DEV JATINBHAI PATEL

CE091

20CEUOS018

LAB6 A4

Longest Common Subsequence:

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


int main(){
    string x,y;
    cout<<"enter both the strings in each line:\n";
    cin>>x>>y;
    int xl=x.length(),yl=y.length();
    int arr[xl+1][yl+1];

    for(int i=0;i<=xl;i++)
    {
        for(int j=0;j<=yl;j++)
        {
            if(i==0||j==0)
            {
                arr[i][j]=0;
            }
            else if(x[i-1]==y[j-1])
            {
                arr[i][j]=1+arr[i-1][j-1];
            }
            else
            {
                arr[i][j]=max(arr[i][j-1],arr[i-1][j]);
            }cout<<arr[i][j]<<" ";
        }cout<<"\n";
    }cout<<"Length of the LCS is "<< arr[xl][yl]<<'\n';
```

```cpp
        int i=xl,j=yl;
        int index=arr[i][j];char lcs[index+1];
        lcs[index]='\0';

        while(i>0&&j>0)
        {
            if(x[i-1]==y[j-1])
            {
                lcs[index-1]=x[i-1];
                i--;
                j--;
                index--;
            }
            else if(arr[i-1][j]>=arr[i][j-1])
            {
                i--;
            }
            else{
                j--;
            }
        }cout<<"LCS is: "<<lcs<<endl;
return 0;
}
```

```
enter both the strings in each line:
aggtab
gxtxayb
0 0 0 0 0 0 0 0
0 0 0 0 0 1 1 1
0 1 1 1 1 1 1 1
0 1 1 1 1 1 1 1
0 1 1 2 2 2 2 2
0 1 1 2 2 3 3 3
0 1 1 2 2 3 3 4
Length of the LCS is 4
LCS is: gtab
```

MED(Minimum Edit Distance):

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

int main()
{
    string name1,name2;
    cout<<"enter both the strings in each line:\n";
    cin>>name1>>name2;
    int n1=name1.length();
    int n2=name2.length();
    cout<<n1<<" "<<n2<<"\n";
    int arr[n1+1][n2+1];

    for(int i=0;i<=n1;i++)
    {
        arr[i][0]=i;
    }
    for(int j=1;j<=n2;j++)
    {
        arr[0][j]=j;
    }int i,j;
```

```cpp
    for(i=1;i<=n1;i++)
    {
        for(j=1;j<=n2;j++)
        {
            int k;
            if(name1[i-1]==name2[j-1])
                k=0;
            else
                k=2;
            int a=arr[i-1][j]+1,b=arr[i][j-1]+1,c=arr[i-1][j-1]+k;

            if (a <= b && a <= c)
                arr[i][j]=a;
            else if (b <= a && b <= c)
                arr[i][j]=b;
            else
                arr[i][j]=c;
            cout<<arr[i][j]<<" ";
        }
        cout<<"\n";
    }cout<<"The MIN cost is "<<arr[i-1][j-1];
    return 0;
}
```

```
enter both the strings in each line:
ram
rom
3 3
0 1 2
1 2 3
2 3 2
The MIN cost is 2
PS C:\Users\User\Desktop\pps\.vscode>
```