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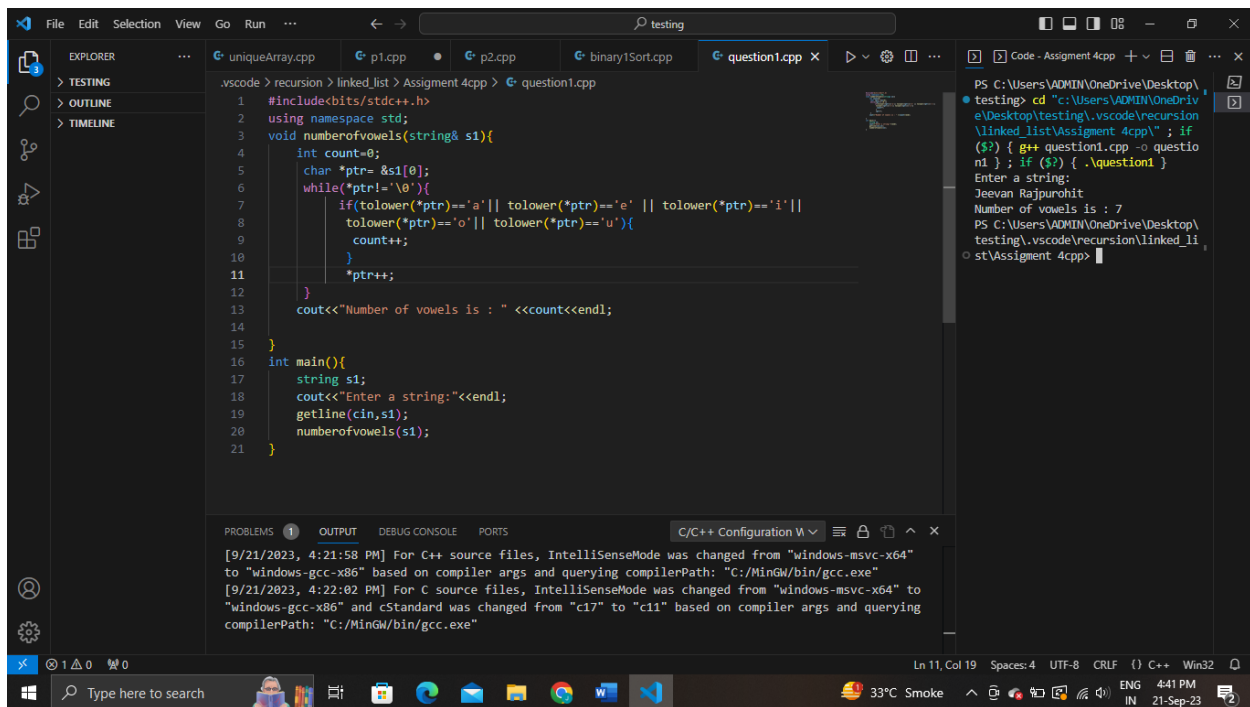
Student Id-202312090

Write a program that takes a string as input and ...

1).

counts the number of vowels in it.

```
#include<bits/stdc++.h>
using namespace std;
void numberOfvowels(string& s1){
    int count=0;
    char *ptr= &s1[0];
    while(*ptr!='\0'){
        if(tolower(*ptr)=='a' || tolower(*ptr)=='e' || tolower(*ptr)=='i' ||
           tolower(*ptr)=='o' || tolower(*ptr)=='u'){
            count++;
        }
        *ptr++;
    }
    cout<<"Number of vowels is : " <<count<<endl;
}
int main(){
    string s1;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    numberOfvowels(s1);
}
```



2).

counts the number of capital letters in it

```

#include<bits/stdc++.h>

using namespace std;
void capitalletter(string& s1){
    int count=0;
    char *ptr= &s1[0];
    while(*ptr!='\0'){
        if(isupper(*ptr)){
            count++;
        }
        *ptr++;
    }
    cout<<"Number of Capital letter in string : " <<count<<endl;
}

int main(){
    string s1;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    capitalletter(s1);
}

```

```
1 #include<bits/stdc++.h>
2 using namespace std;
3 void capitalletter(string& s1){
4     int count=0;
5     char *ptr= &s1[0];
6     while(*ptr!='\0'){
7         if(isupper(*ptr)){
8             count++;
9         }
10        *ptr++;
11    }
12    cout<<"Number of Capital letter in string : " <<count<<endl;
13 }
14
15 int main(){
16     string s1;
17     cout<<"Enter a string:"<<endl;
18     getline(cin,s1);
19     capitalletter(s1);
20 }
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE PORTS C/C++ Configuration V

[9/21/2023, 4:21:58 PM] For C++ source files, IntelliSenseMode was changed from "windows-msvc-x64" to "windows-gcc-x86" based on compiler args and querying compilerPath: "C:/MinGW/bin/gcc.exe"

[9/21/2023, 4:22:02 PM] For C source files, IntelliSenseMode was changed from "windows-msvc-x64" to "windows-gcc-x86" and cStandard was changed from "c17" to "c11" based on compiler args and querying compilerPath: "C:/MinGW/bin/gcc.exe"

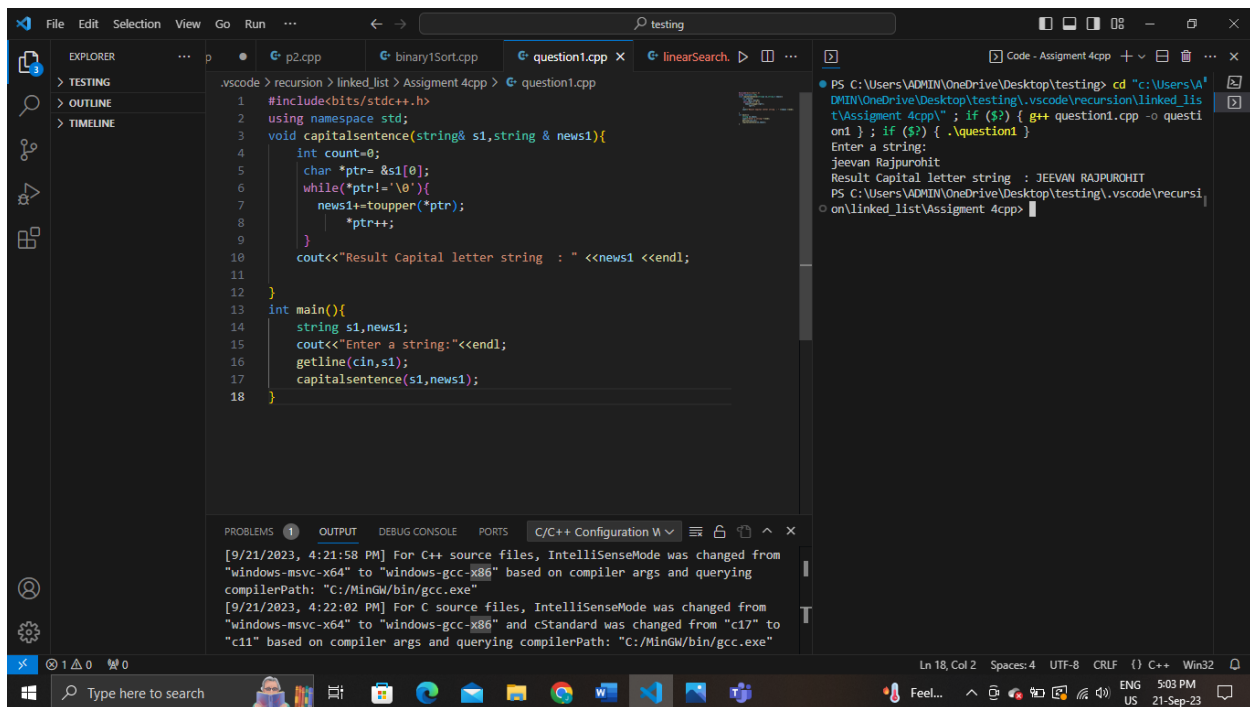
PS C:\Users\ADMIN\OneDrive\Desktop\testing> cd "C:\Users\ADMIN\OneDrive\Desktop\testing\.vscode\recursion\linked\_list\Assignment 4cpp"; if (\$?) { g++ question1.cpp -o question1 ; if (\$?) { .\question1 } }

Enter a string:  
Jeevan RajPurohit  
Number of Capital letter in string : 3  
PS C:\Users\ADMIN\OneDrive\Desktop\testing\.vscode\recursion\linked\_list\Assignment 4cpp>

3).

converts the string to all capital letters.

```
#include<bits/stdc++.h>
using namespace std;
void capitalsentence(string& s1,string & news1){
    int count=0;
    char *ptr= &s1[0];
    while(*ptr!='\0'){
        news1+=toupper(*ptr);
        *ptr++;
    }
    cout<<"Result Capital letter string : " <<news1 <<endl;
}
int main(){
    string s1,news1;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    capitalsentence(s1,news1);
}
```



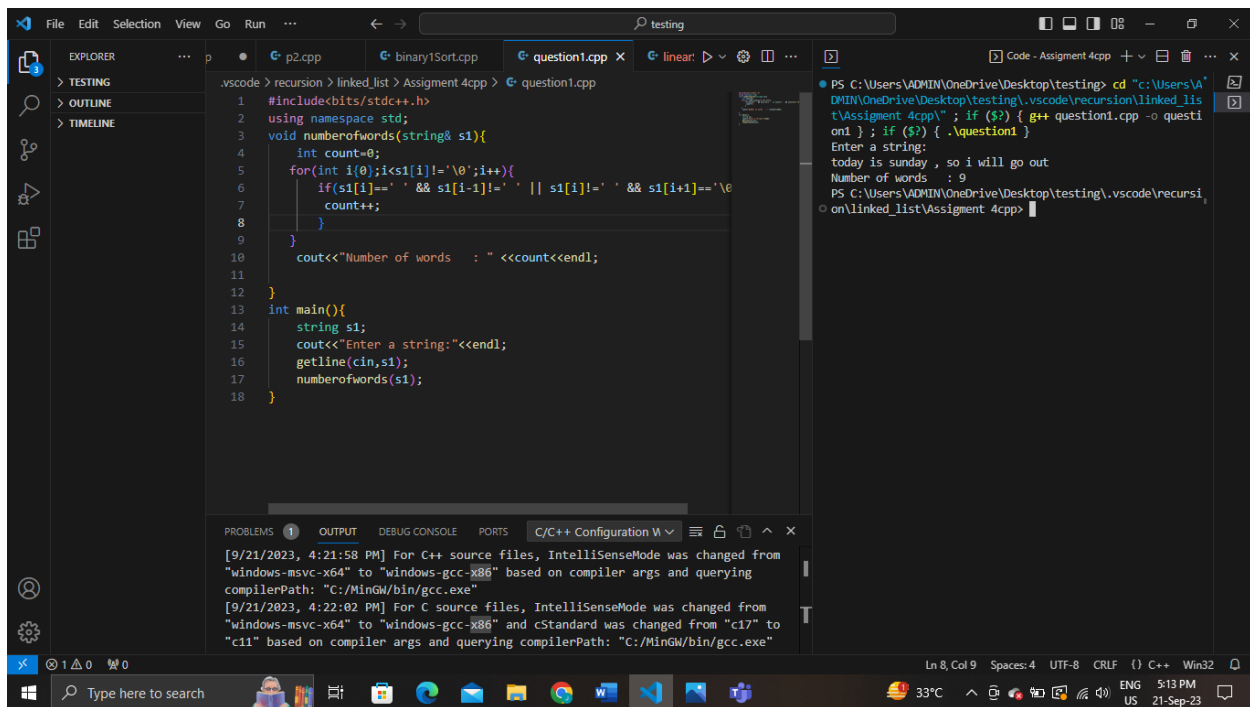
4).

counts the number of words in it.

```

#include<bits/stdc++.h>
using namespace std;
void numberOfwords(string& s1){
    int count=0;
    for(int i{0};i<s1[i]!='\0';i++){
        if(s1[i]==' ' && s1[i-1]!=' ' || s1[i]!=' ' && s1[i+1]=='\0'){
            count++;
        }
    }
    cout<<"Number of words : " <<count<<endl;
}
int main(){
    string s1;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    numberOfwords(s1);
}

```



5).

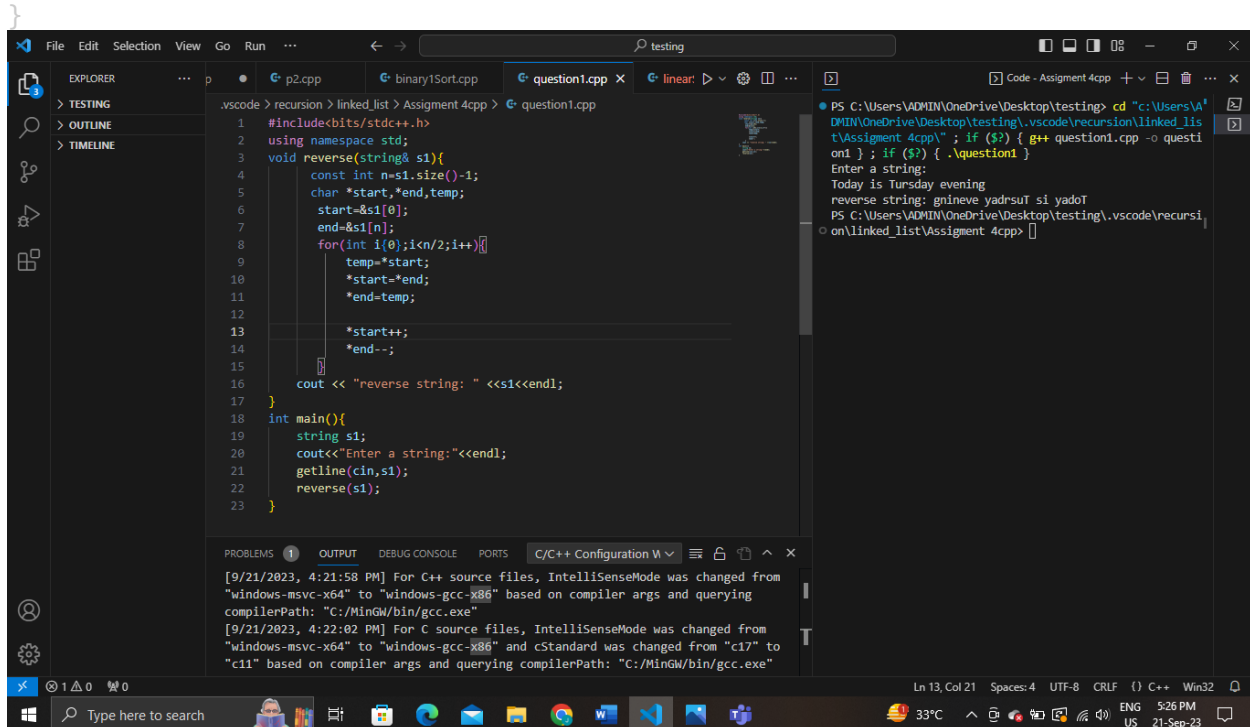
reverses the string and prints it.

```

#include<bits/stdc++.h>
using namespace std;
void reverse(string& s1){
    const int n=s1.size()-1;
    char *start,*end,temp;
    start=&s1[0];
    end=&s1[n];
    for(int i{0};i<n/2;i++){
        temp=*start;
        *start=*end;
        *end=temp;

        *start++;
        *end--;
    }
    cout << "reverse string: " <<s1<<endl;
}
int main(){
    string s1;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    reverse(s1);
}

```



- 6).
- reverses the words in the string. eg. If "this is good" is input, then output should be "good is this"

```

#include<bits/stdc++.h>
using namespace std;
void reversewords(string& s1 ,string& newstr){
    //
    int wordlen=0;
    int n=s1.size()-1;

    for(int i{n};i>=0;i--){
        wordlen++;
        if(s1[i]==' ' || i==0){
            if(i==0){
                newstr+=s1.substr(i,wordlen+1);
            }else{
                newstr+=s1.substr(i+1,wordlen);
                newstr+=' ';
                // if((i-1)!=0){
                //     i--;
                // }
            }
            wordlen=0;
        }
    }
}

```

```

}
cout<<"new reverse string is : "<<newstr<<endl;

}
int main(){
    string s1,newstr;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    reversewords(s1,newstr);
}

```

```

3 void reversewords(string& s1 ,string& newstr){
4     //
5     int wordlen=0;
6     int n=s1.size()-1;
7
8     for(int i(n);i>=0;i--){
9         wordlen++;
10        if(s1[i]!=' ' || i==0){
11            if(i==0){
12                newstr+=s1.substr(i,wordlen+1);
13            }else{
14                newstr+=s1.substr(i+1,wordlen);
15                newstr+=' ';
16                // if((i-1)!=0){
17                //     i--;
18                // }
19            }
20        }
21        wordlen=0;
22    }
23    cout<<"new reverse string is : "<<newstr<<endl;
24
25 }
26 int main(){

```

PROBLEMS 1 OUTPUT DEBUG CONSOLE PORTS C/C++ Configuration V

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Ln 14, Col 44 Spaces: 4 UTF-8 CRLF {} C++ Win32 ENG 5:58 PM 21-Sep-23

7).

counts the number of single, two or three letter words.

```

#include<bits/stdc++.h>
using namespace std;
void reversewords(string& s1 ){
    const auto word_count=[](const string& s1){
        int onelen=0;
        int twolen=0;
        int threelen=0;
        int wordlength=0;
        for(auto i: s1){
            if(!isspace(i)){
                wordlength++;
            }
        }
    };
    word_count(s1);
}

```

```

    }
    if(isspace(i)){
        onelen+=(wordlength==1);
        twolen+=(wordlength==2);
        threelen+=(wordlength==3);
        wordlength=0;
    }
}
cout << "onelen: " << onelen << endl;
cout << "twolen: " << twolen << endl;
cout << "threelen: " << threelen << endl;
};
word_count(s1);
}
int main(){
    string s1;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    reversewords(s1);
}

```

```

PS C:\Users\ADMIN\OneDrive\Desktop\testing> cd "C:\Users\ADMIN\OneDrive\Desktop\testing\.vscode\recursion\linked_list\Assignment 4cpp\"; If ($?) { g++ question1.cpp -o question1 }; If ($?) { .\question1 }
Enter a string:
today is good day
onelen: 0
twolen: 1
threelen: 1
PS C:\Users\ADMIN\OneDrive\Desktop\testing\.vscode\recursion\linked_list\Assignment 4cpp>

```

PROBLEMS | OUTPUT | DEBUG CONSOLE | PORTS | C/C++ Configuration V

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8).

checks if string is a palindrome. i.e. symetric about central character. Eg. if input is "ABCDCEBA" then it is a palindrome.

```
#include<bits/stdc++.h>
```



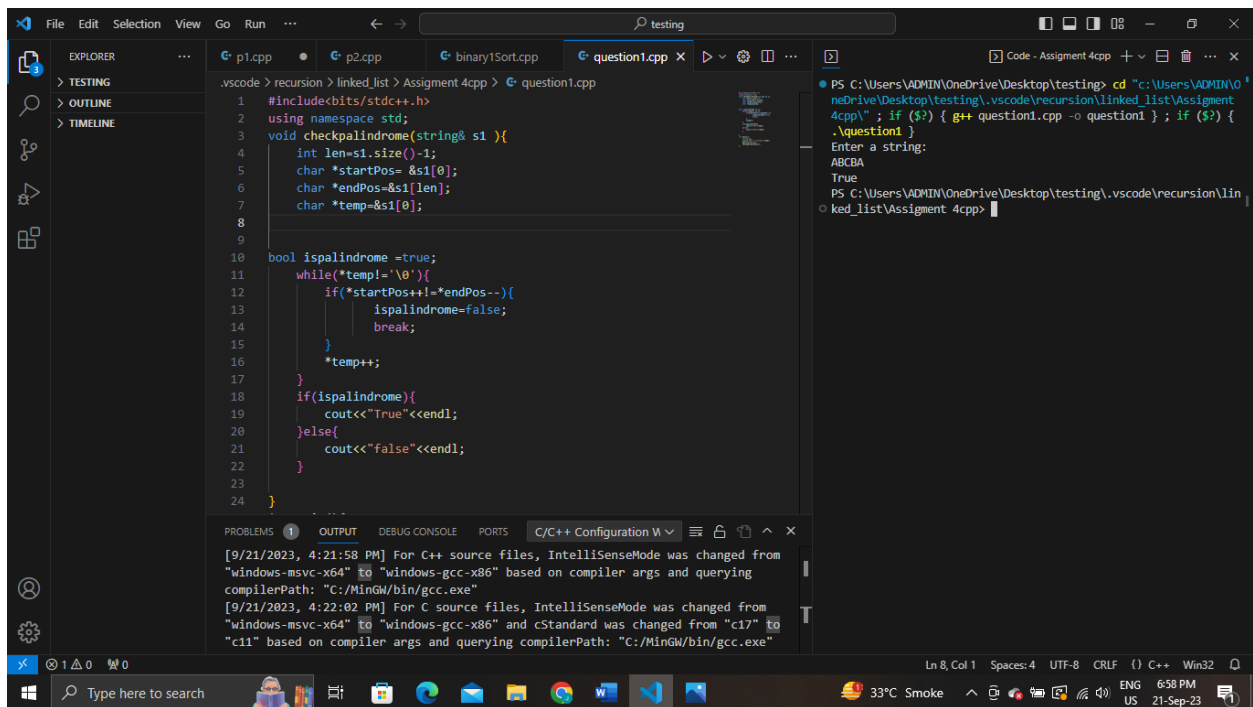
```

using namespace std;
void checkpalindrome(string& s1 ){
    int len=s1.size()-1;
    char *startPos= &s1[0];
    char *endPos=&s1[len];
    char *temp=&s1[0];

    bool ispalindrome =true;
    while(*temp!='\0'){
        if(*startPos++!=*endPos--){
            ispalindrome=false;
            break;
        }
        *temp++;
    }
    if(ispalindrome){
        cout<<"True"<<endl;
    }else{
        cout<<"false"<<endl;
    }
}

int main(){
    string s1;
    cout<<"Enter a string:"<<endl;
    getline(cin,s1);
    checkpalindrome(s1);
}

```



9).

then takes another string as input. It then searches for the second string in the first string. Do not use library functions for searching in the string.

```

#include<bits/stdc++.h>
using namespace std;

int main(){
    {
        string s, newS;
        cout << "Enter main string : " << endl;
        getline(cin, s);
        cout << "Enter search string : " << endl;
        getline(cin, newS);
        int len2 = newS.length(), temp = 0;
        char *sPtr = &s[0], *newPtr = &newS[0];
        bool isWord = false;
        while (*sPtr != '\0')
        {
            if (*sPtr == *newPtr)
            {
                *newPtr++;
                isWord = true;
                temp++;
            }
            if (temp == len2 - 1)

```

```

break;
}
else if (isWord)
{
isWord = false;
newPtr = &newS[0];
}
*sPtr++;
}
cout << " Search Word found : " << endl;
if (isWord)
cout << "Yes" << endl;
else
cout << "No" << endl;
}
}

```

The screenshot shows the Visual Studio Code interface. The Explorer pane on the left shows the project structure. The main editor displays the source code for 'question1.cpp'. The Output pane at the bottom shows the program's execution, including the search string 'rajpurohit' and the result 'Search Word found : Yes'.

10).

```

#include<bits/stdc++.h>
using namespace std;

int main(){
    string s;
    cout << "Enter string : " << endl;
    getline(cin, s);
}

```

```
int n = 0, len = s.length();
    cout << "Enter number for divide string : " << endl;
    cin >> n;
    int cutCounter = ceil(len / n);
vector<vector<char>> newVect;
vector<char> Test;
    for (int i{0}; i < len; i++)
    {
        Test.push_back(s[i]);
        if ((i + 1) % cutCounter == 0 || i == len - 1)
        {
            newVect.push_back(Test);
            Test.erase(Test.begin(), Test.end());
        }
    }
    for (const auto &it : newVect)
    {
        for (char ch : it)
            cout << ch;
        cout << endl;
    }
}
```

The screenshot shows a Visual Studio Code editor with a C++ file named `question1.cpp`. The code implements a function to divide a string into parts of size `n`. The output window shows the execution results for `n=3` and the string `Jeevan rajpurohit`, resulting in three parts: `Jeeva`, `n raj`, and `purohit`. The status bar at the bottom indicates the current line is 26, column 27, with 4 spaces, UTF-8 encoding, and CRLF line endings.

11). Try problem 9th with space characters ignored.

```
#include<bits/stdc++.h>
```

```

using namespace std;

int main()
{
    string str,newstr;
    cout << "Enter main string : " << endl;
    getline(cin, str);
    cout << "Enter search string : " << endl;
    getline(cin, newstr);
    int len2 = newstr.length(), temp = 0;
    char *sPtr = &str[0], *newPtr = &newstr[0];
    bool isWord = false;
    while (*sPtr != '\0')
    {
        if (*sPtr == ' ')
        {
            *sPtr++;
            continue;
        }
        if (*sPtr == *newPtr)
        {
            *newPtr++;
            isWord = true;
            temp++;
            if (temp == len2 - 1)
                break;
        }
        else if (isWord)
        {
            isWord = false;
            newPtr = &newstr[0];
        }
        *sPtr++;
    }
    cout << " Search Word found : " << endl;
    if (isWord){
        cout << "Yes" << endl;
    }else{
        cout << "No" << endl;
    }
}

```

