

KMP STRING MATCHING

```
Algorithm KMP(substr, str)
{
    N := strlen(str);
    M := strlen(substr);
    Take an array "d" of size M;
    d[0] := 0;
    for i := 0, j := 0 to i < M by 1 do
    {
        while((j > 0) and (substr[j] != substr[i])) do
            j := d[j-1];
        if(substr[j] = substr[i]) then
        {
            j := j + 1;
            d[i] := j;
        }
    }
    for i := 0, j := 0 to i < N by 1 do
    {
        while((j > 0) and (substr[j] != str[i])) do
            j := d[j-1];
        if(substr[j] = str[i]) then
            j := j + 1;
        if(j = M) then
        {
            free(d);
            return(i - j + 1);
        }
    }
    free(d);
    return(-1);
}
```