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SECTION: ML

Roll No: 11

# Hash Function For Rabin Karp :

```
#include <iostream>
```

```
#include <string>
```

```
using namespace std;
```

```
const int p = 31;
```

```
const int m = 1e9 + 9;
```

```
int rabin-karp-hash (const string s)
```

```
{  
    long long hash-value = 0;
```

```
    long long p-power = 1;
```

```
    for (char c : s)
```

```
{  
        hash-value = (hash-value + (c - 'a' + 1)  
                      * p-power) % m;
```

```
        p-power = (p-power * p) % m;
```

```
    }
```

```
    return hash-value;
```

```
}
```

```
int main ()  
{
```

```
String str = "hello";
```

```
cout << "Hash of " << str << ":" << rabin-karp-hash  
      (str) << endl;
```

```
return 0;
```

```
}
```

Example :

Text = A B C C D D A E F G

pattern = C D D

let assign a numeric value

A	B	C	C	D	D	A	E	F	G
↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7	8	9	10

$$\begin{aligned} h(x) &= \text{Hash value of text} = C + D + D \\ &= 3 + 4 + 4 \\ &= 11 \end{aligned}$$