MD NAHIDUL HOQUE NIRAB 2018100000023

Assignment#8 - LPS Table Creation and KMP Algorithm Implementation in any of your preferred Programming Language (C/C++/Java)

Code :

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

void LPS_table(char pat[], int M, int lps[])
{

   int len = 0;
   lps[0] = 0;
   int i = 1;
   while (i < M)
      {
         if (pat[i] == pat[len])
         {
            len++;
            lps[i] = len;
            i++;
```

```
        }
        else
        {
            if (len != 0)
            {
                len = lps[len - 1];
            }
            else
            {
                lps[i] = 0;
                i++;
            }
        }
    }
    cout<<"\nPLS Table = ";
    for(int i=0;i<M;i++)
    {
        cout<<lps[i]<<" ";
    }
}

void KMP_patten_Search(char pat[], char txt[],int N,int M)
{
    int lps[M];
    LPS_table(pat, M, lps);
```

```
int i = 0;
int j = 0;
while (i < N)
  {
    if (pat[j] == txt[i])
    {
      j++;
      i++;
      if(j == M)
      {
        cout<<"\nFound pattern at index = "<<i-j;
        j = lps[j - 1];
      }
    }
    else
    {
      if (j != 0)
      {
        j = lps[j - 1];
      }
      else
      {
        i = i + 1;
      }
    }
```

```
        }
}

int main()
{

    char text[100];
    char patten[100];
    cout<<"Input your text array = ";
    cin.get (text,100);
    cout<<"\nInput your patten array = ";
    cin>>patten;
    int t_size = strlen(text);
    int p_size = strlen(patten);
    cout<<"\nThe size of your text array is = "<<t_size;
    cout<<"\nThe size of your patten array is = "<<p_size;
    KMP_patten_Search(patten, text, t_size, p_size);
    return 0;
}
```

Output:

Practice.cpp

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

void LPS_table(char pat[], int M, int lps[])
{

    int len = 0;
    lps[0] = 0;
    int i = 1;
    while (i < M)
        {
            if (pat[i] == pat[len])
            {
                len++;
                lps[i] = len;
                i++;
            }
            else
            {
                if (len != 0)
                {
                    len = lps[len - 1];
                }
                else
                {
                    lps[i] = 0;
                    i++;
                }
            }
        }
    cout<<"\nPLS Table = ";
    for(int i=0;i<M;i++)
```

"H:\Southeast University\Adv Algo (MSRS) 2021\Lab\Lab 8\Practice.exe"

```
Input your text array = AABB BBAA ABAB BAAB

Input your patten array = BBAA

The size of your text array is = 19
The size of your patten array is = 4
PLS Table = 0 1 0 0
Found pattern at index = 5
Process returned 0 (0x0)   execution time : 22.436 s
Press any key to continue.
```