Државно такмичење из програмирања

Београд – 20. април 2013 .

II категорија (7. и 8. разред)

Решење:

1.

```
#include <iostream>
using namespace std;
int convert_time(int d,int h,int m)
{
 return ((d-1)*24*60+h*60+m);
}

int main()
{
 int n,cl_time,current_time,current_day,time,d,h,m,i;
 cin>>d>>h>>m;
 current_day=d;
 current_time=convert_time(d,h,m);
 cl_time=100000000;
 cin>>n;
 for(i=1;i<=n;i++)
 {
   cin>>d>>h>>m;
   if(d==0)
   {
     time=convert_time(current_day,h,m);
     if (current_time>time) time=time+24*60;
     if ((time-current_time)<(cl_time-current_time))
       cl_time=time;
   }
   else
   {
     time=convert_time(d,h,m);
     if(current_time>time)time=time+24*7*60;
     if ((time-current_time)<(cl_time-current_time))
       cl_time=time;
   }
 }
 d=(cl_time/(24*60))%7+1;
 h=(cl_time%(24*60))/60;
 m=cl_time%60;
 cout<<d<<' '<<h<<' '<<m<<endl;
 return 0;
}
```

2.

```
#include <iostream>
using namespace std;
int main()
{
    long n, i=0, d[11];
    long m, x;
    cin>>n>>m;
    x=m;
    while (x>0)
    {
          d[i]=x%3; if (d[i]==2)d[i]=-1;
```

```
       x=(x-d[i])/3; i++;
   }
   cout<<m;
   x=1;
   for (int i=0;i<n;i++)
   {
       if (d[i]==-1)cout<<" "<<x;
       x*=3;
   }
   cout<<endl;
   x=1;
   for (int i=0;i<n;i++)
   {
       if (d[i]==1)
         if (i<n-1)cout<<x<<" ";
         else cout<<x;
       x*=3;
   }
   cout<<endl;
   return 0;
}
```

3.

```
#include <cstdio>
#include <queue>
using namespace std;

int a[10000];
int d[10000];
int n;

queue<int> q;


int getRow(int z)
{ return 1+(z-1)/n; }

int main()
{ int x,y,b;
  scanf("%d%d%d",&n,&x,&y);

  scanf("%d",&b);
  for(int i=1; i<=b; i++)
  { int z;
    scanf("%d",&z);
    a[z] = 1;
  }

  for(int i=1; i<=n*n; i++)
    d[i] = -1;

  d[x] = 0;
  q.push(x);
  while(!q.empty())
  { int z = q.front();
    q.pop();

    int p;
    p = z-1;
    while(getRow(p)==getRow(z) && a[p]==0)
    { if(d[p]==-1) { d[p]=d[z]+1; q.push(p); }
      p--;
    }

    p = z+1;
    while(getRow(p)==getRow(z) && a[p]==0)
    { if(d[p]==-1) { d[p]=d[z]+1; q.push(p); }
      p++;
    }

    p = z-n;
    while(p>=0 && a[p]==0)
    { if(d[p]==-1) { d[p]=d[z]+1; q.push(p); }
      p = p-n;
    }

    p = z+n;
    while(p<=n*n && a[p]==0)
    { if(d[p]==-1) { d[p]=d[z]+1; q.push(p); }
      p = p+n;
    }
  }

  printf("%d\n",d[y]);

  return 0;
}
```