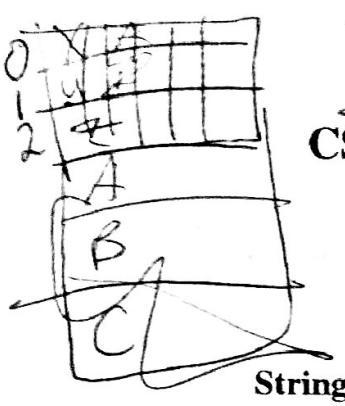

CSCI 101: Fundamentals of Computer Programming

Lab 11: Strings & Sorts

Spring 2006

Strings

There are no string datatypes defined in C, and thus it is simulated using character arrays. However, traditional operators such as the assignment operator "=", addition operator "+", comparisons ">, <, >=" and so will not work on arrays. This is inconvenient as we often come across situations when we would like to perform those operations.

The `string.h` header file provides an array of predefined functions that simulates such operations on strings. The table below describes the more frequently used functions. More information can be found at: *http://www.cplusplus.com/ref/cstring/*

```
char s1[10] = "String 1";
char s2[10] = "String 2";
char s3[10];
```

Assignment	`strcpy(s3,"String 3");`	S3 = "String 3"
Concatenation	`strcat(s3,"concatenated");`	S3 = "String 3 concatenated"
Comparison	`strcmp(s1, s2);`	<0 if s1 < s2, 0 if s1 = s2, >0 if s1 > s2

Table of functions in string.h

The sample program below should clearly illustrate the use of these three functions. Note that you would need to include the `string.h` header file at the top of your program. You may download this program at *http://scf.usc.edu/~csci101/labs/lab11string.c*

```
#include <string.h>
#include <stdio.h>

int main(){
  char name1[20];
  char name2[20];
  int val;

  printf("\nNames after initialization: \n");
  printf("name 1 : %s\n", name1);
```

```
    printf("name 2 : %s\n", name2);


    strcpy(name1, "Mary");
    strcpy(name2, "Arthur");

    printf("\nNames after assignment: \n");
    printf("name 1 : %s\n", name1);
    printf("name 2 : %s\n", name2);

    strcat(name1, " Jane");
    strcat(name2, " Doyle");

    printf("\nNames after concatenation: \n");
    printf("name 1 : %s\n", name1);
    printf("name 2 : %s\n", name2);

    val = strcmp(name1, name2);
    printf("\nComparison between name1 & name2: \n");
    printf("val = %d\n", val);

    return 0;
}
```

Exercise

For this week's lab exercise, you will incorporate the functions from `string.h`. Download the database file from *http://scf.usc.edu/~csci101/labs/lab11database.dat*. There are three columns of data, where the first column corresponds to the first name, the second the last name, and the third the ID of the person. You are to write a program that does the following:

a) Scan all the data from the file into appropriate data structures
b) Concatenate the first and last names into a single string
c) Print the single string names with their associated ID numbers

Your TA/LA will show you a sample output for this exercise. Once you are done, show your TA/LA your completed program for lab credit. Feel free to implement additional features on your program.

F_Name [7] [10]

L_Name [4] [5]

abc

char fname [8]

(name