The time complexity of the first function make_word is O(N) where N is the length of the random word that has to be generated.

The time complexity of the second function, load_words is O(N) where N is the total number of words in the text file (“sowpod.txt”).

Also, the usage of unordered_set reduces the complexity as it is of a constant order while the complexity of a set is log(N). An unordered_set is implemented using a hash table hence, the insertion is randomized. All operations on the unordered_set takes constant time O(1). In the worst case scenario it takes O(N), as it depends on the used hash function, but it generally provides a constant time lookup.

The time complexity of the main function depends on the number of meaningful words(N) we want to generate and the probability of generating a meaningful word using random. The run-time characteristics also depends on the number of meaningful words with the required length as the probability of generating a meaningful word changes with length of the word. As the number of meaningful words with a given length increases N can be neglected as it is aymptotic.