HW #12: Strings

Due dates:

Part I: Monday Apr 11th, at the beginning of the class. Make sure to write your name and msunetid on your paper.
Part II: Sunday Apr 10th, 11:59 pm through Handin (https://secure.cse.msu.edu/handin)

Part I: Comprehension Questions

1. Consider the following statements. What is the output if the user enters the underlined string: *100catsin1 2hats*? (3 pts)

```
int a, b;
char str[20];
scanf("%d%s%d", &a, str, &b);
printf("a = %d, b = %d, str = %s\n", a, b, str);
```

a = 100, b = 2, str = catsin1

2. Consider the following array declarations. (4 pts)

```
char x[25], y[25], z[25];
```

Add statements to:

- Read two strings from the user into x and y.
- Copy the one that comes first in lexicographical order into z.
- Print z to the standard output.

```
scanf("%s%s", x, y);

if (strcmp(x, y) < 0)
        strcpy(z, x);
else
        strcpy(z, y);

printf("%s", z);
```

3. What is the value of str1 after each statement (lines 2-5) (2pts):

char str1[100];	
strcpy(str1, "The Force Awakens");	The Force Awakens
str1[3] = '\0';	The
strcpy(str1 + 3, "!");	The!
strcat(str1, "Again");	The!Again

4. Consider the following string, write a statement to print the substring starting at *never* : (1 pt)

   char markTwainQ[200] = “I have never let my schooling interfere with my education” ;
   printf(“%s”, markTwainQ + 7);

Part II: Lab Assignment

Getting started

Change into the cse220 directory. Create a new directory called lab12.
Change into the new directory. Implement the program below in your lab12 directory.

String manipulation

Create a function removeWhite(const char *str1, char *str2) that removes all spaces inside str1 and stores the resulting string in str2.

Create a function substring(const char *big, const char *small) that takes two strings as parameters and returns 1 if the string small is included in the string big (without using string.h functions strstr or strchr)

Write a program (strProcessing.c) that uses the two functions you wrote. Your program should first ask the user to enter a string (possibly containing spaces). It should then use removeWhite to compute the new corresponding string without spaces and print it to the standard output.

Next, your program should ask the user to enter two strings, read them and outputs one of the following statements accordingly:

The string XXXX contains the string YYYY.
The string XXXX does not contain the string YYYY.

Where XXXX and YYYY are replaced by the actual strings entered by the user.

Submit your source code strProcessing.c through Handin.

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

#define MAX 250

void removeWhite(const char *str1, char *str2);
int substring(const char *big, const char *small);

int main(void) {
	char str[MAX], strNoWhite[MAX];
	printf("Enter a string:\n");
	gets(str);
	removeWhite(str, strNoWhite);
	printf("%s\n%s\n", str, strNoWhite);

	char big[MAX], small[MAX];
	printf("Enter two strings:\n");
	gets(big);
	gets(small);
	int result = substring(big, small);
	printf("RESULT = %d\n", result);

}

void removeWhite(const char *str1, char *str2) {
	while (*str1 != '\0') {
		if (*str1 != ' ') {
			*str2 = *str1;
			str2++;
		}
		str1++;
	}
	*str2 = '\0';
}

int substring(const char *big, const char *small) {
	size_t lenBig = strlen(big);
	size_t lenSmall = strlen(small);

	//Return 0 if small does not fit in big
	if (lenSmall > lenBig)
		return 0;

	int idx, ids, result;
	//For each character in big, check if small matches starting at that character
	for (idx=0; idx < lenBig - lenSmall + 1; idx++) {
		for (ids = 0; ids < lenSmall; ids++) {
			if (*(big + idx + ids) != *(small + ids)) {
```

```
                        result = 0;    //small does not start at idx in big
                        break;
                } else {
                        result = 1; //A match so far
                }
        }
        //If match found, no need to look further
        if (result == 1)
                break;
    }

    return result;
}
```

Handin

The ‘‘handin’’ system has options to allow you to review your files online and to download them. You Should always verify that you submitted the correct files and they were received by the handin system. You can submit files as many times as you like for a particular assignment. Handin will only keep the last version of each file. Remember to submit your files prior to the deadline as you won’t be able to use handin if the deadline has passed.