**Haskell Project**

**Submitted By:**

Nourhan Ramadan

Esraa Salah

**Helper Functions:-**

1-occurenceCount a b : counts the number of occurrences of character a in string b.

2-removeOccurences x :removes all duplicates in String x

3-helperRemoveOccurences x y : removes all duplicates of char x in String y

4- pairGenerator x y : generates a List of pairs with the number of occurences of each char in x in y as the first element and the char in x as the second element

5-insertionSort x : sort x in descending order according to the first element in each pair in x

6-helperInsertionSort x y : puts the pair x in its right place in List y

7-occurenceGenerator x y : generates a string of all charcters that comes after character x in List of strings y including duplicates

8- helperOccurenceGenerator x y : generates a string of all charcters that comes after character x in string y including duplicates

9- cellGenerator a : generates a pair whose first element is char a and second element is a list of pairs indicating the chars that came after a and their corresponding frequencies

**Main Functions:-**

1-makeStatsList : using the helper method helperMakeStatsList this function works as follows :-

i-for every char in “chars” a string of all characters following it including duplicates.  
ii-another string is generated which contains the same characters generated in ‘I’ but with no duplicates.

iii-using the last two steps a list is generated for each character , this list contains all characters coming after my specific character and their frequencies .

iv-A List of pairs(makeStatsList output) of a character and its corresponding list of characters.

2-Compose : This function works in a recursive way as follows :-

i-for the next character to be generated , We generate the occurenceGenerator string of the current character which has duplicates so it handles the probability weight part.

Ii-making the next character generated in part I our character and doing the same steps again till we reach the total size requested.