

# CPSC 327

**Teams:** None, please work individually on this project

**References:**

1. Pointers Memory lectures and projects
2. Command line parameters, lectures and projects
3. File IO lectures and projects

**Sample Code:**

See starter project on course website projects folder

See demo application that you can run from a terminal window to see what output should be

**Topics covered by this project;**

- Using pointers to manipulate char data
- Dynamic memory allocation
- Namespaces
- Command Line Arguments

**Outline**

Please create an application that reads a file (inputfile) , replaces all occurrences of a particular string (tag) with a new string (tag\_replacement), and writes that new string to a new file (outputfile).

This project has 3 parts;

1. In pointer\_proj\_small.cpp, main(...) - Commandline parameter processing and expected program flow
2. In stringmanip.cpp - Pointer based char string processing
3. In fileio.cpp – read and write char data to files

In pointer\_proj\_small.cpp, main(...) Commandline parameter processing and expected program flow  
(see constants.h for following constants)

1. If user passes 1 argument, and it is the HELP\_CHAR, the program should output HELP\_STRING1, HELP\_STRING\_2 and should then exit returning SUCCESS.
2. Otherwise if the user does not provide EXPECTED\_NUMBER\_ARGUMENTS the program should output HELP\_STRING\_2 and should then exit, returning FAIL\_WRONG\_NUMBER\_ARGS.
3. Otherwise the user has entered 4 params;
  - an inputfile,
  - an ouputfile
  - a tag to search for
  - a replacement token
4. Open and read inputfile into string1.
5. Determine number of tags in string1.
6. Calculate the amount of memory needed if tag is replaced by tag\_replacement in string1 (call it string 2).
7. Allocate a char array on the heap that is large enough to hold string2.
8. Copy string1 to string2, replacing tag with tag\_replacement.
9. Save string2 to outputfile
- 10.Delete any dynamically allocated memory

In stringmanip.cpp - Pointer based char string processing

Please provide implementations for the given functions in stringmanip.h. You must use char \* pointers only in this file, you may not use std::string to parse the character arrays. You may use functions defined in <string.h>.

HINT: The const char \* pointers that are used make it easy to get a pointer to a strings internal char representation. For instance:  
string mys = "abc";  
const char \*p = mys.c\_str();

HINT: Iterate over a const char pointer:

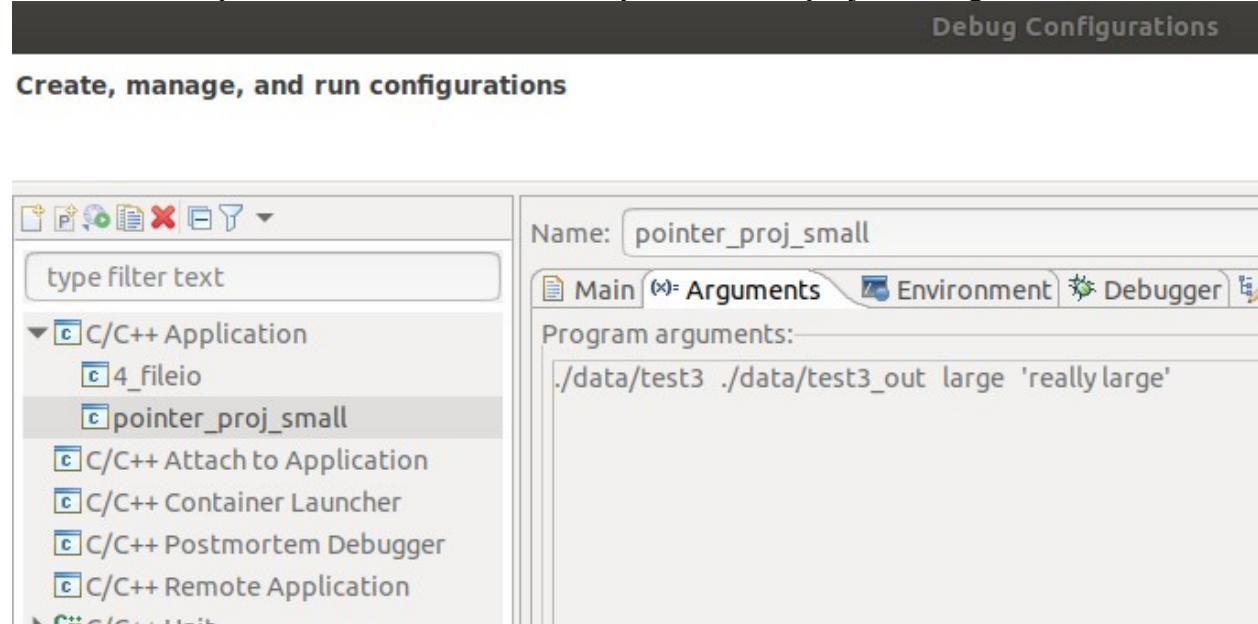
```
void replaceTagWithTagReplacement(const char *src, const char *tag...){  
:  
    while (i<len_src){  
        :  
        if(*(src+i) == tag[0])  
            :  
    }
```

In fileio.cpp – read and write char data to files

Please provide implementations for the given functions in fileio.h

### Passing parameters in eclipse

When debugging in eclipse you should set your debug configuration to pass in all command line parameters. Here is an example from this project using test3



### Assignment

Please fill in required content in;

- fileio.cpp
- stringmanip.cpp
- pointer\_proj\_small.cpp

Please submit only the above three files.

Sample runs are in the data directory with input files and it's associated output file (for instance test1 and test1\_out).

Please ensure that all parsing in stringmanip.cpp is done with pointers, no algorithms or built in string parsing allowed.

Please run valgrind on your project to ensure there are no memory errors.

### Grading:

I will compile and link your solution. I will probably use my own datasets to test regular and edge conditions.

15% Valgrind  
15% commandline args  
15% main  
15% fileio.cpp  
40 % stringmanip.cpp

Special cases:

-5      turn in more than 3 files  
-100    does not compile