Important Algorithmic Functions { CodeLoper }

1] First we will try to see how we can read complex input given for the problem. There are many ways like we can use STL vector,pair and also create our own data type collection based on input using structure.

a) **Let's take input using structure** (There are other ways too i will cover them in STL)

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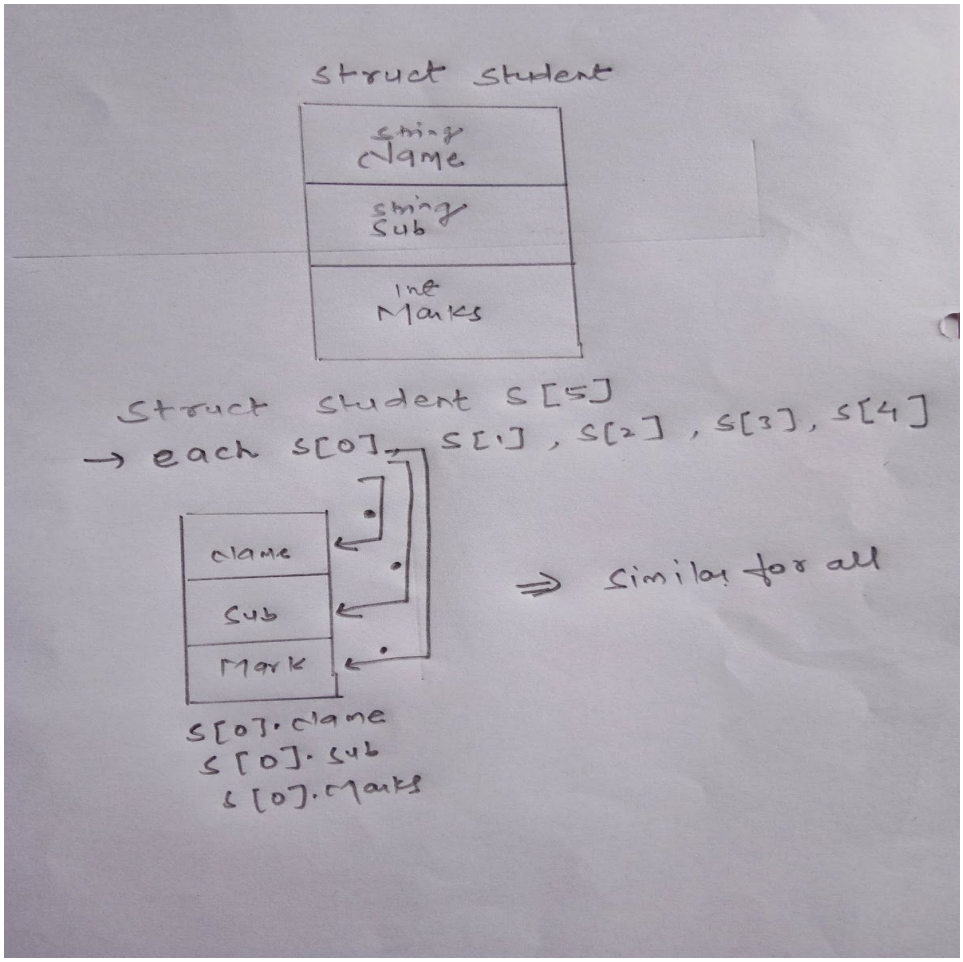
Asif Maths 80
Deepak Maths 89
Amit physics 95
Rootul English 92
Mayank Maths 93



#include<algorithm>

2] Sort function (How can we use comparator in sort function)

We will sort the above input based on their marks in increasing order.

3] using auto

in the type specifier of a variable: `auto x = expr;`. The type is deduced from the initializer

Let's see auto for for loop

4] find function (To search an element is present in array or not)

n=5;

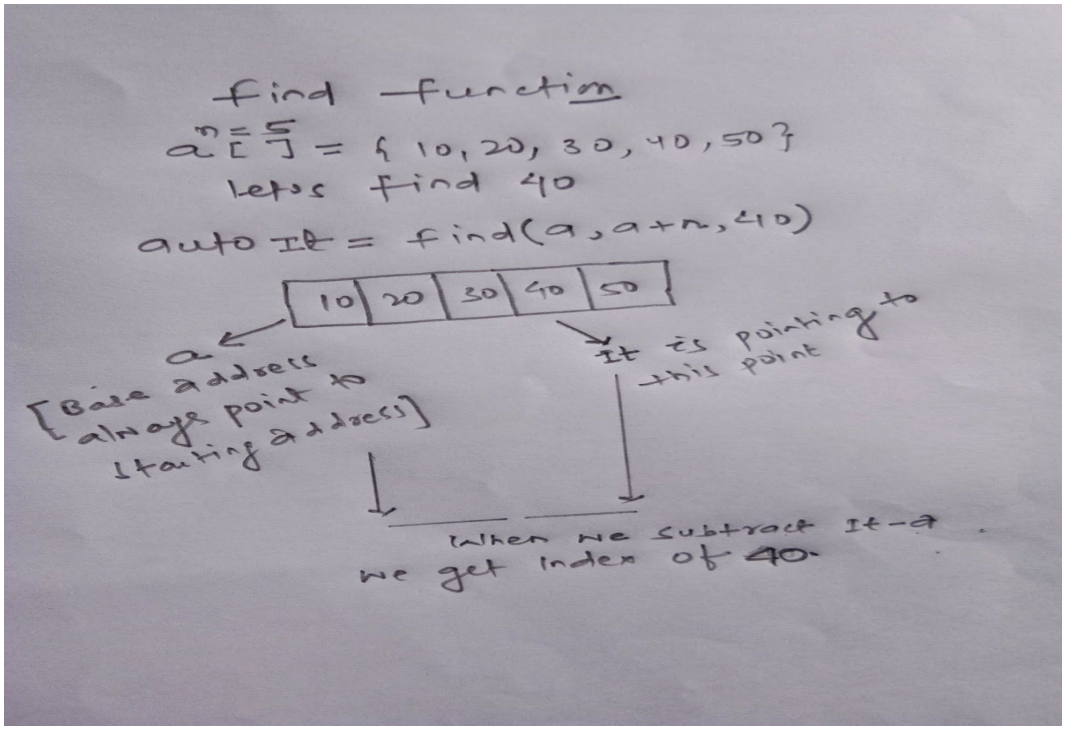
a ={ 10,20,30,40,50 }

Value = 40; (let's find 40)

auto it = find(a,a+n,value)

If value exists it returns a pointer to index of that value if not present it returns pointer to last value

Int index = it - a (we subtract base address of array and get index of particular element)



5] __builtin_popcount (To find number of ones in binary of integer)

6] reverse (to reverse an array)

7] binary_search (to check weather an element present in sorted array using binary search in logn time)

```
if( binary_search(a,a+n,value) ) {
  present;
}else{
not present;
}
```

8] swap function (to swap two value)
swap(a,b)

9] min and max value
min (a,b)
max(a,b)

10] lower_bound (a,a+n,key) return pointer to the first value which is >= key
upper_bound (a,a+n,key) return pointer to the first value which is >key

#include<cmath>

1] sqrt for finding square root
sqrt(16) =4;

2] pow (a,b) to find a^b

3] abs to find mod value of difference abs(3-10) = 7

** will make separate video on #include<cstring>