1 Base algorithm

1.1 Bisection method

search for $min(b), b \in \{a[k] \geq x\}$

```
while(l<r){
    int mid = (l + r) >> 1;
    if(a[mid] >= x) r = mid;
    else l = mid + 1;
}
return a[l];
```

search for $max(b), b \in \{a[k] \leq x\}$

```
while(l<r){
    int mid = (l + r + 1) >> 1;
    if(a[mid] <= x) l = mid;
    else r = mid - 1;
}
return a[l];
```

2 Graph Theory and Network Algorithms

3 Algebraic Algorithms

4 Number Theory

5 Data structure

6 Computational geometry

7 Classic Problems