

Program: KMP Algorithm Niyati Savant

Code:

```
#include<stdio.h>

int pi[10];

int n,m;

void prefix(char p[10])
{
    int q,k;

    pi[1]=0;

    k=0;

    for(q=2;q<=m;q++)
    {
        while(k>0 and p[k+1]!=p[q])
            k=pi[k];

        if (p[k+1]==p[q])
            k=k+1;

        pi[q]=k;
    }
}

void KMPMatcher(char text[20],char p[10])
{
    int q=0;

    for(int i=1;i<=m;i++)
    {
        while(q>0 and p[q+1]!=text[i])
            q=pi[q];

        if (p[q+1]==text[i])
            q=q+1;

        if (q==m)
```

```

        {
            printf("\nPattern occurs with shift %d",i-m);
            q=pi[q];
        }
    }
}

int main()
{
    char p[10];
    char text[20];
    char x;
    printf("Niyati's code for KMP \n");

    printf("Number of characters in pattern- ");
    scanf("%d",&m);
    printf("Number of characters in Text- ");
    scanf("%d",&n);

    printf("Enter pattern\n ");
    for(int i=1;i<=m;i++)
    {
        scanf("%c",&x);
        p[i]=x;
    }

    printf("Enter Text\n ");
    for(int i=1;i<=n;i++)
    {
        scanf("%c",&x);
        text[i]=x;
    }
}

```

```
printf("Prefix table: \n");  
prefix(p);  
for(int i=1;i<=m;i++)  
    printf("%d",pi[i]);  
KMPMatcher(text,p);  
return 0;  
}
```

Output:

Niyati's code for KMP

Number of characters in pattern- 4

Number of characters in Text- 8

Enter pattern

a a a b

Enter Text

a a a a a a b

Prefix table:

0120

Pattern occurs with shift 4