Course: ENSF 614 - Fall 2023

**Lab #:** Lab 2

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Part A

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```
#include <iostream>
#include <cstring>
using namespace std;
  char str1[7] = "banana";
  const char str2[] = "-tacit";
  const char* str3 = "-toe";
  char str5[] = "ticket";
  char my_string[100]="";
  int bytes;
  int length;
  length = (int) my_strlen(my_string);
  cout << "\nLine 1: my_string length is " << length;</pre>
  bytes = sizeof (my_string);
  cout << "\nLine 2: my_string size is " << bytes << " bytes.";</pre>
  strcpy(my_string, str1);
  cout << "\nLine 3: my_string contains: " << my_string;</pre>
  length = (int) my_strlen(my_string);
  cout << "\nLine 4: my_string length is " << length << ".";</pre>
  my_string[0] = '\0';
  cout << "\nLine 5: my_string contains:\"" << my_string << "\"";</pre>
  length = (int) my_strlen(my_string);
  cout << "\nLine 6: my_string length is " << length << ".";
```

```
bytes = sizeof (my_string);
cout << "\nLine 7: my_string size is still " << bytes << " bytes.";</pre>
my_strncat(my_string, str5, 3);
cout << "\nLine 8: my_string contains:\"" << my_string << "\"";</pre>
length = (int) my_strlen(my_string);
cout << "\nLine 9: my_string length is " << length << ".";</pre>
my_strncat(my_string, str2, 4);
cout << "\nLine 10: my_string contains:\"" << my_string << "\"";</pre>
my_strncat(my_string, str3, 6);
cout << "\nLine 11: my_string contains:\"" << my_string << "\"";</pre>
length = (int) my_strlen(my_string);
cout << "\nLine 12; my_string has " << length << " characters.";</pre>
cout << "\n\nUsing my_strcmp: ";</pre>
cout << "\n\"ABCD\" is less than \"ABCDE\" ... my_strcmp returns: " <<
my_strcmp("ABCD", "ABCDE");
cout << "\n\"ABCD\" is less than \"ABND\" ... my_strcmp returns: " <<
my_strcmp("ABCD", "ABND");
cout << "\n\"ABCD\" is equal than \"ABCD\" ... my_strcmp returns: " <<
my_strcmp("ABCD", "ABCD");
cout << "\n\"ABCD\" is less than \"ABCd\" ... my_strcmp returns: " <<
my_strcmp("ABCD", "ABCd");
cout << "\n\"Orange\" is greater than \"Apple\" ... my_strcmp returns: " <<
my_strcmp("Orange", "Apple") << endl;</pre>
```

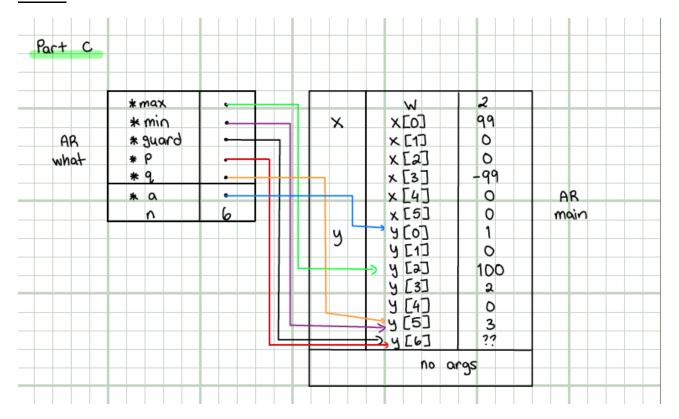
```
int my_strlen(const char *s) {
  while (s[i] != '\0') {
void my_strncat(char *dest, const char *source, int n) {
  int dest_len = my_strlen(dest);
  for (i = 0; i < n \&\& source[i] != '\0'; i++) {
     dest[dest_len + i] = source[i];
  dest[dest_len + i] = '\0';
#include <iostream>
int my_strcmp(const char* str1, const char* str2) {
  while (*str1) {
     sum1 += static_cast<int>(*str1);
```

```
while (*str2) {
    sum2 += static_cast<int>(*str2);
    str2++;
}
return sum1 - sum2;
}
```

## Output:

```
Line 1: my string length is 0
Line 2: my string size is 100 bytes.
Line 3: my string contains: banana
Line 4: my_string length is 6.
Line 5: my string contains:""
Line 6: my string length is 0.
Line 7: my string size is still 100 bytes.
Line 8: my string contains:"tic"
Line 9: my string length is 3.
Line 10: my_string contains:"tic-tac"
Line 11: my string contains: "tic-tac-toe"
Line 12; my_string has 11 characters.
Using my strcmp:
"ABCD" is less than "ABCDE" ... my_strcmp returns: -69
"ABCD" is less than "ABND" ... my_strcmp returns: -11
"ABCD" is equal than "ABCD" ... my_strcmp returns: 0
"ABCD" is less than "ABCd" ... my_strcmp returns: -32
"Orange" is greater than "Apple" ... my strcmp returns: 106
(base) Yajurs-Macbook:Lab 2 yajurvashisht$
```

Part C



## Part E

```
#include "lab2exe_E.h"

cplx cplx_add(cplx z1, cplx z2)
{
    cplx result;

result.real = z1.real + z2.real;
    result.imag = z1.imag + z2.imag;
    return result;
}

void cplx_subtract(cplx z1, cplx z2, cplx *difference) {
    difference->real = z1.real - z2.real;
    difference->imag = z1.imag - z2.imag;
}

void cplx_multiply(const cplx *pz1, const cplx *pz2, cplx *product) {
    product->real = (pz1->real * pz2->real) - (pz1->imag * pz2->imag);
    product->imag = (pz1->real * pz2->imag) + (pz1->imag * pz2->real);
}
```