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**4. C++ Assignment**

**Find the Word:**

**Here is the code:**

#include <iostream>

#include <sstream>

#include <fstream>

#include <string>

#include <vector>

using namespace std;

const int ALPHABET\_SIZE = 26;

// trie node

struct TrieNode

{

struct TrieNode \*children[ALPHABET\_SIZE];

// isEndOfWord is true if the node represents

// end of a word

bool isEndOfWord;

string frequency;

};

// Returns new trie node (initialized to NULLs)

struct TrieNode \*getNode(void)

{

struct TrieNode \*pNode = new TrieNode;

pNode->isEndOfWord = false;

for (int i = 0; i < ALPHABET\_SIZE; i++)

pNode->children[i] = NULL;

return pNode;

}

// If not present, inserts key into trie

// If the key is prefix of trie node, just

// marks leaf node

void insert(struct TrieNode \*root, string key,string frequency)

{

struct TrieNode \*pCrawl = root;

for (int i = 0; i < key.length(); i++)

{

int index = key[i] - 'a';

if (!pCrawl->children[index])

pCrawl->children[index] = getNode();

pCrawl = pCrawl->children[index];

}

// mark last node as leaf

pCrawl->isEndOfWord = true;

pCrawl->frequency=frequency;

}

// Returns true if key presents in trie, else

// false

string search(struct TrieNode \*root, string key)

{

struct TrieNode \*pCrawl = root;

for (int i = 0; i < key.length(); i++)

{

int index = key[i] - 'a';

if (!pCrawl->children[index])

return "";

pCrawl = pCrawl->children[index];

}

if (pCrawl != NULL && pCrawl->isEndOfWord)

return pCrawl->frequency;

}

// Driver

int main()

{

// Input keys (use only 'a' through 'z'

// and lower case)

vector<string> row;

char c=',';

string wsearch,word,line,res;

fstream fin;

int f=0;

fin.open("EnglishDictionary.csv",ios::in);

struct TrieNode \*root = getNode();

getline(cin,wsearch);

// Construct trie

while(fin.good())

{

row.clear();

// read an entire row and

// store it in a string variable 'line'

getline(fin, line);

// used for breaking words

stringstream s(line);

// read every column data of a row and

// store it in a string variable, 'word'

while (getline(s, word, c)) {

// add all the column data

// of a row to a vector

row.push\_back(word);

}

insert(root,row[0],row[1]);

res=search(root,wsearch);

if(res!="")

{

f=1;

break;

}

}

if(f==1)

cout<<"Yes,"<<res<<"\n";

else

cout<<"No\n";

return 0;

}

**7. Business Intelligence Assignment:**

**1) With Jio coming in, we have seen an influx of internet users from Tier 2 and Tier 3.**

**Video/Content apps like Youtube and Tiktok have seen a huge growth while**

**Amazon/Flipkart haven’t seen similar.**

**What could be the reason for it?**

**Ans.)** India’s internet growth story has largely come from Reliance Jio. Jio has changed the consumption habits for hundreds of millions of consumers. "More people are using smartphones as their first device, unlike developed markets where the PC is the first device. And we have seen a huge growth of internet users in video/contents apps like Youtube and tiktok. Before jio YouTube content from India would hardly had views ranging about less than average of 50k for most popular videos and normal Unpopular YouTuber with content had views ranging around 2k to 5k. But after jio The same Video would easily have views ranging around 50 M within month of it's upload. And before jio the TIK TOK even didn’t exist but after jio a guy with no talent became stars. FOR EXAMPLE: Priya Varrier With A Wink Creates Sensation and followers. This is all due to cheap providing internet like JIO. But E-commerce sites like AMAZON/FLIPKART haven’t seen this type of huge growth. Lower data prices and improved data speeds will enable higher consumption and better online experience for consumers. Wider reach of Internet and more people upgrading from feature phones to smartphones is good news for online marketplaces.” To be sure, start-ups and investors attracted by India’s massive Internet user base have been disappointed in the past. While the number of Internet users in India is growing rapidly, that of transacting users (or online shoppers) isn’t increasing at the same rate. The large Internet base in India looks attractive but making money from users is another matter altogether. Still, Jio will help in improving Internet speed and consistency, the lack of which is believed to have held back the expansion of Internet businesses. This is the reason why Youtube and Tiktok have increased there users and we can say that Amazon/Flipkart sites also have users increased but making money and purchasing things from them is other matter. So that’s why they are not much profitable with coming of JIO.

**2) New Onboarding Design at Nymtra**

**Ans.)** Well, if we start reviewing the product it is very innovative ideas that have been added to the app. Adding different new features in the app will certainly benefit everyone and will give access to a lot of crowd from all across the world. Many people can now see the app of our company without even logging in the page this will make us aware that who all are really impressed by our app. Highlighting some things always gives a bigger impression of that product and will help in catching the eye of a customer. Adding 10,000 products will certainly help in increasing the selling of our product as now there is a huge variety of new products and people can get them in at a very cheap price.

If we review the May month and the June month there is certainly an increase in the New Installs, First time buyers , Revenue from FTB’s and FTB’s who made a second purchase . Now if we take account of the July month there is a slight rise in the in all the aspects of the users (New Installs, First time buyers , Revenue from FTB’s and FTB’s who made a second purchase).

There is a sharp rise in the August month in New Installs, First time buyers, Revenue from FTB’s and FTB’s who made a second purchase as this has been the highest growth in a month in all the factors as compared to other months . Then in the month of September and October there is a steady increase in New Installs, First time buyers and Revenue from FTB’s but there is a decrease in the FTB’s who made a second purchase.

Overall, there is a increase in the New Installs, First time buyers and Revenue from FTB’s from the May month to October but there is a decrease in the FTB’s who made a second purchase in October still all these new ideas has helped the company in gaining more and more new users in every month so this is a successful on boarding revamp as New Installs, First time buyers , Revenue from FTB’s and FTB’s who made a second purchase is increasing with every month.

**3) Personalised Recommendations at FilmiStar:**

**a) What will be the change in user behaviour once this feature is introduced?**

Ans.) The feature will allow users to share the list of movies to another user/users. This helps in satisfying the core needs of the user such as

a. Social Validation - What are others watching?

b. Make my viewing experience better by seeing what others are watching.

c) Users also became more excited that what is new going on of my type

d) Users also get more attracted towards these platforms.

**b)** **What should be the goals and metrics for this feature?**

**Ans.) Goal of this feature** - Sharing Recommendations is a feature which will help improve engagement in the platform. The North star metric for this feature would be to measure the Netflix Streaming time/user.

**Metrics to track:**

`Feature Metrics:

-Streaming time increase/decrease due to the shared lists/recommendations

-Click through rate increase due to shared lists/recommendations -Number of lists shared via social media channels

-Number of times a lists has been accessed and via which channels(Facebook, whatsapp, messenger etc.)

-Number of lists subscribed and added by user to their account

**c)** **How should this feature be launched and evaluated?**

**Ans.)** The way to launch this feature would be via A/B testing and tracking engagement metrics improvement for a test and control group before releasing this feature to everyone.

There are two approaches for evaluation:

Approach 1 - Allow users to share recommendations/my list via social media.

Approach 2 - Allow users to share list publicly and allow other users to search and discover the shared recommendations.

- I will prioritize Approach 1 where users be able to share their lists via social media and anyone be able to view the list and add to their account for the MVP. Approach 1 also provides the maximum customer impact to minimum dev effort needed to build.

-Although Approach 2 is interesting , the key challenge in Approach 2 is the potential noise it would create if even a small percentage of Netflix active users start sharing their recommendations. Even if 1% of users start sharing their recommendations, it would be close to 200k lists shared which makes user discovery painful. (150 million subscribers. Assuming 20% of users are active users. Assume 1% of user start sharing recommendations)