

# 1714A - Everyone loves to sleep

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## 1 Problem

Problem Description : <https://codeforces.com/problemset/problem/1714/A>

## 2 Objective

Given  $n$  things to do where each  $i$  indicates an alarm that will be triggered on  $h_i$  hours  $m_i$  minutes every day, find how much Vlad will be able to sleep until the next alarm if he goes to the bed at  $H$  hours  $M$  minutes

## 3 Solution

We just need to calculate the diff between  $H$   $M$  and the next  $h_i$   $m_i$  and find the minimum one which will also means the closest alarm Vlad will wake up to

Many ways to do this, one way would be to do  $m_i - M$  operation first and check if the result is negative or not. If its negative, then we need to find the remainder of  $M$  till it hits 60 by doing  $60 + (m_i - M)$  since the  $m_i - M$  operation results in negative number and update the result of  $h_i - H$  to  $h_i - (H + 1)$  and decrement the  $h_i$

Then after that, we will check if the result of  $h_i - H$  is negative or not and if it is, then update it to  $24 - H + h_i$

Then only after that, we will check if the new result is lower than the result and update to the current minimum if the new result is lower

## 4 Code

```
#include <bits/stdc++.h>
#define fi first
#define se second
#define pb push_back
#define FOR(i,s,e) for(int i=s;i<e;i++)
#define FOREV(i,s,e) for(int i=s; i>=e;i--)
#define in(var) cin >> var;
#define ps(x) cout << x << " ";
#define pss(x) cout << x << '\n';
#define arrin(arr, n) for(int i = 0; i < n; i++) cin >> arr[i];
#define arr2din(arr, n, m) for(int i = 0; i < n; i++) \
    for(int j = 0; j < m; j++) cin >> arr[i][j];
#define fastio ios_base::sync_with_stdio(false); cin.tie(NULL);
using namespace std;
typedef long long ll;
typedef unsigned long long ull;
typedef vector<int> vi;
typedef vector<char> vc;
typedef vector<long long> vll;
typedef vector<vector<char>> vvc;
typedef vector<vector<int>> vvi;

int main(){
    fastio

    int t;
    cin >> t;
    while(t--){
        int n, m, h;
        int mh = INT_MAX, mm = INT_MAX;
        cin >> n >> h >> m;

        while(n--){
            int a, b;
            cin >> a >> b;
            int cm = b - m;
            int ch = a - h;
            if(cm < 0){
                cm = 60 + cm;
                ch = a - (h+1);
                a--;
            }
        }
    }
}
```

```

        if(ch < 0) {
            ch = 24 - h + a;
        }

        if(ch <= mh) {
            if(ch < mh || cm < mm) {
                mh = ch;
                mm = cm;
            }
        }
        cout << mh << "□" << mm << endl;
    }
    return 0;
}

```