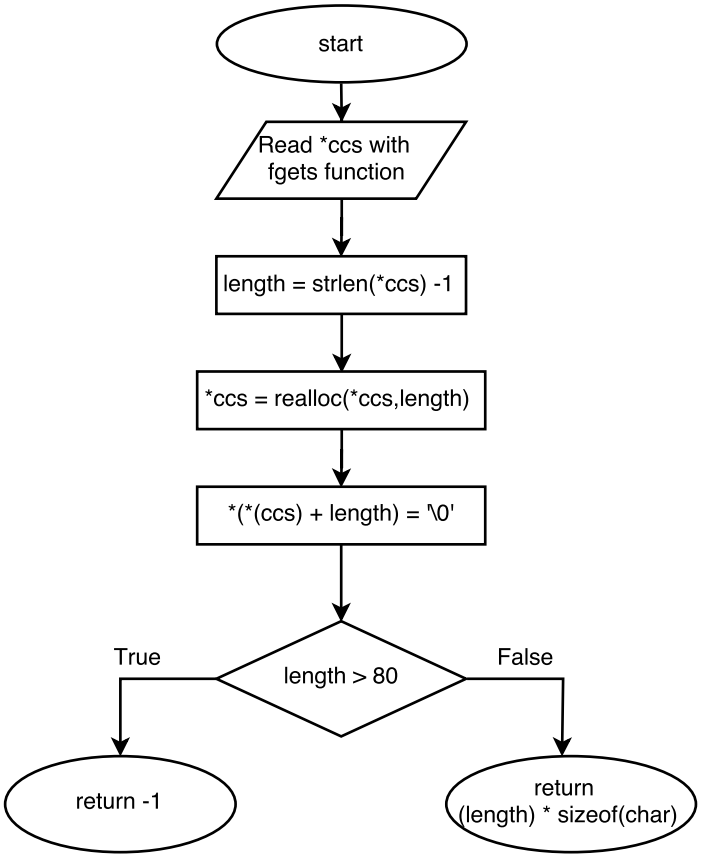
5. Program Flow

My program flow**:**

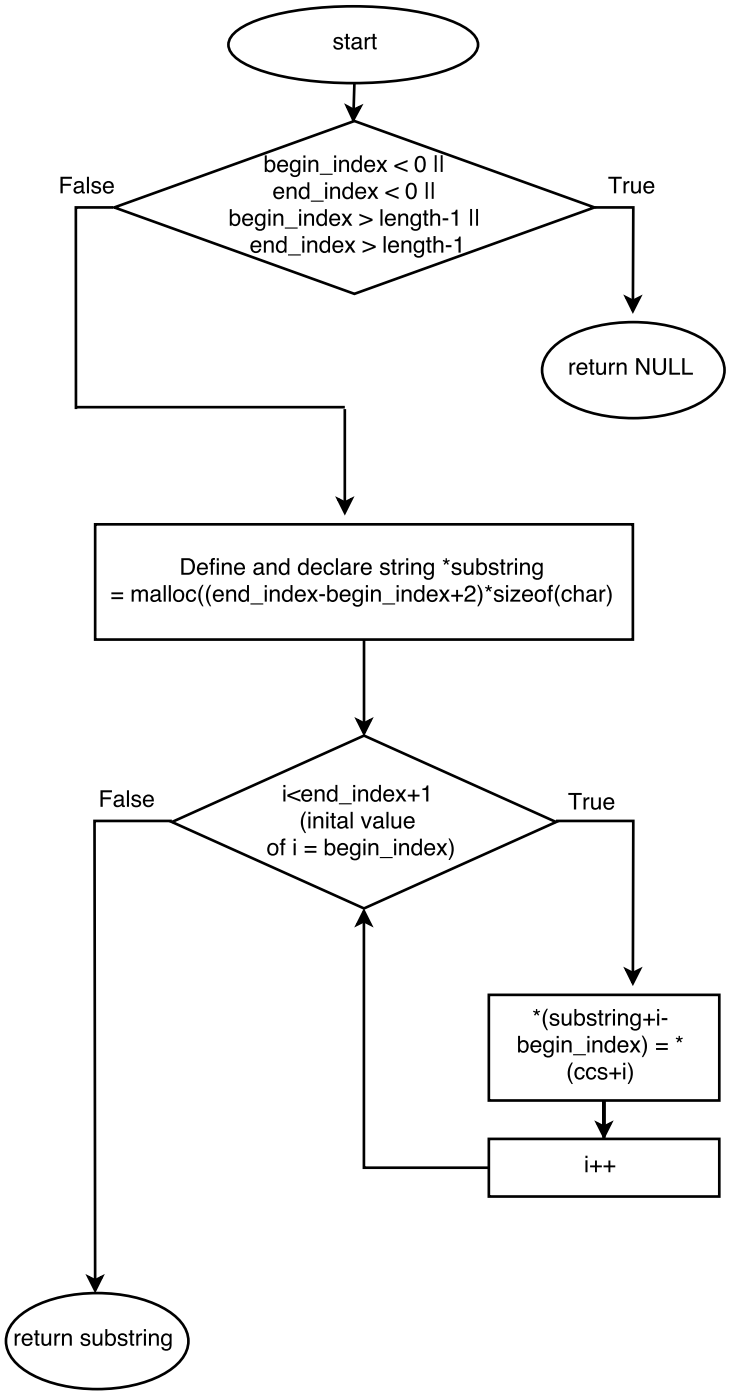
Flowchart: user_menu(void)



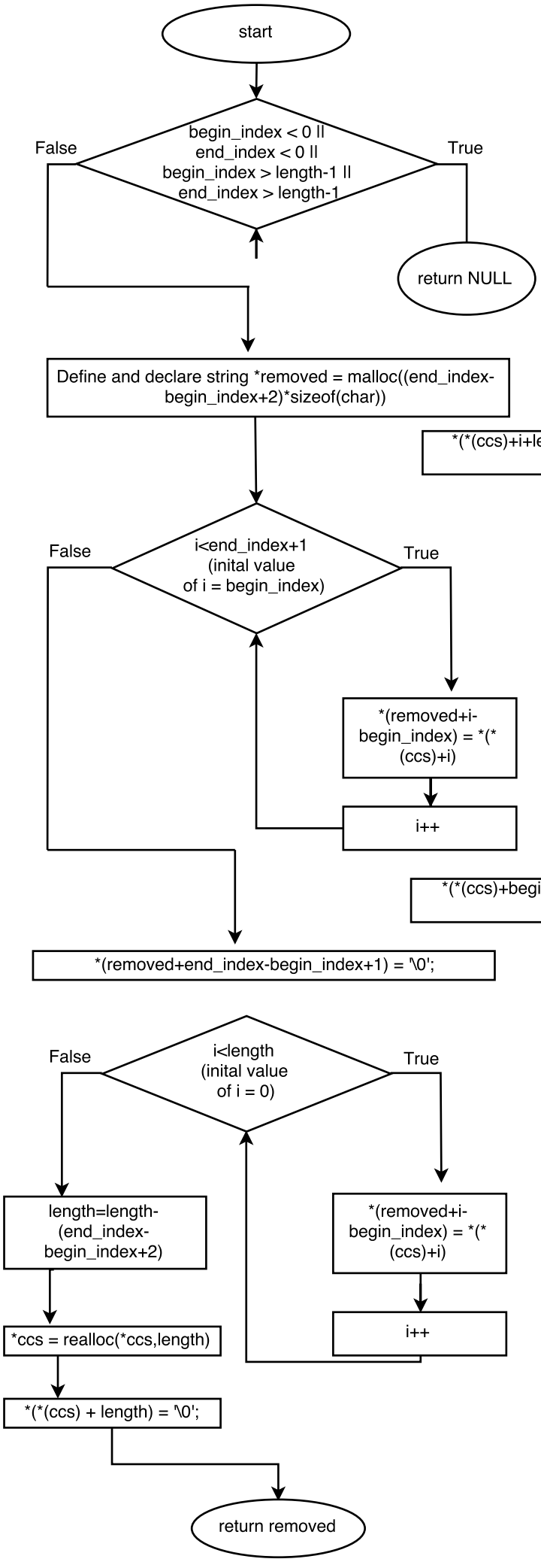
Flowchart: set_ccs(char **ccs)



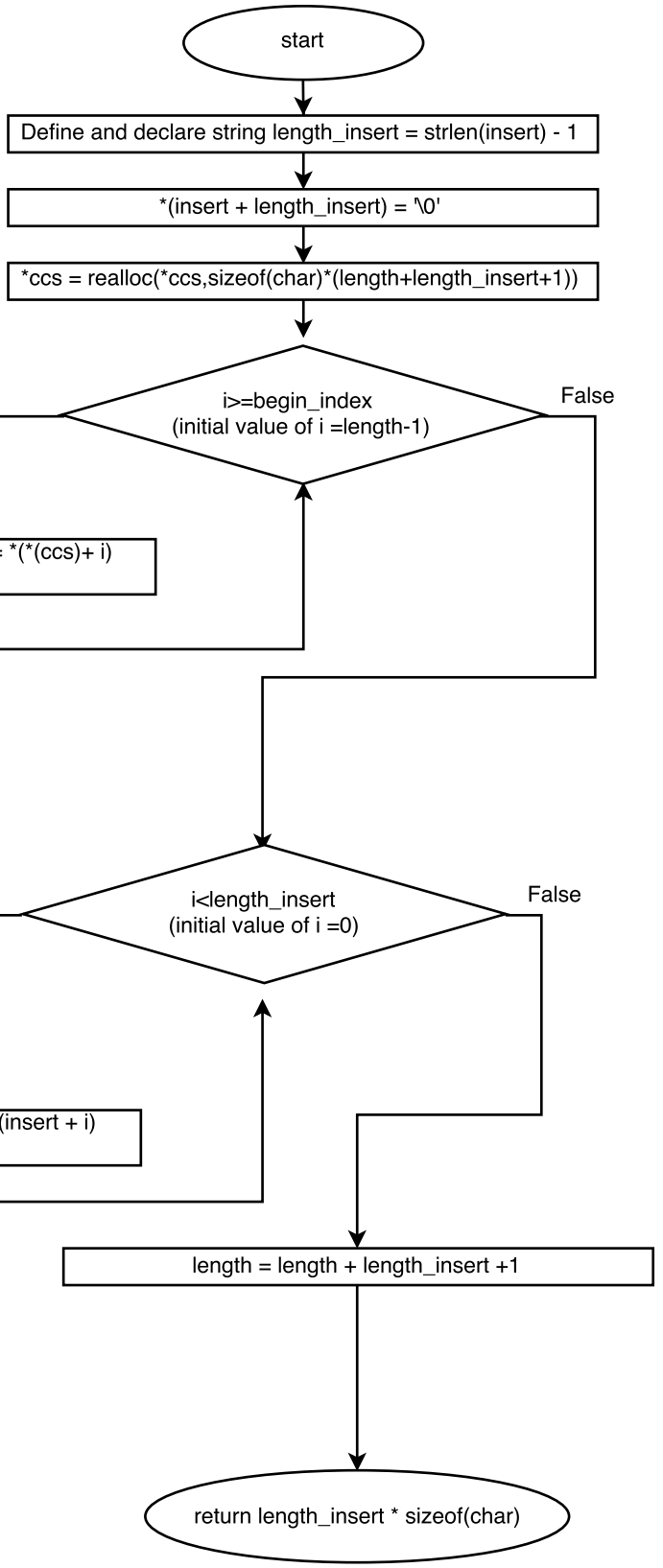
Flowchart: sub_string (char *ccs, int begin_index, int end_index)



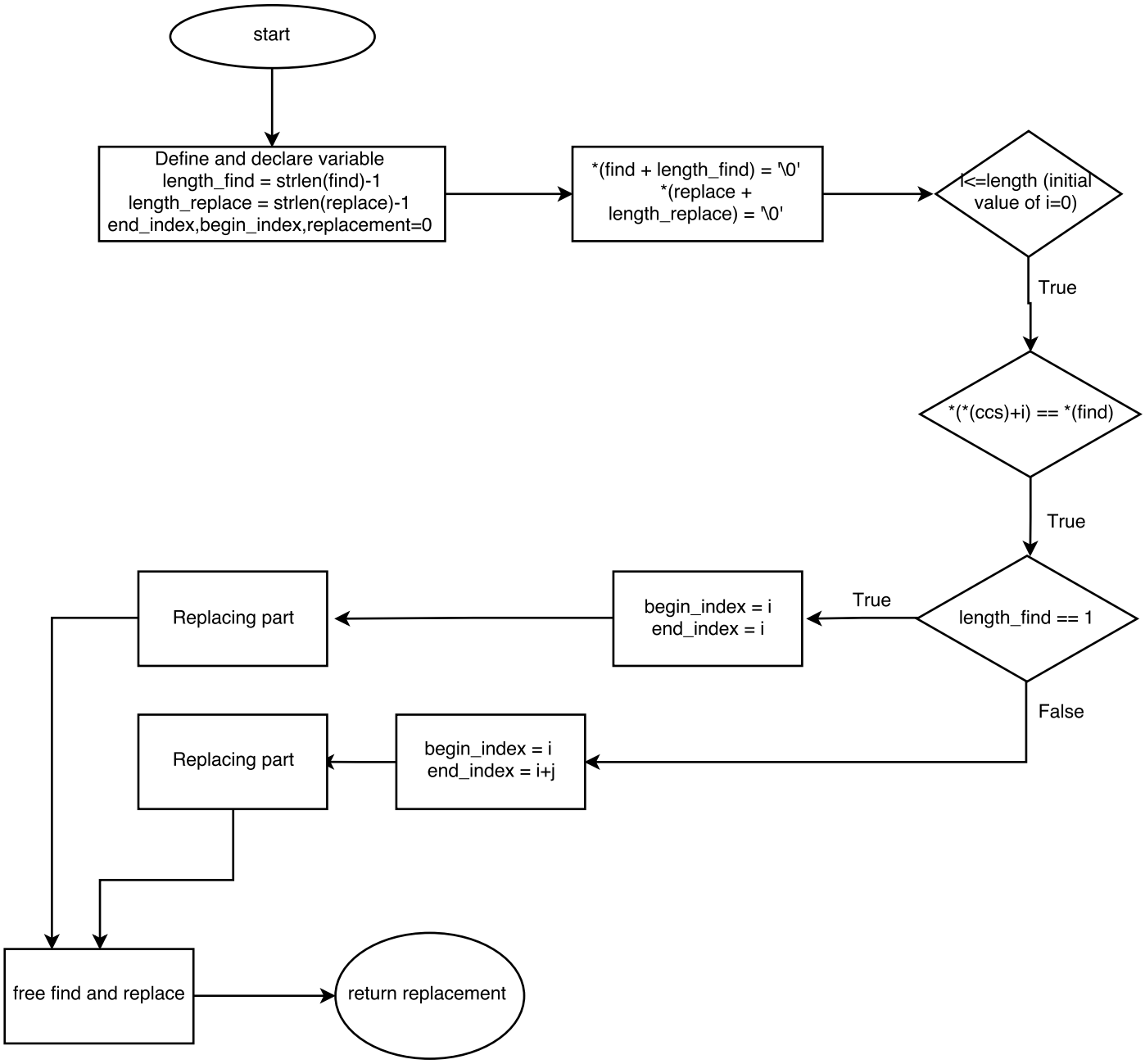
Flowchart: remove_string(char **ccs, int begin_index, int end_index)



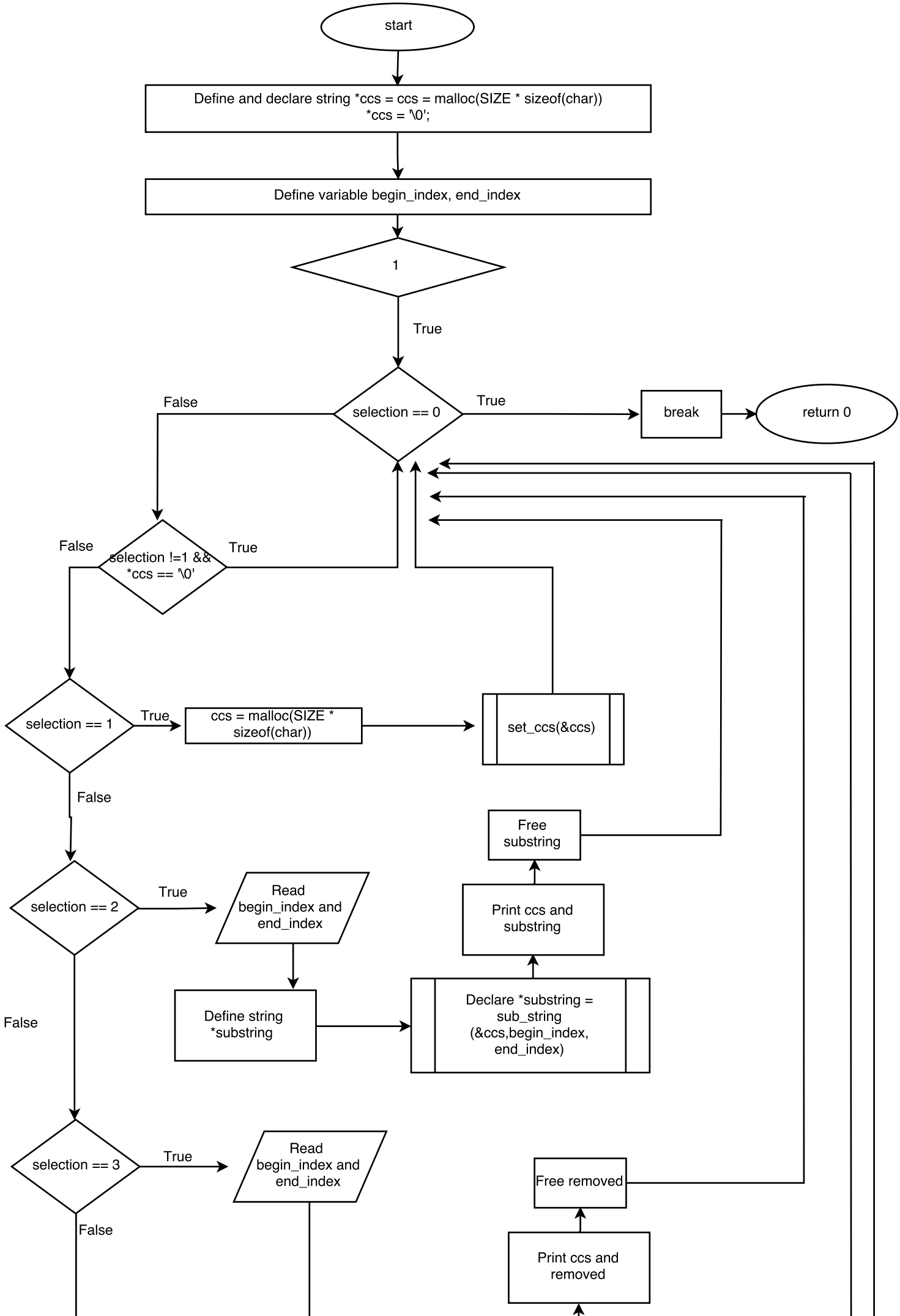
Flowchart: insert_string(char **ccs, char *insert, int begin_index)

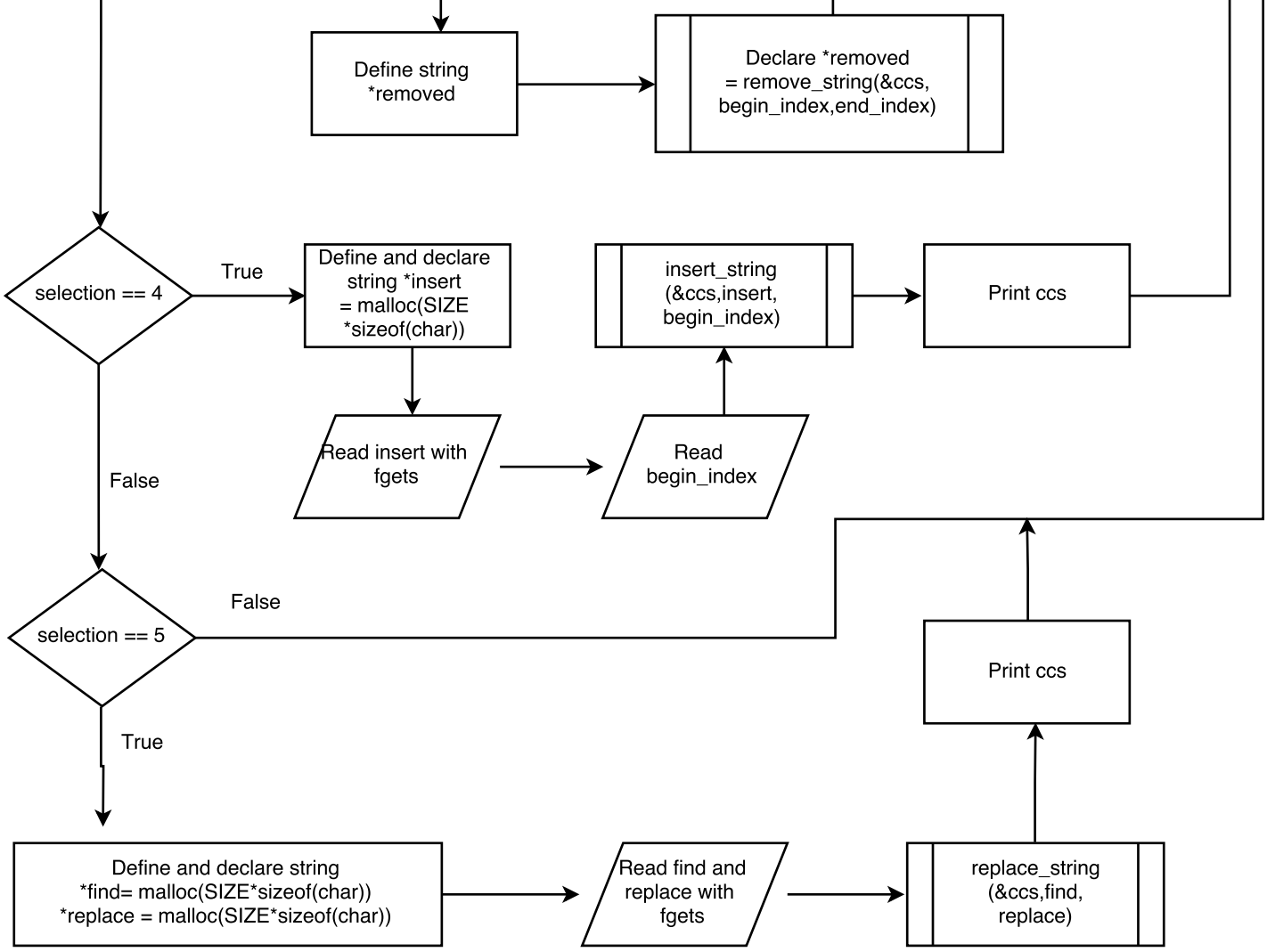


Flowchart: replace_string(char **ccs, char *find, char *replace)



Flowchart: main




Define string
*removed
Declare *removed
= remove_string(&ccs,
begin_index,end_index)
selection == 4
True
Define and declare
string *insert
= malloc(SIZE
*sizeof(char))
insert_string
(&ccs,insert,
begin_index)
Print ccs
Read insert with
fgets
Read
begin_index
False
selection == 5
False
Print ccs
True
Define and declare string
*find= malloc(SIZE*sizeof(char))
*replace = malloc(SIZE*sizeof(char))
Read find and
replace with
fgets
replace_string
(&ccs,find,
replace)