CSCI-311 Assignment 2

Download Lab2.tar from Blackboard. To untar, use this command:
tar -xvf Lab2.tar

This will create the directory *Lab2* with *Makefile* and the directory *tests* inside of Lab2.

You need to write the file called *main.cpp*. Implement the following problem using a recursive function.

Problem statement: Given a string ***s*** and text. Your program must do the following:

1. Find all words (strings) ***w*** in the text such that ***s*** is a substring of ***w***. For example, if *w* = "fundamentalist" and *s*= "*mental*", then *s* is a substring of *w* (i.e. *s* occurs within *w*).
2. For each such words *w,* extract *s* from *w* and concatenate the remaining prefix and suffix of *w* into a new string *z* (ignore empty strings). For example, if *w* = "fundamentalist" and *s*= "*mental*", then *z*= "**fundaist**". **Note:** If *s* occurs in *w* more than once, extract only the first occurrence of *s* from *w.* For example if *w*= "murmured" and *s* = "ur", then *z* = "**mmured**".
3. Finally, sort all such *z* words using *insertion sort.*

Specification Requirements:

1. Write *main()* function that reads a string *s* and *text* from the standard input using *cin,* and then puts all words from the text into a vector of strings.
2. Write a recursive function called ***collect*** (use this name) that takes as parameters a vector of strings (all words from the text), and a string *s*, and any other parameters you need and finds and collects all words *z.* This function does not sort words *z*.
3. Write a function called ***insertion*** that implements *insertion sort* using *function template*. This function takes a vector of items of generic type T and sorts items in non-decreasing order. The results will be in the same vector (i.e. vector will be overwritten).
4. Call the recursive function *collect* from main, and then call *insertion* function from main on vector with *z* words. Finally, print out sorted *z* words: put spaces between words, and ***endl*** at the end.

Input:
Line 1: a string ***s***
The rest of lines contain text.

Sample Input:

```
all
That is how she got her nickname, for everybody called her Cinderella. Cinderella used to
spend long hours all alone talking to the cat. The cat said, “Meow”, which really meant,
“Cheer up! You have something neither of your stepsisters have and that is beauty.” “Don’t
be alarmed, Cinderella,” said the fairy. “The wind blew me your sighs. I know you would
love to go to the ball. And so you shall!”
```

Sample Output: (here, colors are shown for convenience: prefix is shown in blue and suffix in green)

```
b. ced rey sh!"
```