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### **Program Summary:**

Lab2-Q1.py: I autogenerate an input file with a bank of words to choose from. Then, I number them and write them to the output file.

isUnique.cpp: method1() is a brute force method, that for each character in the word loops through the entire rest of the word to see if it is a repeat, and if it is, return false. My method, method2(), initializes an integer array (but really it is a Boolean array), which is initialized to all 0s as a default. I convert all the characters to their ASCII codes, including converting upper case characters for lower case, so that my method is not case sensitive. I then give each ASCII code an index in the array, and upon converting a character to its ASCII code, check if its corresponding index is 0. If it isn't, turn it to 1, and if it is already 1, return false.

URLify.cpp: I iterate down from the last true character in the array (ignoring the padding of spaces at the backend of the array). Whenever a space is found, I first create a while loop to find how many non-space characters are found after that space. Then, I start from the last of those non-space characters, move it 2 elements to the right, and iterate down until I finally move the character right after the space. Having created 2 non-used positions in my array, I convert the space to a %, the 1<sup>st</sup> non-used position to a 2, and the 2<sup>nd</sup> non-used position to a 0.

**References:** none used

### **Instructions:**

Python Section:

- Lab2-Q1.py: Just run the code! Input file is autogenerated by my program (with test values) as in.txt, output file is out1.txt. Set the constant LEN to be whatever number of input values you want to generate (so 500).

C++ Section:

- isUnique.cpp: Create files of your desired names, one for input and one for output. Put a bunch of random strings separated by lines in the input file. Run the code in the format:  
\$ g++ isUnique.cpp  
\$ ./a.out <input file> <output file> <method number>
- URLify.cpp: Either import the function using #include URLify.cpp or just uncomment my main function to test it.