LAB ASSIGNMENT3

Submitter's Details :

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link to github repo : https://github.com/karan0299/CSN-261ASSIGNMENT

Problem 1

Create a dictionary using Trie data structure (without using STL) having words and their meanings. You need to read the words and their respective meanings from a CSV file (uploaded in Piazza, named as TrieInput.csv), where 1st column is for words and 2nd column shows its meaning.

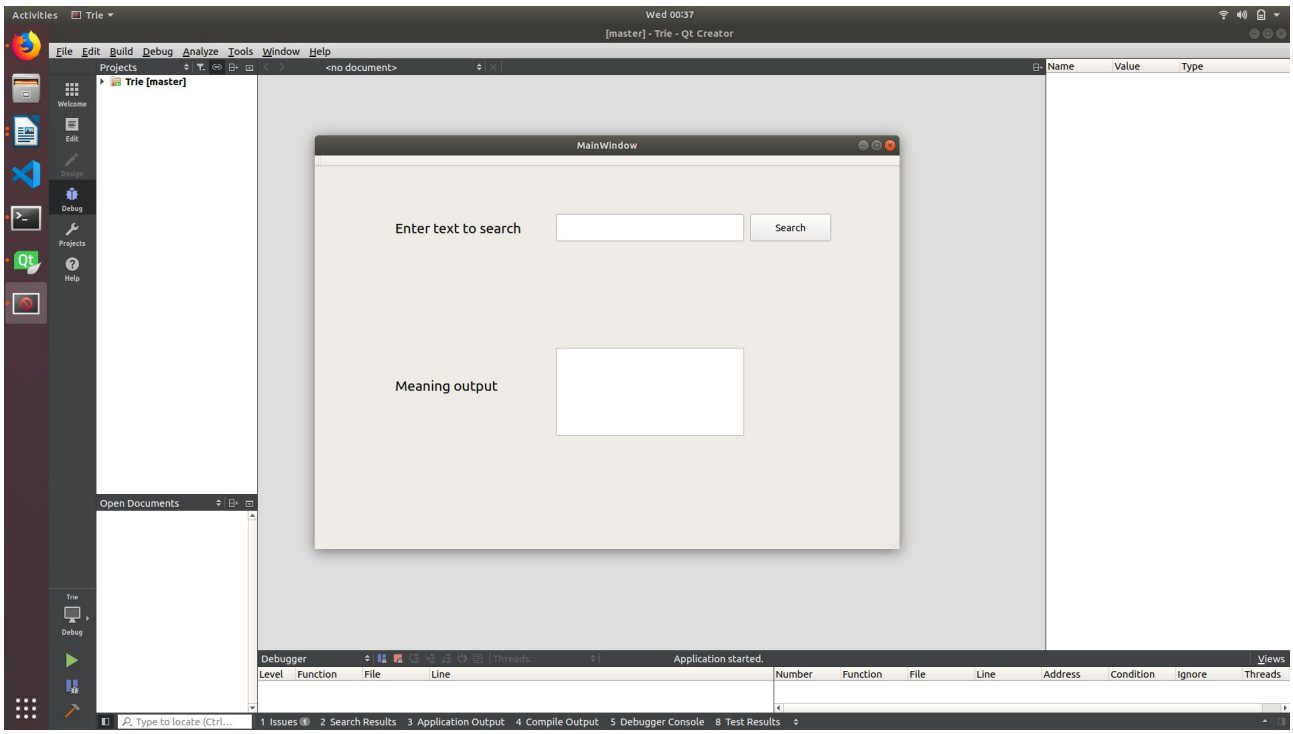
Data Structures used :

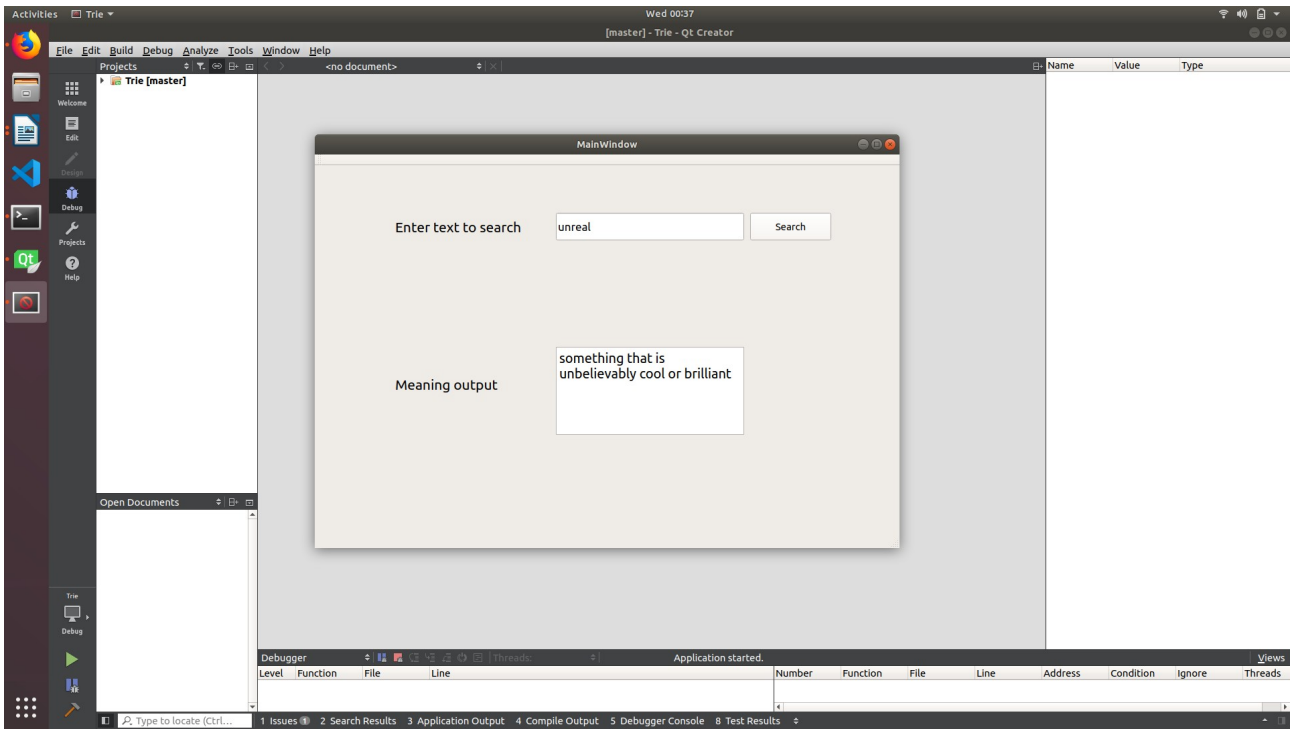
i) Trie Data Structure

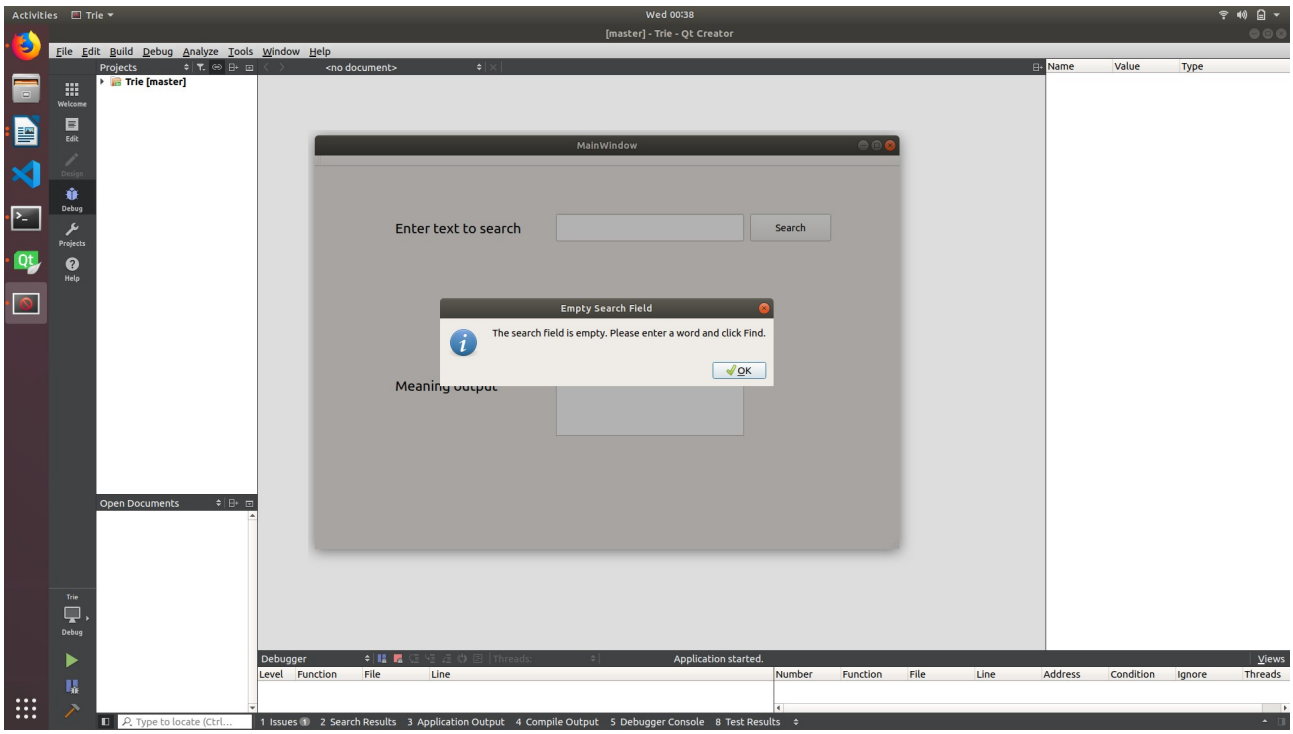
Algorithms used :

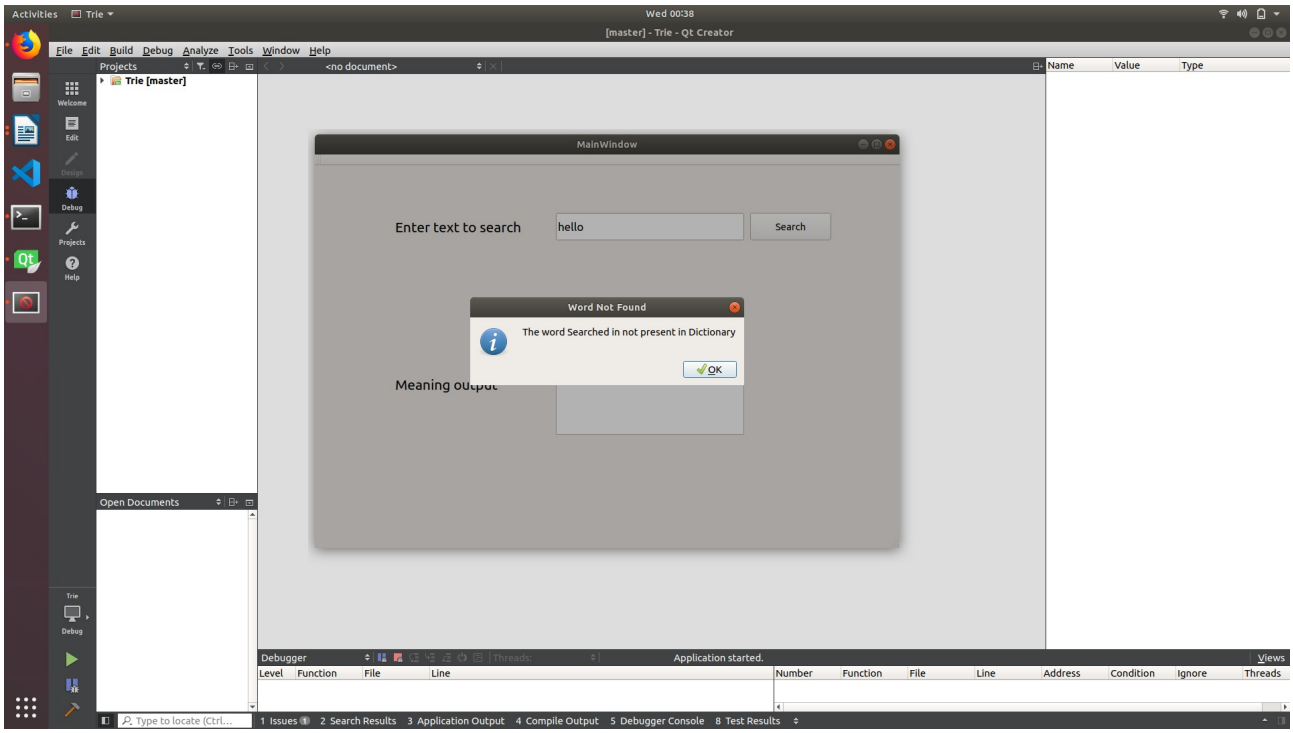
i) Insertion in Trie
ii) Search in Trie

Snapshots of running Program:


Activities
Trie
Wed 00:37
[master] - Trie - Qt Creator
File Edit Build Debug Analyze Tools Window Help
Projects
<no document>
Trie [master]
Welcome
Edit
Design
Debug
Projects
Help
MainWindow
Enter text to search
Search
Meaning output
Open Documents
Debugger
Application started.
Level Function File Line
Number Function File Line Address Condition Ignore Threads
Type to locate (Ctrl...
1 Issues 2 Search Results 3 Application Output 4 Compile Output 5 Debugger Console 8 Test Results


Activities
Trie
Wed 00:37
[master] - Trie - Qt Creator
File Edit Build Debug Analyze Tools Window Help
Projects
<no document>
Trie [master]
Welcome
Edit
Design
Debug
Projects
Help
MainWindow
Enter text to search
unreal
Search
Meaning output
something that is
unbelievably cool or brilliant
Open Documents
Debugger
Application started.
Level Function File Line
Number Function File Line Address Condition Ignore Threads
Type to locate (Ctrl...
1 Issues 2 Search Results 3 Application Output 4 Compile Output 5 Debugger Console 8 Test Results


Activities
Trie
Wed 00:38
[master] - Trie - Qt Creator
File Edit Build Debug Analyze Tools Window Help
Projects
<no document>
Trie [master]
Welcome
Edit
Design
Debug
Projects
Help
MainWindow
Enter text to search
Search
Empty Search Field
The search field is empty. Please enter a word and click Find.
OK
Meaning output
Open Documents
Debugger
Application started.
Views
Level Function File Line
Number Function File Line Address Condition Ignore Threads
Type to locate (Ctrl...
1 Issues 2 Search Results 3 Application Output 4 Compile Output 5 Debugger Console 8 Test Results

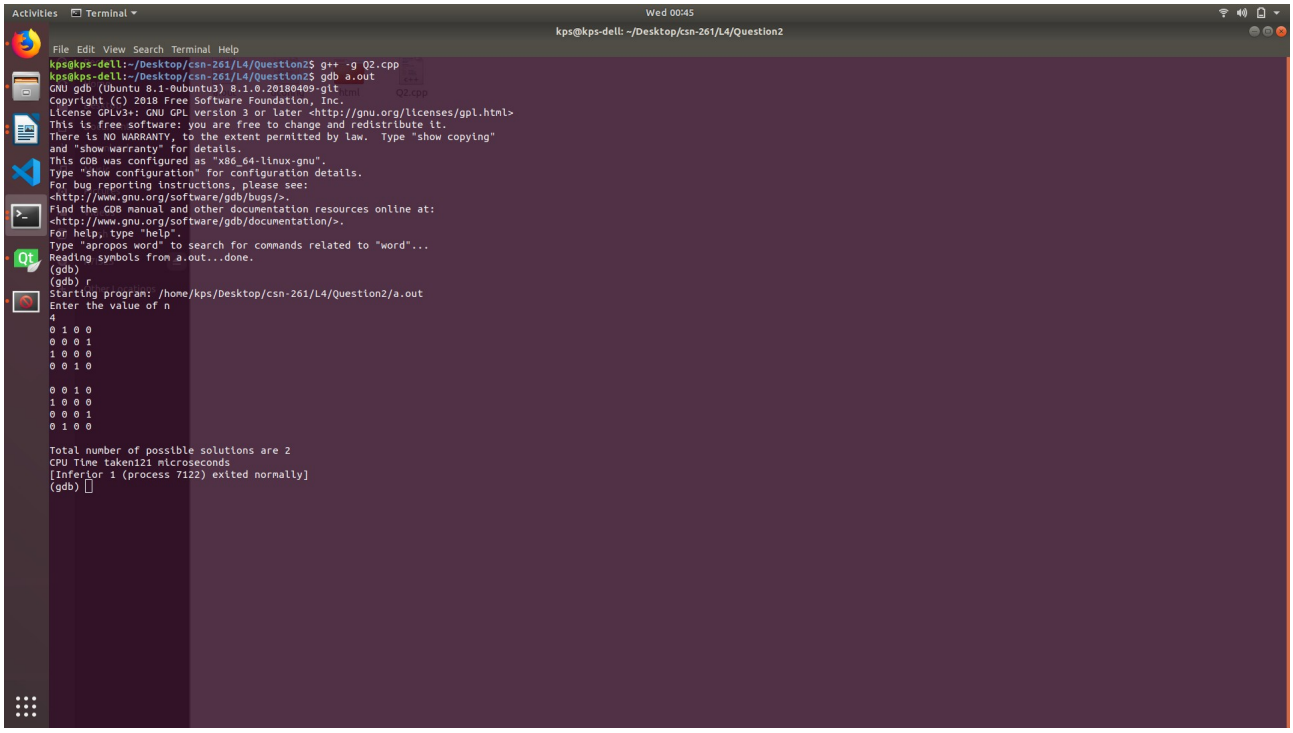

Activities
Trie
Wed 00:38
[master] - Trie - Qt Creator
File Edit Build Debug Analyze Tools Window Help
Projects
<no document>
Trie [master]
Welcome
Edit
Design
Debug
Projects
Help
MainWindow
Enter text to search
hello
Search
Word Not Found
The word Searched in not present in Dictionary
OK
Meaning output
Open Documents
Debugger
Application started.
Views
Level Function File Line
Number Function File Line Address Condition Ignore Threads
Type to locate (Ctrl...
1 Issues 2 Search Results 3 Application Output 4 Compile Output 5 Debugger Console 8 Test Results

Problem 2:
Implement N Queens problem to show all the possible combinations inN x Nbinary matrix and to display the total number of such combinations at the end, where 1 represents the position of N queens in theN x N matrix and remaining cells are represented by 0. A sample output for N=4 is shown below

Data Structures used :
i) 2D array

Algorithms used :
i) *Backtracking Algorithm* :The idea is to place queens one by one in different columns, starting from the leftmost column. When we place a queen in a column, we check for clashes with already placed queens.

Snapshots of running Program:



Problem 3:
Given an integer array having N number of elements, write a C++ programausing hash map (using STL) to find the length of the largest subarray from the given input array, where thesummation of the elements of the subarray is equal to n. In the output, if any solution exists then print the starting and ending index (with respect to given input array) of the largest subarray and also print its length. Otherwise, print “Not Found”, as described in the following output.

Data Structures used :
i) unordered hash map
ii)vector

Algorithms used :
i) Store the cummulative sum in map upto index i and sum as key and i as value.

Snapshots of running Program: