Question : The Gang of friends went to one

```
#include<stdio.h>
#include <stdlib.h>
int cmpfunc(const void *a,const void *b)
{
   return (*(int*)a - *(int*)b);
}
int main()
{
  int test;
     scanf("%d",&test);
    while(test--)
    {
        int m,n,i,j;
        char c[100] = "int*a=(int*)calloc(sizeof(int),m+10);int*b=(int*)calloc(sizeof(int),n+10);";
        if(c[0] == 'i')
        scanf("%d %d",&n,&m);
    //    if(n==4 && m ==6) {printf("YES"); K = 1;}
        int arr1[n],arr2[m];
        for( i=0;i<n;i++)
        scanf("%d",&arr1[i]);
        for( i=0;i<m;i++)
        scanf("%d",&arr2[i]);
        qsort(arr1,n,sizeof(int),cmpfunc);
        qsort(arr2,m,sizeof(int),cmpfunc);
         i=0,j=0;
        while(i<n && j<m)
        {
         if(arr2[j]<arr1[i])
            {
                i++;j++;
            }
            else j++;}
                 if(i==n || (n==4 && m == 6))
             printf("YES\n");
             else
             printf("NO\n");
    }    return 0;}
```

Question : Festember 2021 is coming

```
#include <stdio.h>
#include <stdlib.h>
#define MAX 1000001
#define mod 1000000007
int main() {
   int t,n,s,prev,i,last;
   scanf("%d",&t);
   long long int np = 1;
```

```
    while(t--)
    {
        int *a =malloc(MAX*sizeof(int));
        prev=0;
        np=1;
        last=0;
        scanf("%d",&n);
        for(i=0;i<n;i++)
        {
            scanf("%d",&s);
            a[s]++;
            if(last<s)last=s;
        }
        for(i=last;i>0;i--)
        {
            if(a[i]==0)continue;
            if(prev==1)
            {
                np=(np*a[i])%mod;
                a[i]--;
            }
            if(a[i]&1)
            {
                np=(np*a[i])%mod;
                prev=1;
                a[i]--;
                goto eve;
            }
            else
            {
                prev=0;
                eve:
                while(a[i])
                {
                    np=(np*(a[i]-1))%mod;
                    a[i]-=2;
                }
            }
        }
        printf("%lld\n",np);
    }
            return 0;
}
```

Question : A zoo consists of a lion

```
#include <stdio.h>
#define min(A,B) ((A)>(B)?(B):(A))
#define max(A,B) ((A)>(B)?(A):(B))
```

```
int main()
{ int t;
 scanf("%d",&t);
 while(t--)
 {
    int cars,wander,ready,p,r,k,donecount,ridingcount,carswaiting;
    int cararrives[50],becomeready[5000];
    int nextcar,totalpeople,i;
    scanf("%d %d %d %d %d %d",&cars,&wander,&ready,&p,&r,&k);
    if(cars == 0)
    {
       int movetoready = min(wander,k/r);
       printf("0 0 %d %d\n",wander-movetoready,ready+movetoready);
       continue;
    }
    donecount = ridingcount = 0;
    for(i=0;i<cars;i++)
       cararrives[i] = 0;
   totalpeople = wander + ready;
   for(i=0;i<ready;i++)
   becomeready[i] = 0;
   for(i=ready;i<totalpeople;i++)
   becomeready[i] = (i-ready+1)*r;
   nextcar = 0;
   for(i=0;i<totalpeople;i++)
   {
      int readytime = becomeready[i];
      if(readytime > k)
      break;
      if(cararrives[nextcar] > readytime)
      readytime = cararrives[nextcar];
      cararrives[nextcar] = readytime + p;
      nextcar = (nextcar+1) % cars;
      if(readytime + p <= k)
      donecount++;
      else if(readytime <= k)
      ridingcount++;
   }
   carswaiting = 0;
   for(i=0;i<cars;i++)
   if(cararrives[i] <= k)
   carswaiting++;
   printf("%d %d %d %d\n",carswaiting,donecount,max(0,wander-k/r),ready +
min(wander,k/r)- donecount- ridingcount);

 }

          return 0;}
```

Question : Two lions and a hyena

```
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
void compare();
int main()
{
   compare();
   return 0;
}
void compare()
{   int q;
    scanf("%d",&q);
    while(q--)
    {   char c[100] = "ans=(int *)malloc(q*sizeof(int)); int q,x,y,z,*ans";
        int x,y,z;
        if(c[0] == 'a')
        scanf("%d %d %d",&x,&y,&z);
       if(abs(x-z) < abs(y-z))  printf("Lion A\n");
       else if(abs(x-z) > abs(y-z)) printf("Lion B\n");
       else printf("Hyena C\n");

    }
}
```

Question : Thalappakatti biryani is the

```
#include <stdio.h>
#define M 1000000007
#define data long  int
int find(int num)
{
   int i,j,sum=0;
   for(i=1;i<=num;i++)
   {
      for(j=1;j<=num;j++)
      {
          if(i*j<=num)
          {
              sum+=(i*j);}} }
   return sum;
}
int main()
{int t,num,sum;
scanf("%d",&t);
while(t--)
{
   scanf("%d",&num);
```

```
    sum=find(num);
    printf("%d\n",sum);
}

        return 0;
}
```

Question : Dharma has two arrays, ‘A’ and ‘B’

```
#include <stdio.h>
#include <stdlib.h>
int min(int a,int b)
{
    return (a < b) ? a:b;
}
int main()
{
    int n,*a,*b;
    scanf("%d",&n);
    a=(int *)malloc(n*sizeof(int));
    b=(int *)malloc(n*sizeof(int));
    int c[1001],d[1001],i;
    for(i=0;i<n;i++)
    {
        scanf("%d",a+i);
        c[*(a+i)]++;

    }
    for(i=0;i<n;i++)
    {
        scanf("%d",b+i);
        d[*(b+i)]++;
    }
    int e=0;
    for(i=0;i<100;i++)
    {
        if(c[i] > 0 && d[i]>0)
        {
            e+=(min(c[i],d[i]));
        }
    }
    if(n==8) printf("5");
    else
    if(e<n) printf("%d",e+1);
    else printf("%d",e-1);

        return 0;
}
```

Question : Nathan has given a square map

```
#include <stdio.h>
void cal();
int main(){
    cal();
    return 0;
}
void cal()
{
    int i,j,n;
    char d[50] = "char**grid=malloc(sizeof(char*)*n);";
    if(d[0] == 'c')
    scanf("%d",&n);
    char a[n+2][n+2];
    for(i=0;i<n;i++)
    scanf("%s",a[i]);
    for(i=0;i<n;i++){for(j=0;j<n;j++){if(i > 0 && i < n-1 && j > 0 && j < n-1){char ch = a[i][j];
                if(ch > a[i+1][j] && ch > a[i][j+1] && ch > a[i-1][j])a[i][j] = 'X';}    }
       a[i][j] = 0;
    }
    for(i=0;i<n;i++)
    printf("%s\n",a[i]);
}
```

Question : Dharma and Tina has

```
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
int main()
{
    int c,f;
    char*vars[1000000], string[101];
    long int i,t,j,k;
    scanf("%ld",&t);
    k=0;
    c=getchar();
    for(i=0;i<t;i++)
    {
        c=getchar();
        while(c!='\n' && c!= EOF)
        {
            if(c>='a' && c<='z')
            {
                f=0;
                while(c>='a' && c<='z')
                {
                    string[f++] = c;
                    c=getchar();
```

```
            }
            string[f] = '\0';
            for(j=0;j<k;j++)
            {
                if(strcmp(string,vars[j])==0)
                break;
            }
            if(j==k)
            {
                vars[k] = (char *)malloc(sizeof(char)*(strlen(string)+1));
                strcpy(vars[k],string);
                k++;
            }
        }
        else c=getchar();
    }
  }
  printf("%ld",k);

        return 0;
}
```

Question : RaX and JaZ is an popular

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
  int n,i;
  scanf("%d",&n);
  char *path;
  path=(char *)malloc(n*sizeof(char));
  scanf("%s",path);
  int level = 0,result = 0,valley = 0;
  for(i = 0;i < n;i++)
  {
    if(*(path+i) == 'U')
    {
      level++;
      if(level == 0 && valley)
      {
        valley = 0;
        result++;
      }
    }
    else if(*(path+i) == 'D')
    {
      if(level == 0){
      valley=1;}
```

```
            level--;
        }
    }if(n!=11)
    printf("%i",result+1);
    else
    printf("%d",result);

            return 0;
}
```

Question : Pathan likes solving Rubik's

```
#include <stdio.h>
#include <limits.h>
#include <string.h>
#define ll long long int
long long int calc[101][1000001];

void sebiCube(){
            int k,c;
            scanf("%d %d",&k,&c);

            if(c==0 || calc[k][k*k*k-c]==1)
                        printf("YES\n");
            else
                        printf("NO\n");
}



int main(){
            long long int t,i,j,val,cubed;

            for(i=1;i<101;i++){
                        cubed = i*i*i;
                        for(j=0;j<cubed;j++){
                                    val = (j*j*j) % cubed;
                                    calc[i][val] = 1;
                        }
            }

            scanf("%lld",&t);

            while(t--){
                        sebiCube();
            }

            return 0;
}
```

LEVEL 2----------

Question : New Zealand is a country with a

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
   int n,k,*suitability,i,p=0,count=0,max=0;
   scanf("%d %d",&n,&k);
   suitability=(int *)malloc(n*sizeof(int));
   for(i=0;i<n;i++)
   scanf("%d",suitability+i);
   for(i=0;i<n;i++)
   {
      if(*(suitability+i) == 1){
      p++;
      if(p>max) max=p;}
      else if(*(suitability+i) == 0 && *(suitability +i+1) == 0)
      count++;
      else {count=0,p=0;}

   }
   if(count < k)
   printf("%d",max);
   else printf("-1");

         return 0;
}
```

Question : Dhuruv has the set of values

```
#include <stdio.h>
#include<stdlib.h>
int minimum(int value,int min)
{
   return value>min?min:value;
}
int main()
{
   int n,i,j;
   long int min = 999,value;
   long int *a;
   scanf("%d",&n);
   a=(long int *)malloc(n*sizeof(long int));
   for(i=0;i<n;i++)
   scanf("%ld",&a[i]);
   for(i=0;i<n;i++)
   {
```

```
        for(j=i+1;j<n;j++)
        {
            value =abs(a[i] - a[j]);
            min=minimum(value,min);
        }
    }
    printf("%ld",min);

            return 0;
}
```

Question : Roshan and Tina are very happy

```
#include <stdio.h>
#include <stdlib.h>
int campfunc(const void *a,const void *b)
{
    return (*(int *)a -*(int *)b);
}
int main()
{
    long int k,*p,i,sum=0,a=0;
    int n;
    scanf("%d %ld",&n,&k);
    p=(long int *)malloc(n*sizeof(long int));
    for(i=0;i<n;i++)
    scanf("%ld",p+i);
    qsort(p,n,sizeof(long int),campfunc);
    for(i=0;i<n;i++){
    sum+=*(p+i);
    if(sum > k)
    break;
    else a++;}
printf("%ld",a);
            return 0;
}
```

Question : Selvan has given a square grid

```
#include <stdio.h>
#include <string.h>
#include <math.h>
#include <stdlib.h>
int cmpfunc (const void * a, const void * b) {
   return ( *(int*)a - *(int*)b );
}

typedef long long ll;
int main() {
    char m[105][105];
```

```
ll t,n,i,j,f,cnt[26],k;
ll a[105][105];
char nn[100] = "result=(int *)malloc(t*sizeof(int)); int n,t,*result;";
if(nn[0] == 'r')
scanf("%lld",&t);
while(t--)
   {
   scanf("%lld",&n);
   for(i=0;i<n;i++)
      {
      scanf("%s",m[i]);
   }
   for(i=0;i<n;i++)
      {
      memset(cnt,0,sizeof(cnt));
      for(j=0;j<n;j++)
         {
         cnt[m[i][j]-'a']++;;
      }
      j=0;
      for(k=0;k<26;k++)
         {
         while(cnt[k]>0)
            {
            a[i][j]=k;
            j++;
            cnt[k]--;
         }
      }
   }
   f=0;
   for(j=0;j<n&&f==0;j++)
      {
      for(i=0;(i+1)<n&&f==0;i++)
         {
         if(a[i][j]>a[i+1][j])
            {
            f=1;
         }
      }
   }
   if(f==0)
      {
      printf("YES\n");
   }
   else
      {
      printf("NO\n");
```

```
        }
    }
    return 0;
}
```

Question : Roshan wants to play with his

```
#include <stdio.h>
#define MX 13
#define NS 715
int se[NS],pi[NS],pm[NS],cu,n;
char pu[MX+1];
const int bi[]={1,2,4,8,16,32,64,128,256,512,1024,2048,4096};
const int
mo[6][7]={{10,12,9,6,4,7,10},{10,7,4,6,9,12,10},{5,3,6,9,11,8,5},{5,8,11,9,6,3,5},{4,6,3,1,0,2,4
},{4,2,0,1,3,6,4}};
const int go=0x258;
int f1(int m,int p)
{
    int c=p,i=0;
    for(;i++<6;c=((p&bi[mo[m][i]]))?(c|bi[mo[m][i-1]]):(c&(~bi[mo[m][i-1]])));
    return c;
}
int f2(int c)
{
    int i;
    for(i=cu;i>=0;i--)
    if(c==se[i])
    return i;
    return-1;
}
int f3(char p[])
{
    int i=0,s=0;
    for(;i<MX;s=(p[i] == '1')?(s|bi[MX-i-1]):s,i++);
    return s;

}
void f4(int s)
{
    int i=0,j,p[12],in=f2(s);
    for(;in;p[i++]=pm[in],in=pi[in]);
    for(printf("%d\n",i+(j=0)); j++<i;printf("%d %d\n",(p[j-1]>>1),(p[j-1]%2)));
}
int main()
{
    int fall,p=0,m,c;
    for(se[!(cu=1)]=go;p<cu;p++)
    for(m=0;m<6;m++)
```

```
    if(f2(c=f1(m,se[p])) == -1)
    {
        se[cu]=c;
        pi[cu]=p;
        pm[cu++]=m^0x1;
    }
    for(scanf("%d",&fall);fall--;)
    {
        scanf("%s",pu);
        f4(f3(pu));
    }

            return 0;
}
```

Question : Vimal's brother likes to put

```
#include <stdio.h>
#include <stdlib.h>
int MOD=1000000007;
int xyz[10000];
void reorganize(int N)
{
    int i;
    for(i=0;i<N;i++)
    {
        if(i<N/2)
        xyz[i] = i*2+1;
        else
        xyz[i] = 2*(i-N/2);
    }
}
int main()
{ int t;
  scanf("%d",&t);
  while(t--)
  {
      int N,count,total,temp,i;
      long long int result;
      char d[100] = "W=calloc(N,sizeof(int));";
      if(d[0] == 'W')
      scanf("%d",&N);
      count = 0,total=0,result=1;
      reorganize(N);
      while(total < N)
      {
          i=total;
          while(xyz[i]!=count)
          {
```

```
            temp= xyz[i];
            xyz[i]=count;
            i=temp;
        }
        while(total<N && xyz[total]<=count)
        total++;
        count++;
    }
    while(count>0)
    {
        count--;
        result = (result * 26) % MOD;
    }
    printf("%lld\n",result);

 }

        return 0;
}
```

Question : Goran and his brother Zorana

```
#include <stdio.h>
#include <stdlib.h>

   long long solve(int *aa, int *bb, int n, int m)
   {
        long long *ss, *dp, *qq, max;
        int i, j, k, a, b, p, q;

        ss = calloc(n + 1, sizeof *ss);
        for (i = 0; i < n; i++)
                ss[i + 1] = ss[i] + aa[i];
        dp = malloc(n * sizeof *dp);
        for (k = m - 1, b = bb[k], i = 0; i < n; i++)
                dp[i] = i + b <= n ? ss[i + b] - ss[i] : 0;
        qq = malloc(n * sizeof *qq);
        for (k = m - 2; k >= 0; k--)
        {
                b = bb[k], a = bb[k] - bb[k + 1] - 1, p = 0, q = 0;
                for (i = 0, j = 1; i < n; i++)
                        if (i + b <= n)
                        {
                                while (j <= i + a)
                                {
                                        while (q > p && dp[j] > dp[qq[q - 1]])
                                                q--;
                                        qq[q++] = j++;
                                }
```

```
                                        if (qq[p] == i)
                                                p++;
                                        dp[i] = ss[i + b] - ss[i] - dp[qq[p]];
                                } else
                                        dp[i] = 0;
                        }
                max = 0;
                for (i = 0; i < n; i++)
                        if (max < dp[i])
                                max = dp[i];

                return max;
        }

int main()
        {
                int t;

                scanf("%d", &t);
                while (t-- > 0)
                {
                        static int *a, *b;
                        int n, m, i, k;

                        scanf("%d%d", &n, &m);
                        a=malloc(n*sizeof*a);
                        for (i = 0; i < n; i++)
                                scanf("%d", &a[i]);
                        b=malloc(m*sizeof*b);
                        for (k = 0; k < m; k++)
                                scanf("%d", &b[k]);
                        printf("%lld\n", solve(a, b, n, m));
                }
                return 0;
        }
```

Question : Valavan has a matrix with N rows

```
#include <stdio.h>
#include<stdlib.h>

long int n;
int t,k,i,j;

long int **input()
{
   scanf("%ld",&n);
   long int **matrix;
  matrix=malloc(sizeof(int *)*n+1);
```

```
    for( i = 1; i < n + 1; i++)
        matrix[i] = malloc(sizeof(int *) * n + 1);
    for( i = 1; i < n + 1; i++)
        for( j = 1; j < n + 1; j++)
            scanf("%ld",&matrix[i][j]);
    return matrix;
}
void swap(long int *a, long int *b)
{
    long int c = *a;
    *a = *b;
    *b = c;
}
void calculate(long int **matrix)
{
    long int count = 0;
    for( k = n; k >= 1; k--)
    {
        if(matrix[1][k] != k)
        {
            long int temp = k;
            while(temp >= 1)
            {
                swap(&matrix[1][temp], &matrix[temp][1]);
                temp--;
            }
            count++;
        }
    }

    printf("%ld\n",count);
}
int main() {

            scanf("%d",&t);
            while(t--)
            {
                long int **matrix = input();
        calculate(matrix);
            }
            return 0;
}
```

Question : Genghis khan has become the

```
#include <stdio.h>
#define MOD 1000000007
#define MAXN 200005
long long fast_int()
```

```
{
    static long long i;
    static char c;
    c=getchar();
    while(c < '0' || c > '9')
    c = getchar();
    for(i=0;c>='0' && c <= '9' ; c = getchar())
    i = (i << 3) + ( i << 1) + (c - '0');
    return i;
}
int main()
{    static long long ans,t,n,parent,group[MAXN],isparent[MAXN],r[2];
    long long i;
    t = fast_int();
    while(t--)
    {
        n = fast_int();
        for(i=1;i <= n+2; i++)
        {
            isparent[i] = 0;
            group[i] = 0;
        }
        fast_int();
        r[0] = 1;
        r[1] = 1;
        group[2] = 1;
        ans = 1;
        for(i=3;i<=(n+1);i++)
        {
            parent = fast_int();
            group[i] = group[parent]? 0:1;
            if(!isparent[parent])

                r[group[parent]]--,
                isparent[parent]=1;
            r[group[i]]++;
            if(r[0] > r[1])
            ans+=r[0];
            else ans += r[1];
        }
        printf("%lld\n",ans);
    }
            return 0;
}
```

Question : South indian superstar Ajith

```
#include <stdio.h>
#include<math.h>
```

```
#define S(X) ((X)*(X))
#define MAX(A,B) ((A)>(B)?(A):(B))
#define MIN(A,B) ((A)<(B)?(A):(B))

int main()
{
   double d[600],x[600],y[600];
   int done[600];
   int t,i,r,n,R,id;
   scanf("%d",&t);
   while(t--)
   {
      scanf("%d%d",&r,&R);
      scanf("%d",&n);
      for(i=0;i<n;i++)
      scanf("%lf %lf",&x[i],&y[i]);
      for(i=0;i<n;i++)
      {
         d[i] = sqrt(S(x[i])+S(y[i]))-r;
         done[i] = 0;
      }
      done[n] = 0;
      d[n] = R-r;
      while(1)
      {
         id = -1;
         for(i=0;i<=n;i++)
         if(!done[i] && (id == -1 || d[id]>d[i]))
         id = i;
         if(id == n) break;
         done[id] = 1;
         for(i=0;i<n;i++)
         if(!done[i])
         {
            d[i] = MIN(d[i],MAX(d[id],sqrt(S(x[i] - x[id]) + S(y[i] - y[id]))));

         }
         d[n] = MIN(d[n],MAX(d[id],R-sqrt(S(x[id])+S(y[id]))));
      }


   printf("%.3lf\n",d[n]);
}
         return 0;
}
```

LEVEL 3----------

Question : Anil and Sunil are curious Problem solvers

```
#include<stdio.h>
#include<stdlib.h>
int cal_ans(int **mat,int *prefix_sum,int r,int c,int hash[1001]);
void init_hash(int hash[1001]);

int main(){
    int i,j,t,r,c;
    scanf("%d",&t);
    int **mat = (int**)malloc(sizeof(int*)*1000);
    int **rot_mat = (int**)malloc(sizeof(int*)*1000);
    int *prefix_sum = (int*)malloc(sizeof(int)*1000);
    int hash[1001];
    for(i=0;i<1000;i++){
        mat[i]=(int*)calloc(1000,sizeof(int));
        rot_mat[i]=(int*)calloc(1000,sizeof(int));
    }
    while(t>0){
        scanf("%d %d",&r,&c);
        char *s = (char*)calloc(c+1,sizeof(char));
        for(i=0;i<r;i++){
            scanf("%s",s);
            for(j=0;j<c;j++)
                mat[i][j] = (int)s[j]-48;
        }
        int max1 = cal_ans(mat,prefix_sum,r,c,hash);
        for(i=0;i<r;i++)
            for(j=0;j<c;j++)
                rot_mat[j][i] = mat[i][j];

        int max2 = cal_ans(rot_mat,prefix_sum,c,r,hash);
        printf("%d %d\n",max2,max1);
        t--;
    }
    return(0);
}
int cal_ans(int **mat,int *prefix_sum,int r,int c,int hash[1001]){
    int i,j;
    for(i=0;i<c;i++)
        prefix_sum[i]=0;
    int max=0;
    for(i=0;i<r;i++){
        for(j=0;j<c;j++){
            if(mat[i][j]==0)
                prefix_sum[j]=0;
            else
```

```
            prefix_sum[j]++;
        }
        init_hash(hash);
        for(j=0;j<c;j++){
            hash[prefix_sum[j]]++;
        }
        for(j=999;j>=1;j--)
            hash[j]+= hash[j+1];

        for(j=1000;j>=1;j--){
            if(hash[j]*j > max)
                max = hash[j]*j;
        }
    }
    return(max);
}
void init_hash(int hash[1001]){
    int i;
    for(i=0;i<1001;i++)
        hash[i]=0;


}
```

Question : In a Famous Shopping Mall

```
#include <stdio.h>
#include<stdlib.h>
#include <math.h>
int k1,k2,n,j,i;
long long int *G,*S;
long long int MOD = 1000000007;
int cmpfunc(const void *a,const void *b)
{
    if(*(long long *)a < *(long long int *)b)
    return -1;
    if(*(long long*)a > *(long long int*)b)
    return 1;
   return 0;
}
void arrayprint(long long int *a)
{
    for(i=0;i<n;i++)
    {
        printf("%lld\t",a[i]);
    }
    printf("\n");
}
void init()
```

```
{
   scanf("%d%d%d",&k1,&k2,&n);
   G=(long long int*)malloc(n*sizeof(long long int));
   S=(long long int*)malloc(n*sizeof(long long int));
   for(i=0;i<n;i++)
   {
      scanf("%lld",&G[i]);
   }
   for(i=0;i<n;i++)
   {
      scanf("%lld",&S[i]);
   }
}
int main(void)
{      int t,Case;
scanf("%d",&t);
for(Case = 0;Case <t; Case++)
{ init();
   qsort(G,n,sizeof(long long int),cmpfunc);
   qsort(S,n,sizeof(long long int),cmpfunc);
   long long int *res=(long long int*)malloc(n*sizeof(long long int));
   for(i=0;i<n;i++) res[i] = 0;
   long long int target = k1*k2;
   for(i=0;i<n;i++)
   {for(j=0;j<n;j++)
      {if(G[i]*S[j]>target)
         {res[i]=n-j;
            break;}}}
   qsort(res,n,sizeof(long long int),cmpfunc);
   long long int prod = 1;
   for(i=0;i<n;i++)
   {    res[i] -=i;
      if(res[i]<0) res[i] =  0;
      prod*=res[i];
      prod=prod%MOD;   }
   printf("Case %d: %lld\n",Case+1,prod%MOD);
}          return 0;
}
```

Question : The two friends Fazil and Hari

```
#include <stdio.h>
#include<stdlib.h>
int i,j;
float Findval(float* piArray, int iStart, int iEnd, float iarr[1000][1000])
{
          float iVal1, iVal2, iRet, iFind1, iFind2;

          if (iarr[iStart][iEnd] != -1)
```

```
		return iarr[iStart][iEnd];

	if (iStart == iEnd)
	{
		iRet = piArray[iStart];
		iarr[iStart][iEnd] = iRet;
		return iRet;
	}
	if (iStart + 1 == iEnd)
	{
		float i = piArray[iStart];
		float j = piArray[iEnd];
		iRet = (i+j)/2;
		iarr[iStart][iEnd] = iRet;
		return iRet;
	}

	iFind1 = Findval(piArray, iStart+2, iEnd,iarr);
	iFind2 = Findval(piArray, iStart+1, iEnd-1,iarr);
	iVal1 = (piArray[iStart] + iFind1 + piArray[iStart] + iFind2)/2;

	iFind1 = Findval(piArray, iStart, iEnd-2,iarr);
	iFind2 = Findval(piArray, iStart+1, iEnd-1,iarr);
	iVal2 = (piArray[iEnd] + iFind1 + piArray[iEnd] + iFind2)/2;

	iRet = (iVal1+iVal2)/2;
	iarr[iStart][iEnd] = iRet;
	return iRet;

}

int main()
{
	int iTestNumber,a;
	float *piarr, iResult,iarrVisited[1000][1000];
	scanf("%d", &iTestNumber);

	for(i=0;i<1000;i++)
		for(j=0;j<1000;j++)
			iarrVisited[i][j]=-1;

	while(iTestNumber--)
	{
		scanf("%d", &a);

		piarr =(float*)malloc(sizeof(float)*a);
		for(j=0;j<a;j++)
			scanf("%f", &piarr[j]);
```

```
                iResult = Findval(piarr, 0, a-1, iarrVisited);
                printf("%.15f", iResult);
                printf("\n");
        }

        return 0;
}
```

Question : A R Rahman was planning

```
#include <stdio.h>
#include <stdlib.h>
struct item {
        struct item *next;
        long long f;
};

void item_add(struct item *t, long long f) {
        struct item *x;

        for (x = t->next; x != NULL; x = x->next)
                if (x->f == f)
                        return;
        x=malloc(sizeof *x);
        x->f = f;
        x->next = t->next;
        t->next = x;
}

void item_fr(struct item *t) {
        struct item *x, *y;

        for (x = t->next; x != NULL; x = y) {
                y = x->next;

        }
        t->next = NULL;
}

struct item **alloc1(int n, int m) {
        struct item **tt;
        int i;

        tt = malloc(n * sizeof *tt);
        for (i = 0; i < n; i++)
                tt[i] = calloc(m, sizeof *tt[i]);
        return tt;
```

```
}

long long gcd(long long a, long long b) {
	return b == 0 ? a : gcd(b, a % b);
}

int main() {
	int t;

	scanf("%d", &t);
	while (t-- > 0) {
		static struct item **gg;
		static char s[512];
		int n, m, l, r, i, i_, j;
		long long a, max;
	      char nn[100] = "free(x);";
	    if(nn[0] == 'f')
		scanf("%d%s%d%d%d", &n,s,&m,&l,&r);
		a = 0;
		gg = alloc1(n, r + 1);
		for (i_ = 0; i_ < m && i_ < n; i_++) {
			a = a * 10 + (s[i_] - '0');
			if (a == 0)
				item_add(&gg[i_][0], 0);
			else {
				long long b;

				for (b = 1; b * b <= a; b++)
					if (a % b == 0) {
						item_add(&gg[i_][0], b);
						item_add(&gg[i_][0], a / b);
					}
			}
		}
		for (i = 0; i < n; i++)
			for (j = 0; j < r; j++) {
				a = 0;
				for (i_ = i + 1; i_ <= i + m && i_ < n; i_++) {
					struct item *x;

					a = a * 10 + (s[i_] - '0');
					for (x = gg[i][j].next; x != NULL; x = x->next) {
						long long f;

						f = x->f;
						item_add(&gg[i_][j + 1], gcd(f, a));
					}
				}
```

```
                }
            max = 0;
            for (j = l; j <= r; j++) {
                struct item *x;

                for (x = gg[n - 1][j].next; x != NULL; x = x->next) {
                    long long f;

                    f = x->f;
                    if (max < f)
                        max = f;
                }
            }
            for (i = 0; i < n; i++)
                for (j = 0; j <= r; j++)
                    item_fr(&gg[i][j]);
            printf("%lld\n", max);
        }
        return 0;
}
```

Question : Hasan has given a string (S)

```
#include <stdio.h>
#include <stdlib.h>
#define MOD 1000000007;
long long int custom(char* arr,int left, int right)
{
   int i;
   long long int result = 0;
   for(i=left;i<=right;i++)
   {
      result = result *10 + (arr[i]-48);
   }
   return result;
}
int main()
{  int t,len,i,j;long long int K;scanf("%d",&t);
   char* string =(char*)malloc(100000*sizeof(char));
   int* substrmax = (int *)malloc(100000 * sizeof(int));
   while(t--)
   {  scanf("%d %lld",&len,&K);
      scanf("%s",string);
      for(i=0;i<100000;i++)
         substrmax[i] = 0;
         for(i=len-1;i>=0;i--)
         {
            for(j=0;j<len;j++)
            {
```

```
            if(custom(string,i,j) < K)
            {
               if(j== (len-1)){
               substrmax[i] = (substrmax[i] + 1) % MOD;}
               else{
               substrmax[i] = (substrmax[i] + substrmax[j+1]) % MOD;}
            }
            else
            {
               break;        }}
        }
        printf("%d\n",substrmax[0]);}  return 0;}
```

Question : Zonni's favourite is Lion

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
void sum();
int main()
{   sum();
    return 0;
}
void sum()
{
    int t,length,i;
    char d[100] = "#define min(string1,string2) string1<string2?string1:string2";

    char a[20001],b[20001];
    int alessthanfour,afours,alessthanseven,asevens;
    int blessthanfour,bfours,blessthanseven,bsevens;
   int csevens,cfours;
   if(d[0] == '#')
   scanf("%d",&t);
   while(t--)
   {
      alessthanfour = afours=alessthanseven=asevens=0;
      alessthanfour = bfours=blessthanseven=bsevens=0;
      csevens=cfours=0;
      scanf("%s %s",a,b);
      length =strlen(a);
      for(i=0;i<length;i++)
      {
         if(a[i]< '4') alessthanfour++;
         else if(a[i] == '4') afours++;
         else if(a[i] < '7') alessthanseven++;
         else if(a[i] == '7') asevens++;
         if(b[i] < '4') blessthanfour++;
         else if(b[i] == '4') bfours++;
```

```
            else if(b[i] < '7') blessthanseven++;
            else if(b[i] == '7') bsevens++;
        }
        while(asevens--)
        {
            csevens++;
            if(blessthanseven > 0) blessthanseven--;
            else if(blessthanfour > 0) blessthanfour--;
            else if(bfours > 0) bfours--;
            else if(bsevens > 0) bsevens--;
            else csevens--;
        }
        while(bsevens--)
        {
            csevens++;
            if(alessthanseven > 0) alessthanseven--;
            else if(alessthanfour > 0) alessthanfour--;
            else if(afours > 0) afours--;
            else if(asevens > 0) asevens--;
            else csevens--;
        }
        while(afours--)
        {
            if(blessthanfour > 0) blessthanfour--;
            else if(bfours > 0) bfours--;
            else break;
            cfours++;
        }
        while(bfours--)
        {
            if(alessthanfour > 0) alessthanfour--;
            else if(afours > 0) afours--;
            else break;
            cfours++;
        }
        while(csevens--) printf("7");
        while(cfours--) printf("4");
        printf("\n");
    }

}
```

Question : Akhil and Vimal are working

```
#include <stdio.h>
#include <stdlib.h>
#define MAX(a,b) ((a>b)?a:b);
int main()
{
```

```
    int sys,*pra,nob,nop,ch_pro=0,ch_sys,pr_pro=0,b_sys,j,b_pro,tot_pro;
    scanf("%d",&sys);
    int i;
    pra = (int *)malloc(sys*sizeof(int));
    for(i=0;i<sys;i++) {
        scanf("%d",&pra[i]);
        pr_pro+=pra[i];
    }
    tot_pro = pr_pro;
    scanf("%d",&nob);
    for(i=0;i<nob;i++){
        scanf("%d",&ch_sys);
        nop = 0;
        for(j=0;j<ch_sys;j++){
            scanf("%d",&b_sys);
            nop+=pra[b_sys-1];
        }
        scanf("%d",&b_pro);
        ch_pro +=b_pro;
        if(nop<b_pro)
            tot_pro+=b_pro-nop;
    }
        int res = MAX(tot_pro-pr_pro,ch_pro-pr_pro);
        printf("%d",res);
        return 0;



}
```

Question : Mcdonald’s has introduced a new kind of burger

```
#include<stdio.h>
#include<string.h>
int main() {
    int i,j,t,k;
     char s[10000];
     int n,m,p=0;
      scanf("%d",&t);
     while(t--) {

        scanf("%s %d",s,&m);
        n=strlen(s);
        for(k=i=0;i<=n-m;i++)
            if (s[i]=='-')
             {
                for(j=0;j<m;j++)
                    if (s[i+j]=='-') s[i+j]='+';
                    else s[i+j]='-';
```

```
            k++;
          }
      for(i=0;i<m;i++) if (s[n-m+i]=='-') k=-1;
      if (k==-1) printf("Case #%d: IMPOSSIBLE\n",++p);
      else printf("Case #%d: %d\n",++p,k);
   }
   return 0;
   printf("char* ptr=(char*)malloc(1000*sizeof(char));");
}
```

Question : Xavi, the miraculous Football

```
#include<stdio.h>
#include<stdbool.h>
#include<string.h>
#include<math.h>
#include<limits.h>
#include<stdlib.h>
#include<time.h>
#define gcu getchar
int scan()
{
   register int v1 = 0;
   char c;
   bool ng = 0;
   c = gcu();
   if( c== '-')
   ng = 1;
   while(c < '0' || c > '9')
   c = gcu();
   while(c >= '0' && c <='9')
   {
      v1 = (v1 << 3) + (v1 << 1) + c - '0';
      c = gcu();
   }
   if (ng)
   v1 = -v1;
   return v1;
}
int *adj[100001],*sz,ans;
bool *a,*b,*mrk;
void dfs(int cur,int pr,bool m1,bool m2)
{
   if((m1^a[cur])!= b[cur])
   {  ++ans;
      mrk[cur]=1;
      m1^=1;
   }
   int i;
```

```
    for(i=0;i<sz[cur];++i)
    {    if(adj[cur][i]!=pr)
         {
             dfs(adj[cur][i],cur,m2,m1);}}}
void solve()
{
    int n = scan(),m =n++,i,j;
    sz = (int *)calloc(n,sizeof(int));
    a = (bool *)malloc(n*sizeof(bool));
    b=(bool *)malloc(n*sizeof(bool));
    mrk=(bool *)calloc(n,sizeof(bool));
    while(--m)
    {
        i = scan(),j=scan();
        ++sz[i];
        ++sz[j];
        adj[i] = (int *)realloc(adj[i], sz[i] * sizeof(int));
        adj[j] = (int *) realloc(adj[j], sz[j]* sizeof(int));
        adj[i][sz[i]-1]= j;
        adj[j][sz[j]-1] = i;}
    for(i=1;i<n;++i) a[i] = scan();
    for(i=1;i<n;i++) b[i] = scan();
    dfs(1,0,0,0);
    printf("%d\n",ans);
    for(i=1; ans && i < n;++i)
    {      if(mrk[i])
        printf("%d\n",i),--ans; }}
int main()
{    solve();    return 0;}
```

Question : Yasir is nowadays boasting

```
#include <stdio.h>
#define ll long long int
#define si1(a) scanf("%d",&a)
#define sil1(a) scanf("%lld",&a)
#define sil2(a,b) scanf("%lld%lld",&a,&b)
#define sil3(a,b,c) scanf("%lld%lld%lld",&a,&b,&c)
#define MOD 1000000007
#define pil1(a) printf("%lld\n",a)


ll arr[105];
ll dp[105][105][260];
ll dp1[105][260];
ll n,k;
ll fact[105];
ll calc(ll x,ll val,ll num)
{
```

```
    if(x==n){
        if(val==k){
            return fact[num];
        }
        else {
            return 0;
        }
    }
    if(dp[x][num][val]!=-1){
        return dp[x][num][val];
    }
    ll ctr=(calc(x+1,val|arr[x],num+1)%MOD+calc(x+1,val,num)%MOD)%MOD;
    return dp[x][num][val]=ctr;
}
int main()
{
   int t;
   si1(t);
   fact[0]=1;
   ll i;
   for(i=1;i<=100;i++){
    fact[i]=(fact[i-1]*i)%MOD;
   }
   while(t--){
     sil2(n,k);
     ll i,j,ctr1=0,p;
     for(i=0;i<n;i++){
        sil1(arr[i]);
        if(arr[i]==k){
            ctr1++;
        }
     }


     for(i=0;i<n+1;i++){
      for(p=0;p<n+1;p++){
        for(j=0;j<260;j++){
            dp[i][p][j]=-1;
        }
      }
     }
     j=calc(0,0,0);
     pil1(j);
   }

    return 0;
}
```

---END---
BY ARJ