

RabinKarp

```
public class RabinKarp {

    public final static int d = 256;

    public final static int q = 101;

    public static void search(String pattern, String text) {

        int M = pattern.length();

        int N = text.length();

        int i, j;

        int p = 0;

        int t = 0;

        int h = 1;

        for (i = 0; i < M - 1; i++)

            h = (h * d) % q;

        for (i = 0; i < M; i++) {

            p = (d * p + pattern.charAt(i)) % q;

            t = (d * t + text.charAt(i)) % q;

        }

        for (i = 0; i <= N - M; i++) {

            if (p == t) {

                for (j = 0; j < M; j++) {

                    if (text.charAt(i + j) != pattern.charAt(j))

                        break;

                }

                if (j == M)

                    System.out.println("Pattern found at index " + i);

            }

        }

    }

}
```

```

        if (i < N - M) {

            t = (d * (t - text.charAt(i) * h) + text.charAt(i + M)) % q;

            if (t < 0)

                t = (t + q);

        }

    }

}

public static void main(String[] args) {

    String text = "GEEKS FOR GEEKS";

    String pattern = "GEEK";

    search(pattern, text);

}

}

```



The screenshot shows an IDE window titled 'Main.java'. The code defines a 'Main' class with two static final integers, 'd' (256) and 'q' (101). It includes a 'search' method that takes a 'pattern' and 'text' string. The method calculates the length of the pattern (M) and text (N). It initializes variables 'i', 'j', 'p', 't', and 'h'. A loop for 'i' from 0 to M-1 calculates 'h' as (h * d) % q. Another loop for 'i' from 0 to M-1 calculates 'p' as (d * p + pattern.charAt(i)) % q and 't' as (d * t + text.charAt(i)) % q. A third loop for 'i' from 0 to N-M checks if 'p' equals 't'. If true, it enters a loop for 'j' from 0 to M-1 to verify the pattern. If any character mismatch is found, it breaks the loop. The output shows the pattern found at index 0 and index 10, and the program finished with exit code 0.

```

8
9 public class Main
10 {
11     public final static int d = 256;
12     public final static int q = 101;
13
14     public static void search(String pattern, String text) {
15         int M = pattern.length();
16         int N = text.length();
17         int i, j;
18         int p = 0;
19         int t = 0;
20         int h = 1;
21
22         for (i = 0; i < M - 1; i++)
23             h = (h * d) % q;
24
25         for (i = 0; i < M; i++) {
26             p = (d * p + pattern.charAt(i)) % q;
27             t = (d * t + text.charAt(i)) % q;
28         }
29
30         for (i = 0; i <= N - M; i++) {
31             if (p == t) {
32                 for (j = 0; j < M; j++) {
33                     if (text.charAt(i + j) != pattern.charAt(j))
34                         break;

```

Pattern found at index 0
Pattern found at index 10
...Program finished with exit code 0