

CSE2031

Lab 6 Summer 2016

In this lab, you will implement a program to find the longest match between two strings (maximum overlap between two strings).

Problem Description

Finding the maximum overlap between two strings has many applications in security, DNA sequencing, ...

To see how it works, consider the following 6 sentences, we start by finding the maximum overlap between any 2 strings

eers are paid t	(1)
aid to mak	(2)
e things work	(3)
to make things	(4)
Engineers are p	(5)

The maximum overlap is between (1) and (5) of length 10

eers are paid t	(1)
Engineers are p	(5)

Combined to produce (6). Now we remove (1) and (5) and replace them with (6)

Engineers are paid t	(6)
aid to mak	(2)
e things work	(3)
to make things	(4)

The maximum overlap is between (3) and (4) of length 8.

e things work	(3)
to make things	(4)

Combined to produce (7). Now we remove (3) and (4) and replace them with (7).

to make things work	(7)
Engineers are paid t	(6)
aid to mak	(2)

The maximum overlap is between (7) and (2) of length 6

```
    to make things work      (7)
aid to mak                   (2)
```

Combined to produce (8). Now we remove (7) and (2) and replace them with (8)

```
        aid to make things work (8)
Engineers are paid t           (6)
```

The only overlap is between (8) and (6) of length 5. Combined to produce (9)

```
Engineers are paid to make things work (9)
```

Note that we are considering the overlap at the boundary of the string only. That is a match from the beginning of the first string to the end of the first or the second string.

Practice

Write a C program to read 2 strings from the standard input. The two strings are terminated by a new line (use fgets).

Find the length of the maximum overlap and combine these two strings as shown above.

To make it easy on you, write two programs

L5A.c that displays on the standard output a single integer that is the maximum overlap between these 2 strings followed by a new line.

L5B.c similar to the above program, but adds on a separate line the combination of these two strings as shown above **followed by a new line.**

Sample input 1:

```
1234
abcd1234cdef
```

Sample output 1:

```
4
abcd1234cdef
```

Sample input 2:

```
abcdef
123
```

Sample output 2:

```
0
abcdef123
```