**Strings and Pointers in C**

**https://github.com/CYBS-3113/string-and-pointer-operations-djdcybersecurity**

A screenshot of a computer

Description automatically generated

**Overview**

This assignment combines the concepts of **strings** and **pointers** in C programming. You will manipulate strings, explore pointers, and demonstrate your understanding of their relationship in various scenarios.

**Objectives**

* Work with C strings and pointers.
* Use string functions to test and manipulate data.
* Use pointers for operations like searching, copying, and reversing.
* Understand dynamic memory allocation using pointers.

**Instructions**

**1. Implement the Following Functions**

Open the provided file strings\_pointers.c and implement the following functions:

* **string\_to\_upper**:
  + Converts all lowercase characters in a string to uppercase using the toupper function.
  + The input string should be modified in place.
* **find\_substring**:
  + Searches for a substring in a given string using pointers.
  + Returns the pointer to the start of the substring or NULL if not found.
* **dynamic\_string\_copy**:
  + Dynamically allocates memory for a string copy using malloc.
  + Copies the original string into the newly allocated memory and returns a pointer to it.
* **reverse\_array**:
  + Reverses the contents of an integer array using pointers.
* **pointer\_to\_max**:
  + Returns a pointer to the maximum value in an integer array.

**2. Write a main Function**

The main function should:

* Convert a string to uppercase and print it.
* Search for a substring and print its location.
* Create a dynamic copy of a string and print it.
* Reverse an integer array and print the result.
* Find the maximum value in an array and print it.

**Example Input**

String: "Hello, World!"

Substring to find: "World"

Integer array: [1, 2, 3, 4, 5]

**Example Output**

Original string: Hello, World!

Uppercase string: HELLO, WORLD!

Substring "World" found at: World!

Dynamic string copy: Hello, World!

Original array: 1 2 3 4 5

Reversed array: 5 4 3 2 1

Maximum value in array: 5