**Algorithm**

1. **Searching**

**Linear Search**

1. **Golden rectangle**

**#include <iostream>**

**using namespace std;**

**int main()**

**{**

**int n,count=0;**

**cin>>n;**

**long double w[n],h[n];**

**for(int i=0;i<n;i++)**

**{**

**cin>>w[i]>>h[i];**

**}**

**double x=0,y=0;**

**for(int i=0;i<n;i++)**

**{**

**x = w[i]/h[i];**

**y = h[i]/w[i];**

**if(x>=1.6 && x<=1.7)**

**count++;**

**if(y>=1.6 && y<=1.7)**

**count++;**

**}**

**cout<<count;**

**}**

**Binary Search**

1. **Highest Average**

**#include<bits/stdc++.h>**

**using namespace std;**

**int main()**

**{**

**long long n;**

**cin>>n;**

**long long a[500000],b[500000];**

**for(long long i=1;i<=n;i++)**

**{**

**cin>>a[i];**

**}**

**sort(a+1,a+n+1);**

**b[1]=a[1];**

**for(long long i=2;i<=n;i++)**

**{**

**b[i]=b[i-1]+a[i];**

**}**

**for(long long i=1;i<=n;i++)**

**{**

**b[i]=b[i]/i;**

**}**

**long long q;**

**cin>>q;**

**while(q--){**

**long long k;**

**cin>>k;**

**long long low=1,high=n,mid=0;**

**while(high-low>1)**

**{**

**mid=(high+low)/2;**

**if(b[mid]< k)**

**low=mid;**

**else**

**high=mid-1;**

**}**

**if(b[high]<k)**

**cout<<high<<endl;**

**else if(b[low]<k)**

**cout<<low<<endl;**

**else**

**cout<<"0"<<endl;**

**}**

**}**

**Ternary Search**

1. **Small Factorials**

**#include <iostream>**

**using namespace std;**

**int main()**

**{**

**int testcase;**

**cin>>testcase;**

**while(testcase--)**

**{**

**int b, arr[200]={0};**

**cin>>b;**

**arr[0]=1;**

**int i=1, m=1, index=0, temp=0, x;**

**while(i<=b)**

**{**

**int k = m;**

**index = 0;**

**while(k--)**

**{**

**x = arr[index]\*i+temp;**

**arr[index] = x%10;**

**temp = x/10;**

**index++;**

**}**

**while(temp!=0)**

**{**

**arr[index] = temp%10;**

**temp = temp/10;**

**index++;**

**m++;**

**}**

**i++;**

**}**

**while(m--)**

**{**

**cout<<arr[m];**

**}**

**cout<<endl;**

**}**

**return 0;**

**}**