**COMP 1917 Computing 1  
Session 2, 2014**

**Tutorial - Week 7**

**String Functions**

**This page was last updated: 09/09/2015 07:05:42**

**Presentation Topic for This Week**

Briefly describe the [Vigenere Cipher](http://en.wikipedia.org/wiki/Vigenere_cipher), and how it can be broken.

1. Suppose a program myprog has the following prototype for the main function
2. int main(int argc, char \*argv[])

What are the values of argc and argv[] when the program is invoked from the command line by

./myprog -a -bc junk

1. Recall that a *string* is an array of characters, with the special character '\0' used to mark the end of the string.

Write a function void reverse\_string(char s[]) which reverses a string "in place". For example, the string "live on" would be converted to "no evil". Try to do it by just permuting the elements in the string itself (i.e. without declaring another array inside the function).

1. Write a function void substr(char s[], char d[], int lo, int hi) where given a string s[], we want to extract from s[] a substring starting at lo and ending at hi inclusive. The resultant substring is to be returned in the character array d[]. Checks must be made to ensure that lo is within the length of s[]; if not, then d[] is an empty string. If s[] is shorter than specified by hi, then d[] contains the substring ofs[] starting at lo to the '\0' character.
2. Write your own version of the library function strstr(), which the on-line manual defines as follows:
3. char \*strstr( char s[], char d[] )

The strstr() function finds the first occurrence of the substring d in the string s. If d is an empty string, s is returned; if doccurs nowhere in s, NULL is returned; otherwise a pointer to the first character of the first occurrence of d is returned.

Note: Later in your studies, you might learn more sophisticated ways of implementing the strstr() function which are faster, such as the[Boyer-Moore algorithm](http://en.wikipedia.org/wiki/Boyer-Moore_string_search_algorithm) and the [Knuth-Morris-Pratt algorithm](http://en.wikipedia.org/wiki/Knuth-Morris-Pratt_algorithm) (but these are beyond the scope of this course).

**Presentation Topic for Week 8**

Briefly describe the 2012 attempt by George Church and Sriram Kosuri at Harvard University to encode a book in DNA and read it out again. Do you think we will be programming with molecular computers in the foreseeable future?