

* To convert any letter from capital to small

```
char x;  
cin >> x;  
x = x - 'A' + 'a';  
cout << x << endl;
```

In this solution, we don't use numbers to check in ASCII Code

* string

if you defined variable of string datatype and stored name in it then you wanted to know the name consists of how many characters

```
string name = "Sasa";  
int x = name.size(); // 4
```

To print each char of the name, you can do it by for loop, don't forget the string is array

```
for (int i = 0; i < x; i++)  
{  
    cout << name[i];  
}
```

* when you want to print name, and it is defined by array of char, you should put the size of array (size + 1) and put last index = '\0'.

- Null character
- if we don't write it, the output will be wrong
- ways like this will be wrong

* To put spaces between strings

```
string name;
```

```
getline (cin, name);
```

```
cout << name << endl;
```

} in case of string

```
getline (cin, name);
```

```
char name[20];
```

```
cin.getline (name, 20);
```

```
cout << name << endl;
```

} in case of char

```
cin.getline (name, 20);
```

* Types of Search *

① Sequential search

البحث التسلسلي على كل عنصر موجود في الـ array وتعمل check على

② Binary search

عدد خطوات أقل من الـ sequential وأسرع من الوقت

```
int arr[6] = {0, 1, 2, 3, 4, 5};
```

```
int start = 0; int end = 5; int mid;
```

```
bool isFound = false;
```

```
while (start <= end)
```

```
{
```

```
    mid = (start + end) / 2;
```

```
    if (arr[mid] == 3)
```

```
    {
```

```
        isFound = true;
```

```
        break;
```

```
    }
```

```
    else if (arr[mid] > 3)
```

```
    {
```

```
        end = mid - 1;
```

```
    }
```

```
else
```

```
{
```

```
    start = mid + 1;
```

```
}
```

```
}
```

```
if (isFound)
```

```
{
```

```
    cout << "Found" << endl;
```

```
}
```

```
else
```

```
{
```

```
    cout << "not Found" << endl;
```

```
}
```

Note: the array must be sorted

To Sort an array, you can use function do it quickly.

```
Sort(array.name, array.name + size);
```

Note: char array only i can do cin or cout direct without loops.

To Convert string to integer

- ① include bits/stdc++.h
- ② stringstream S; string X = "150"; int num;
- ③ S << X
- ④ S >> num
- ⑤ cout << num << endl; // 150 => integer