CO322: Data Structure and Algorithms

LAB 04

Exercise:

- Runtime complexity =

```
                                                    No of times
word = set(input())                                 1.  1
Dictionary = open("words.txt", 'r').readlines()     2.  1

for item in Dictionary:                             3.  N
    wordChars = set(item)                           4.  1
    wordChars.remove('\n')                          5.  1
    notInChar = 0                                   6.  1

    for char in wordChars:                          7.  n

        if not char in word:                        8.  1
            notInChar = 1                           9.  1
            break                                   10.  1

    if notInChar == 0:                              11.  1
        print(item, end=' ')                        12.  1
```

Therefore run time complexity:

Time sum of list = 1+1 + (N+1+1+1+1+1) x (n+1+1)

= 2 + (N+5) x (n+2)

Ignoring constant = N x n + c

T (n) = N x n + c

Therefore the runtime complexity is O (N^2)

- Space complexity:

  In this program it does not use large extra memory such as when using merge sorting.