Lab 4 Session

1. Reverse the order of words in a given sentence (an array of characters). Take the "Hello World" string for example use substr() function in C++.

A. CODE:

```
#include<iostream>
using namespace std;
string substr(string str)
{
    int i= str.length() - 1;
    int start,end = i + 1;
    string result = "";

    while(i >= 0)
    {
        if(str[i] == ' ')
        {
            start = i + 1;
            while(start != end)
                result += str[start++];

            result += ' ';

            end = i;
        }
        i--;
    }
    start = 0;
    while(start != end)
        result += str[start++];
     return result;
}
```

```
int main()
{
    string str = "HELLO WORLD";
    cout << substr(str);
     return 0;
}
```

SAMPLE INPUT AND SAMPLE OUTPUT:

```
WORLD HELLO

...Program finished with exit code 0
Press ENTER to exit console.
```

2. given a dictionary of words and a large input string. We have to find out whether the input string can be completely segmented into the words of a given dictionary.

A. <u>CODE</u>:

```
#include <iostream>
#include <vector>
#include <algorithm>
using namespace std;
void wordBreak(vector<string> const &dict, string str, string out)
{
    if (str.size() == 0)
    {
        cout << out << endl;
        return;
    }
    for (int i = 1; i <= str.size(); i++)
    {
        string prefix = str.substr(0, i);
        if (find(dict.begin(), dict.end(), prefix) != dict.end())
        {
            wordBreak(dict, str.substr(i), out + " " + prefix);
        }
    }
}
int main()
{
    vector<string> dict = {"one","two","three","four" };
    string str = "onetwo";
    wordBreak(dict, str, "");
    return 0;
}
```

<u>SAMPLE INPUT AND SAMPLE OUTPUT</u>:

```
 one two


...Program finished with exit code 0
Press ENTER to exit console.
```

3. Write a program in C++ to count the number of vowels is a given string.

A. <u>CODE</u>:

```
#include <iostream>
using namespace std;
int main()
{
    char line[150];
    int vowels;
    vowels =  0;
    cout << "Enter a line of string: ";
    cin.getline(line, 150);
    for(int i = 0; line[i]!='\0'; ++i)
    {
        if(line[i]=='a' || line[i]=='e' || line[i]=='i' ||
           line[i]=='o' || line[i]=='u' || line[i]=='A' ||
           line[i]=='E' || line[i]=='I' || line[i]=='O' ||
           line[i]=='U')
        {
            ++vowels;
        }
    }

    cout << "Vowels: " << vowels << endl;
    return 0;
}
```

<u>SAMPLE INPUT AND SAMPLE OUTPUT</u>:

```
Enter a line of string: lohith
Vowels: 2
```