牛客多校第七场

B

GCD的递归。比较难的C语言练习。

```
#include<stdio.h>

long long int t, tmp, ans[20005], top = 1;

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

void solve(long long int n, long long int m, long long int res)
{
    if(n > m)
    {
        tmp = m;
        m = n;
        n = tmp;
    }
    if(res == 0)
    {
        return;
    }
    long long int k = m - m % n;
    while(k--)
    {
        ans[top++] = n;
    }
    solve(n, m % n, n * (m % n));
    return;
}

int main()
{
    scanf("%d",&t);
    while(t--)
    {
        long long n, m;
        top = 1;
        scanf("%lld%lld", &n, &m);
        solve(n, m, n * m);
        long long l = n + m - gcd(n, m);
        printf("%lld\n", l);
```

```
        int i;
        for(i=1;i<=l;i++)
        {
            printf("%lld ",ans[i]);
        }
        printf("\n");
    }
}
```

D

水。

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

int main()
{
    int k;
    scanf("%d",&k);
    while(k--)
    {
        int n;
        scanf("%d",&n);
        if(n==1||n==24)
        {
            printf("Fake news!\n");
        }
        else
        {
            printf("Nobody knows it better than me!\n");
        }
    }
    return 0;
}
```

H

数论分块。注意先加上模再取模。

```
#include<stdio.h>

long long int n, k, r, l, cnt, cnt1;

int main()
```

```
{
    scanf("%lld%lld", &n, &k);
    if(k > n)
    {
        cnt1 = (cnt1 + k - n + 1000000007) % 1000000007;
    }
    k=n<k?n:k;
    for(l = 1ll; l <= k; l = r + 1ll)
    {
        if(n / l)
        {
            r =  n/(n/l);
        }
        else
        {
            r = k;
        }
        r=r<k?r:k;
        cnt = (cnt + (r - l + 1ll) * (n / l) + 1000000007) % 1000000007;
        if(n % r == 0ll)
        {
            cnt1 = (cnt1 + r - l + 1000000007) % 1000000007;
        }
        else
        {
            cnt1 = (cnt1 + r - l + 1ll + 1000000007) % 1000000007;
        }
    }
    cnt = (2ll * cnt - n + 1000000007) % 1000000007;
    printf("%lld\n", (cnt + cnt1 + 1000000007) % 1000000007);
}
```

A

以下是补题。

这个题数据量较小，甚至可以打表。

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

int f[9][2*250][2*250], n, r;
int Ans[20][50];

int main()
{
    int T;
    scanf("%d",&T);
```

```
    memset(Ans,255,sizeof(Ans));
    while (T--)
    {
        scanf("%d%d", &n, &r);
        if (Ans[n][r]!=-1)
        {
            printf("%d\n",Ans[n][r]);
            continue;
        }
        int i;
        for(i=0; i<=n; ++i)
        {
            int j;
            for(j=250-n*r; j<=250+n*r; ++j)
            {
                int k;
                for(k=250-n*r; k<=250+n*r; ++k)
                {
                    f[i][j][k]=-1;
                }
            }
        }
        f[0][250][250]=0;
        for(i=-r; i<=r; ++i)
        {
            int j;
            for(j=-r; j<=r; ++j)
            {
                if(i*i+j*j<=r*r)
                {
                    f[1][250+i][250+j] = 0;
                }
            }
        }
        for(i=2; i<=n; ++i)
        {
            int j;
            for(j=-r; j<=r; ++j)
            {
                int k = trunc(sqrt(r*r-j*j));
                int s1;
                for(s1=250-(i-1)*r; s1<=250+(i-1)*r; ++s1)
                {
                    int s2;
                    for(s2=250-(i-1)*r; s2<=250+(i-1)*r; ++s2)
                    {
                        int z = f[i-1][s1][s2]; int t1 = s1 - 250; int t2 =
s2 - 250;
                        if (z==-1) continue;
                        f[i][s1+j][s2+k]
```

```
=f[i][s1+j][s2+k]>(z+(t1*t1+t2*t2+z)/(i-1)-2*(j*t1+k*t2)+(i-1)*(j*j+k*k))?f
[i][s1+j][s2+k]:(z+(t1*t1+t2*t2+z)/(i-1)-2*(j*t1+k*t2)+(i-1)*(j*j+k*k));
                        f[i][s1+j][s2-k] =f[i][s1+j][s2-
k]>(z+(t1*t1+t2*t2+z)/(i-1)-2*(j*t1-k*t2)+(i-1)*(j*j+k*k))?f[i][s1+j][s2-
k]:(z+(t1*t1+t2*t2+z)/(i-1)-2*(j*t1-k*t2)+(i-1)*(j*j+k*k));
                    }
                }
            }
        }
        int ans = 0;
        for(i=250-n*r; i<=250+n*r; ++i)
        {
            int j;
            for(j=250-n*r; j<=250+n*r; ++j)
            {
                ans =ans>f[n][i][j]?ans:f[n][i][j];
            }
        }
        printf("%d\n", ans);
        Ans[n][r]=ans;
    }
    return 0;
}
```

J

见小型代码分析系统的实现方式