58127-1 Programming in C (4 credit points / 2 credit weeks)

Please write on each paper the date and the name of the course as well as your name, student id (or social security number) and signature. The final grade of the course depends on both this exam, and the programming project.

Remember to write necessary comments to your program.

1) FUNCTION STRINGCOUNT (12 points)

Write a function `stringCount`, which has two strings as parameters. The function counts how many times the first string exists as a substring in the second. As a return value function returns the number of substrings. The substrings may overlap. In this solution you should not use any standard library functions.

2) FUNCTION APPENDLIST (14 points)

Write a function `appendList` that creates a new unordered singly linked list of strings from two singly linked lists of strings. The function copies into the new list only strings where a string given as a parameter is not a substring.

The function gets as parameters pointers to the first element of the both lists and a pointer to a string, which is not allowed to be a substring. The function returns a pointer to the first element of the new list. You are not allowed to change the original lists in any way.

Give also the declarations of the data types needed for lists. Each element of the list has a pointer to a string.

You may use standard library functions and the function stringCount from the previous question.

3) LINES (14 points)

Write a C program `longest` so that

```
longest f1 f2 ... fn
```

 reads each of the n files named `f1, f2,...,fn` in sequence, and writes the name and the length of the longest file to `stdout`. Use command line arguments to give file names. Perform error checking, and when necessary give an error message.

Good luck !

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