Name: Atharva Bilonikar

Uid No: 2021700011

CSE DS D1

DAA exp 10

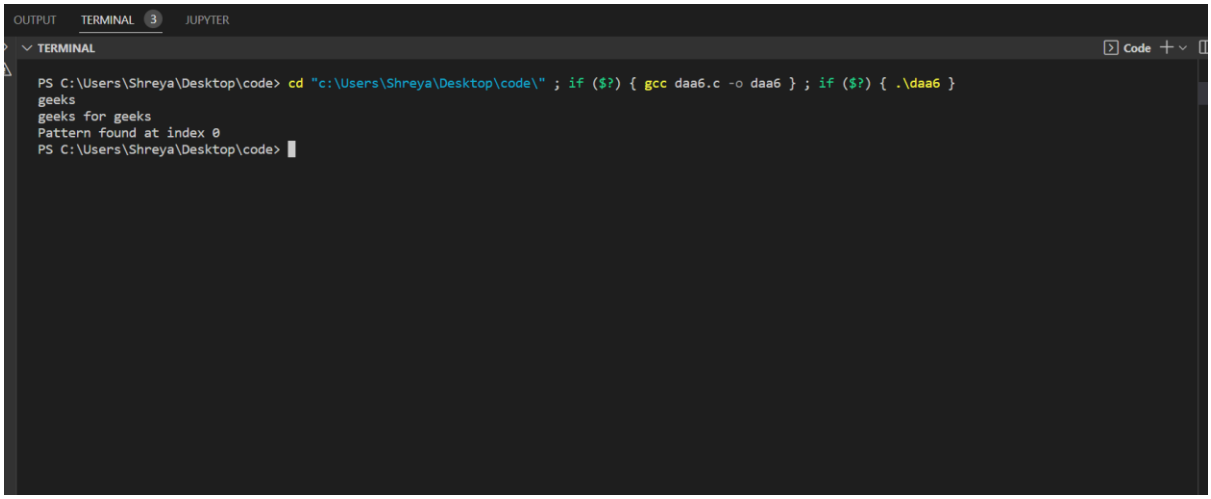
Aim: String Matching algorithms (To implement Robin Karp algorithm)

Code:

```
#include <stdio.h>
#include <string.h>

// d is the number of characters in the input alphabet
#define d 256


void search(char pat[], char txt[], int q)
{
    int M = strlen(pat);
    int N = strlen(txt);
    int i, j;
    int p = 0; // hash value for pattern
    int t = 0; // hash value for txt
    int h = 1;

    // The value of h would be "pow(d, M-1)%q"
    for (i = 0; i < M - 1; i++)
        h = (h * d) % q;

    for (i = 0; i < M; i++) {
        p = (d * p + pat[i]) % q;
        t = (d * t + txt[i]) % q;
    }

    // Slide the pattern over text one by one
    for (i = 0; i <= N - M; i++) {

        if (p == t) {
            /* Check for characters one by one */
            for (j = 0; j < M; j++) {
                if (txt[i + j] != pat[j])
                    break;
            }

            // if p == t and pat[0...M-1] = txt[i, i+1,
```

```
            // ...i+M-1]
            if (j == M)
                printf("Pattern found at index %d \n", i);
        }


        if (i < N - M) {
            t = (d * (t - txt[i] * h) + txt[i + M]) % q;

            // We might get negative value of t, converting
            // it to positive
            if (t < 0)
                t = (t + q);
        }
    }
}

/* Driver Code */
int main()
{
    char txt[10];
    char pat[10];
    scanf("%s %s",txt,pat);


    int q = 101;

    // function call
    search(pat, txt, q);
    return 0;
}
```

Output:



Conclusion : In this experiment I understood Rabin karp algorithm.