Program Name- To change the gender of the string, i.e – toggle all the gender-specific words in the input string.

Project Category- Strings, Hashmaps

Programming Paradigm Used- String Manipulation

Examples-

Suppose our input string is – "she is my sister". Then there are two gender-specific words- "she" and "sister" . When we toggle these words to their respective counterparts- "he" and "brother", then our input string becomes – "he is my brother". We say that the gender of the string has been changed.

Algorithm-

We maintain a hash-map which maps all the "female" words to the "male" words and all the "male" words to "female" ones. Then for each word in the string, we check whether this is a gender-specific word or not. If it is then we swap this word with its counterpart word. Else we don't swap this word. All the words gets concatenated in a new string, which at the end is printed and is our required string.

Time Complexity-

$O(N^2)$, where N is the length of the string, as the '+'/ 'append' operator of the string can take upto O(N) time and assuming that lookup in the dictionary takes O(1) worse case time.

Auxiliary Space-

Apart from the dictionary that maps all the words to its counterpart, we declare O(N) space for the new string, where N is the length of input string.

Scope for Improvements-

We can add more words and their counterparts in the dictionary to increase the accuracy of the program. For example, we can add – "actor , actress" , "god , godess" to our dictionary.