

flashing



number = 1

→ 1	→ 2
3	→ 1
4	→ 0
2	→ 2
10	→ 0

```
int f(number, arr)
```

```
{
```

```
    cnt = 0
```

```
    for (i = 0; i < n; i++)
```

```
    {
```

```
        if (arr[i] == number)
```

```
            cnt = cnt + 1;
```

```
    }
```

number = 1

```
int f(number, arr)
{
    cnt = 0
    for (i = 0; i < n; i++)
    {
        if (arr[i] == number)
            cnt = cnt + 1;
    }
    return cnt;
}
```

0

1	→	1
3	→	1
4	→	0
2	→	2
10	→	0
⋮		
12	→	0

for (i = 0; i < n; i++) →

$(5 \times O(N))$

{ if (arr[i] == number)  
cnt = cnt + 1;

$O(0 \times N)$

$O(10^5 \times 10^5)$



```
for (i=0; i<n; i++) → (5 × O(N))  
    if (arr[i] == number)  
        cnt = cnt + 1;  
    }  
return cnt;  
}
```

$O(0 \times N)$   
 $O(10^5 \times 10^5)$   
 $O(10^{10})$

1 op →  $\frac{1}{10^8}$   $10^2$   
 $10^{10} \rightarrow \frac{1}{10^8} \times 10^{10} \rightarrow 100$   
 $\frac{10^8}{10^{10}} \approx \frac{1}{100}$   
 $10^{10} \rightarrow 10000000000$   
 $\frac{10^8}{10^{10}} \approx \frac{1}{100}$   
 $10^{10} \rightarrow 10000000000$



[Hashing]  $\rightarrow$  pre storing / fetching

1	2	1	3	2
---	---	---	---	---

adman 12

$n=13$

Hashing

0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	2	3	4	5	6	7	8	9	10	11	12



pre calculation

0

1	$\rightarrow$	2
3	$\rightarrow$	1
4	$\rightarrow$	0
2	$\rightarrow$	2
10	$\rightarrow$	0
...		
12	$\rightarrow$	0





Patterns.cpp hashing.cpp ×

code > hashing.cpp > main()

```
1 #include<bits/stdc++.h>
2 using namespace std;
3
4 int main() {
5     int n;
6     cin >> n;
7     int arr[n];
8     for(int i = 0;i<n;i++) {
9         cin >> arr[i];
10    }
11
12    // precompute
13    int hash[13] = {0};
14    for(int i = 0;i<n;i++) {
15        hash[arr[i]] += 1;
16    }
17
18    int q;
19    cin >> q;
20    while(q--) {
21        int number;
22        cin >> number;
23        // fetch
24        cout << hash[number] << endl;
25    }
26
27    return 0;
28 }
```

input.txt ×

input.txt

```
1 5
2 1 3 2 1 3
3 5
4 1
5 1
6 2
7 3
8 12
```

output.txt ×

output.txt

```
1 2
2 0
3 1
4 2
5 0
6
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

\* Terminal will be reused by tasks, press any key to close it.



```
Patterns.cpp hashing.cpp x
code > hashing.cpp > main()
1  #include<bits/stdc++.h>
2  using namespace std;
3
4  int main() {
5      int n;
6      cin >> n;
7      int arr[n];
8      for(int i = 0; i < n; i++) {
9          cin >> arr[i];
10     }
11
12     // precompute
13     int hash[13] = {0};
14     for(int i = 0; i < n; i++) {
15         hash[arr[i]] += 1;
16     }
17
18     int q;
19     cin >> q;
20     while(q--) {
21         int number;
22         cin >> number;
23         // fetch
24         cout << hash[number] << endl;
25     }
26
27     return 0;
28 }
```

```
input.txt x
input.txt
1  5
2  1 3 2 1 3
3  5
4  1
5  4
6  2
7  3
8  12

output.txt x
output.txt
1  2
2  0
3  1
4  2
5  0
6
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

\* Terminal will be reused by tasks, press any key to close it.

TUF



~~arr [10<sup>9</sup> + 1]~~

10<sup>9</sup>  
m

mt

arr [10<sup>6</sup>]

→ inside main →

10<sup>7</sup>  
local

mt

arr [10<sup>7</sup>]

→ globally

→ 10<sup>8</sup>

# Hashing | Maps | Time Complexity | Collisio...

take U forward

```
Patterns.cpp hashing.cpp ×
code hashing.cpp
1 #include<bits/stdc++.h>
2 using namespace std;
3 int main() {
4     int n;
5     cin >> n;
6     int arr[n];
7     for(int i = 0;i<n;i++) {
8         cin >> arr[i];
9     }
10
11     // precompute
12     int hash[10000000] = {0};
13     for(int i = 0;i<n;i++) {
14         hash[arr[i]] += 1;
15     }
16
17     // ...

```

```
input.txt ×
1 5
2 1 3 2 1 3
3 5
4 1
5 4
6 2
7 3

```

```
output.txt ×
output.txt
1

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
* The terminal process "/bin/zsh '-c', 'g++ -std=c++17 -g code/hashing.cpp -o hashing.out && /usr/bin/time -lp ./hashng.out < input.txt > output.txt && rm *out && rm -r *out.dSYM'" terminated with exit code: 139.
```

```
* Terminal will be reused by tasks, press any key to close it.
```

```
time: command terminated abnormally
real 0.29
user 0.00
sys 0.00
1359872 maximum resident set size
0 average shared memory size
0 average unshared data size
0 average unshared stack size
152 page reclaims
```

-39:35 / 1:00:05 · Maximum hash Array size (Main Vs Global) >





number hashing

Character hashing



arrays



$s = \text{"abcdabec"}$





s = "a b c d a b e f c"

cnt = 2

0 2 0 1 3  
a → 2  
c → 2  
e → 0

$s = "abcdabec"$

```
f(char c, s)
{
    cnt = 0
    for (i = 0; i < n; i++)
    {
        if (s[i] == c)
            cnt++;
    }
    return cnt;
}
```

$\theta$  queries  $\left\{ \begin{array}{l} a \rightarrow 2 \\ c \rightarrow 2 \\ e \rightarrow 0 \end{array} \right.$

$O(\theta \times N)$




$$a, b, \dots, z \rightarrow 26$$

$\theta$  quanta  $\left\{ \begin{array}{l} a \rightarrow 2 \\ c \rightarrow 2 \\ z \rightarrow 0 \end{array} \right.$

$$O(2 \times N)$$

Strivers A2Z DSA Course/Sheet x HTML ASCII Reference +

w3schools.com/charsets/ref\_html\_ascii.asp#:~:text=ASCII%20is%20a%207-bit,are%20all%20based%20on%20ASCII.

HTML CSS JAVASCRIPT SQL PYTHON JAVA PHP BOOTSTRAP HOW TO W3.CSS C C++ C# REACT R JQUERY DJANGO

### HTML Charsets

- HTML Charsets
- HTML ASCII**
- HTML WIN-1252
- HTML ISO-8859
- HTML Symbols
- HTML UTF-8

### HTML UTF-8

- Latin Basic
- Latin Supplement
- Latin Extended A
- Latin Extended B
- Modifier Letters
- Diacritical Marks
- Greek and Coptic
- Cyrillic Basic
- Cyrillic Supplement

### HTML Symbols

- General Punctuation
- Currency Symbols
- Letterlike Symbols
- Arrows
- Math Operators
- Box Drawings
- Block Elements
- Geometric Shapes
- Misc Symbols
- Dingbats
- Emoji
- Emoji Smileys
- Emoji Skin Tones

T	84	uppercase T	<a href="#">Try it</a>
U	85	uppercase U	<a href="#">Try it</a>
V	86	uppercase V	<a href="#">Try it</a>
W	87	uppercase W	<a href="#">Try it</a>
X	88	uppercase X	<a href="#">Try it</a>
Y	89	uppercase Y	<a href="#">Try it</a>
Z	90	uppercase Z	<a href="#">Try it</a>
[	91	left square bracket	<a href="#">Try it</a>
\	92	backslash	<a href="#">Try it</a>
]	93	right square bracket	<a href="#">Try it</a>
^	94	caret	<a href="#">Try it</a>
_	95	underscore	<a href="#">Try it</a>
`	96	grave accent	<a href="#">Try it</a>
a	97	lowercase a	<a href="#">Try it</a>
b	98	lowercase b	<a href="#">Try it</a>
c	99	lowercase c	<a href="#">Try it</a>
d	100	lowercase d	<a href="#">Try it</a>
e	101	lowercase e	<a href="#">Try it</a>
f	102	lowercase f	<a href="#">Try it</a>
g	103	lowercase g	<a href="#">Try it</a>



int n = 'a'

↑

97

↘



$s = "abcdabec"$

ASCII

'a'  $\rightarrow$  97

'7'  $\rightarrow$  122

$\theta$  queries  $\left\{ \begin{array}{l} a \rightarrow 2 \\ c \rightarrow 2 \\ z \rightarrow 0 \end{array} \right.$

$O(\theta \times N)$





$$j = a$$

$$102 - 97 = 5$$

$$\underline{O(2 \times N)}$$

$$|a| - |a| = 0$$

$$|b| - |a| = 1$$

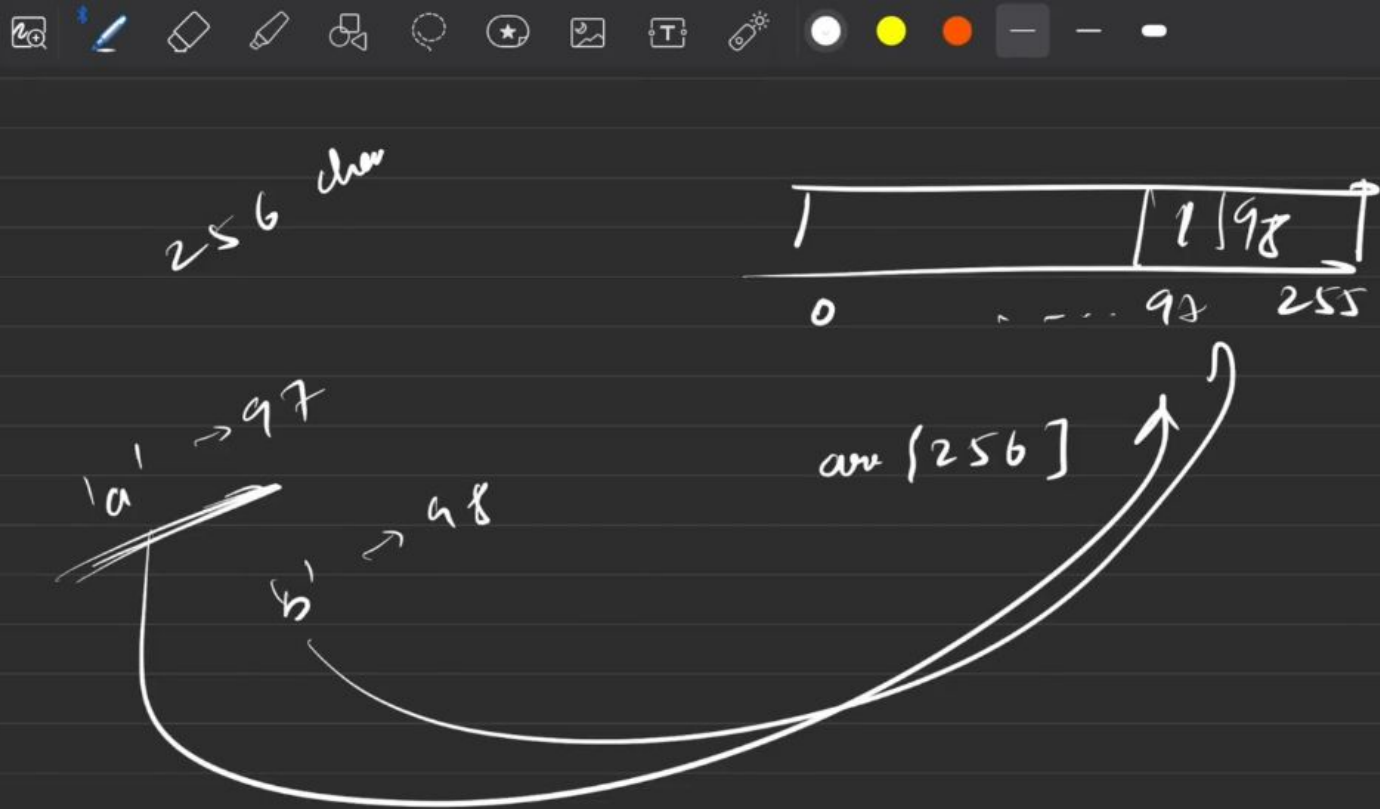
$$|c| - |a| = 2$$

$$\underline{Ch - 'a'}$$

↓  
index in hash array

$$\text{int } n = |a|$$

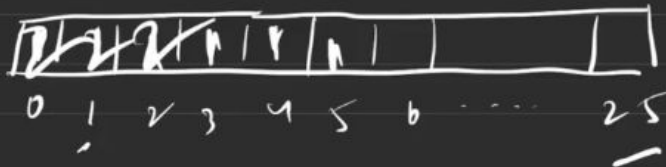
↑  
97





Character hashing

$e - a = 5$   
 $j - a = 9$   
 $c - a = 2$



lower case letters

a, b, ..., z  $\rightarrow$  26

s = "abcdabegc"  
1 1 1 1 1 1 1 1 1

ASCII  
 $\rightarrow$

'a'  $\rightarrow$  97

'z'  $\rightarrow$  122

'j' = 'a'

a-a    b-a    d-a  
c-a  
0 2 0 1 3  
a  $\rightarrow$  2  
c  $\rightarrow$  2  
z  $\rightarrow$  0



Patterns.cpp

hashing.cpp

code > hashing.cpp > main()

```
3
4 int main() {
5     string s;
6     cin >> s;
7
8     //pre compute
9     int hash[256] = {0};
10    for(int i = 0; i < s.size(); i++) {
11        hash[s[i]]++;
12    }
13    int q;
14    cin >> q;
15    while(q--) {
16        char c;
17        cin >> c;
18        // fetch
19        cout << hash[c] << endl;
20    }
21    return 0;
22 }
```

input.txt

```
1 abcdabehf
2 5
3 a
4 g
5 h
6 b
7 c
```

output.txt

output.txt

```
1 2
2 0
3 1
4 2
5 1
6 
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

\* Terminal will be reused by tasks, press any key to close it.



0 1 2 3 4 5 6 7 8 9 10 11 12

pre calculation

ch - 10  
 3 → 1  
 4 → 0  
 2 → 2  
 10 → 0  
 ...  
 12 → 0

number hashing

arrays

Character hashing

e - a = 5  
 j - a = 8  
 c - a = 2

0 1 2 3 4 5 6 ... 25

lower case letters

a, b, ..., z → 26

s = "abcdabefc"

a - a  
 b - a  
 c - a  
 d - a  
 e - a  
 f - a  
 g - a



0 1 2 3 4 5 6 7 8 9 10 11 12

pre calculation

$\theta$  { 3  $\rightarrow$  1  
4  $\rightarrow$  0  
2  $\rightarrow$  2  
10  $\rightarrow$  0  
...  
12  $\rightarrow$  0

number hashing

character hashing

arrays

e - a = 5  
l - a = 2  
c - a = 2

0 1 2 3 4 5 6 ... 25

lower case letters

a, b, ..., z  $\rightarrow$  26

s = "abcdabefc"

a - a  
b - a  
c - a  
d - a  
e - a  
f - a  
g - a



0 1 2 3 4 5 6 7 8 9 10 11 12

pre calculation

ch - 'a'

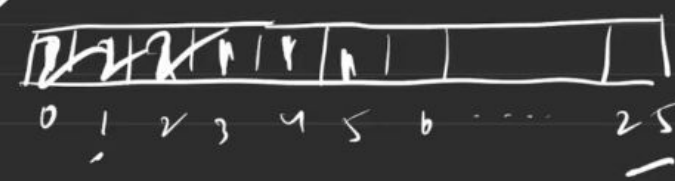
$\theta$  { 3 → 1  
4 → 0  
2 → 2  
10 → 0  
⋮  
12 → 0

number hashing

arrays

character hashing

e - a = 5  
l - a = 8  
c - a = 2



lower case letters

a, b, ..., z → 26

s = "abcdabefc"

a - a  
b - a  
c - a  
d - a  
e - a  
f - a  
g - a



0 1 2 3 4 5 6 7 8 9 10 11 12

pre calculation

$2 \leq b$

0

3	→	1
4	→	0
2	→	2
10	→	0
⋮		
12	→	0

number hashing

arrays

character hashing

e - a = 5  
l - a = 2  
c - a = 2

0	1	2	3	4	5	6	...	25
---	---	---	---	---	---	---	-----	----

lower case letters

a, b, ..., z → 26

s = "abcdabefc"

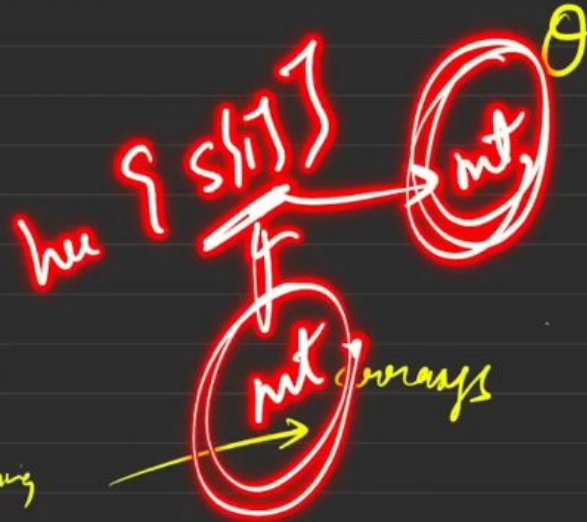
a - a  
b - a  
c - a  
d - a  
e - a  
f - a  
g - a





0 1 2 3 4 5 6 7 8 9 10 11 12

pre calculation



3 → 1  
4 → 0  
2 → 2  
10 → 0  
⋮  
12 → 0

number hashing

character hashing

e - a = 5  
l - a = 8  
c - a = 2

0 1 2 3 4 5 6 ... 25

lower case letters

a, b, ..., z → 26

s = "abcdabefc"

a - a  
b - a  
c - a  
d - a  
e - a  
f - a  
g - a



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Teacher/Entrepreneur/Minimalist

8h • Edited •

- [1] If you are poor, you want to be rich.
- [2] If you are famous, you want privacy.
- [3] If you are in a relationship, you might want some space.
- [4] If you are lonely, you might want company.
- [5] If you are acing your career, you might want some free time.
- [6] Even when you get everything right, you would need something to kill boredom.

As humans we are designed to chase something.

99.9% of us won't go to some mountain in search of meaning.

So probably, what we call 'struggle' (career, relationship, money etc) is a temporary destination that our life has set for us.

This makes our struggles, our meaning.



5,108

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Ex - Intern at Walmart'22, Microsoft'21, ...

1yr • 🌐

## Internship -> PPO Conversion 🙌

You have grabbed an internship with your dream company, that's amazing and kudos to your efforts, however, your next goal should be to secure a PPO! 🚀

I successfully completed internships with my dream companies and secured PPOs (Pre-Placement Offers). Looking back on my internship experience and considering the factors that contributed to the internship's success, a few aspects stand out. While there is no definite pathway to a successful internship, and much depends on factors beyond our control, however, following some of these basic approaches can significantly increase the chances of a successful internship!

### ★ Before the Internship:

- Get familiarised with the company:** Do well-conducted research to gain a thorough understanding of the company's products.
- Learn to use GitHub:** Almost all tech companies use git as a version control system. It is an essential tool that every developer should be familiar with.
- Tech Stack:** Some companies will mention the tech stack you will be using before the internship so you can get hands-on experience with it. It will also demonstrate that you are curious and have a learning mindset.

### ★ During the internship:

- Take ownership of your project:** Once you've been assigned a project, it's completely your responsibility.
- Be attentive & responsible**
- Clear your Doubts:** Do not hesitate to ask questions, but make sure you have done your research first.
- Clean & well-designed code:** Writing meaningful variable names and creating proper classes and functions will improve code quality.
- Keep your mentor & manager updated** on your progress.
- Take feedback** and don't repeat your mistakes, making the same mistake multiple times can be a red flag.
- Try to attend most of the standups** and meetings and learn from them.
- Towards the end of the internship, there will usually be a **presentation** of your project, so make sure to thoroughly revise it and update your slides.
- Most companies conduct **technical interviews** near the end of an internship, so make sure you're in practice with DSA and other important topics, as interviews carry a good weightage.

### ★ Pro - Tips:

- Network, Network, Network!
- Be a good team player
- Improve your soft skills
- Keep confident and do not hesitate to share your opinions.

Also, try to enjoy your internship and do not stress out, focus on learning and enjoying, and everything else will follow!

I wish you very good luck with your internship



A special thanks to [Shivanshu G.](#) for helping me with the poster :)

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**Nistha Gupta** • Following

Ex - Intern at Walmart'22, Microsoft...

11mo •

**Start Celebrating Small Wins!**

- 1) Break down your Large Goals: Create small, achievable goals so you can track your progress more easily. A little progress each day adds up to big results.
- 2) Don't be too hard on yourself: Setting strict deadlines for your goals can lead to feelings of failure, even if small victories are achieved along the way.
- 3) Reward Yourself: Whenever you finish a task, reward yourself with a treat. It makes you feel satisfied and happy.
- 4) Track Your daily Progress: Keeping track of your progress will help you remember how far you've come toward your goal. When you see yourself achieving small goals, it will boost your confidence and consistency.

Some of the things which I try to practice in my daily life to increase my productivity and confidence in order to achieve big success! Learning how to celebrate small wins is the key to keep yourself motivated while pursuing your goals 700

**#motivation #achievement #success  
#placement #interviewpreparation #learning  
#productivity**

**Nistha Gupta**  
@NisthaGupta09

Start appreciating yourself for the small achievements you're making on your way to big success.

1:35 PM · 29 Mar, 2022



871

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11mo •

There are two types of rejection:

- 1) You reject yourself
- 2) Someone else rejects you

I think the latter is still better than the former one! Because if you don't apply, you'll definitely miss out, so believe in your skills, apply, and give your best ❤️

#motivation #placements #applytoday



You miss 100% of the shots you don't take!

**Nistha Gupta**  
@NisthaGupta09

508

39 comments • 1 repost



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Comment



Repost



Send





Bhairam Zezra

Yesterday, 9:44 pm



## અકદસ પ્રાથમિક શાળા-કડી.

૧૧ / ૧

૨૨:-

રોજના 1 કે 2 જાB ડૉટા પુરુ કરવા  
માટે જેટલી મહેનત કરો દો ને એટલી  
ભાણવા માટે પણ કરમે, કારણ કે તમે  
કરાવેલું "199 કે 399" ના રિચાર્જ ને  
તમે વર્ષ નથી જવા દતા તો તમારા  
ભાણવા પાછળ તમારા માતા-પિતા વર્ષ  
હમરોનું રિચાર્જ કરાવે દો તો, એમના ડૉટાને  
પણ એક સારા જોડા જીતીને ન્યાય આપમે.  
"મોબાઈલ નો ડૉટા જીતવાર આવશે, પરંતુ  
ભાણવાનો ડૉટા જીતવાર નહીં આવે." 😊



Reply



**Bhairam Zezra**

Yesterday, 10:03 pm



**ખોટા વ્યક્તિઓ ને મનાવવા  
નહિ અને સાચા ને છોડવા  
નહિ સબંધ થોડા હોય  
તો ચાલશે પણ સારા  
અને સાચા લોકો સાથે જ  
રાખો...**



623



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