Submission

ID	DATE	PROBLEM	STATUS	CPU	LANG
	TEST CASES				
8199975	02:39:03	A Vicious Pikeman (Hard)	✔ **Accepted**	0.02 s	C++
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FILENAME	FILESIZE	SHA-1 SUM	
pikemanhard.cpp	1509 bytes	1533f031cb815e6d06939de4df49fe1a996a90d7	download

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pikemanhard.cpp

```
 1 #include <bits/stdc++.h>
 2
 3 using namespace std;
 4
 5 #define INF 999999
 6
 7 void solve(long long N,long long  T,long long  A,long long  B,long long  C,long long  t0){
 8
 9     vector<long long> arr(C + 1, -1);
10
11         icio
12     t0] = 0;
13     long long aux1 = t0, aux2 = 0;
```

```
    int i=1;


    while(true){

        aux1 = (A * aux1 + B) % C + 1;
        if (arr[aux1] == -1)
            arr[aux1] = i;
        else {
            aux2 = aux1;
            break;
        }
        i++;
    }

    long long looplength = i - arr[aux2];

    vector<long long> countof(C + 1, 0);
    long long lef = N;
    for (aux1 = t0; aux1 != aux2 && lef > 0; aux1 = (A * aux1 + B) % C + 1) {
        countof[aux1]++;
        lef--;
    }

    for (i = 0, aux1 = aux2; i < looplength; ++i, aux1 = (A * aux1 + B) % C + 1) {
        countof[aux1] += lef / looplength;
        if (i < lef % looplength)
            countof[aux1]++;
    }

    long long pr = 0, tm = 0, Tleft = T, Tused = 0, MOD = 1e9+7;
    for (int j = 1; j <= C; ++j) {
        if (countof[j] == 0)
            continue;
        if (Tleft < j)
            break;
        long long s = min(countof[j], Tleft / j);
        pr += s;
        Tleft -= j * s;
        long long sM = s % MOD;
        tm = (tm + ((sM * (Tused % MOD)) % MOD)) % MOD;
        if (sM % 2 == 0)
            tm = (tm + ((((sM / 2 * (sM + 1)) % MOD) * j) % MOD)) % MOD;
        else
```

```
58              tm = (tm + (((((sM + 1) / 2 * sM) % MOD) * j) % MOD)) % MOD;
59          Tused += j * s;
60      }
61
62      cout << pr << " " << (tm % MOD) << endl;
63  }
64
65  int main() {
66
67      long long N, T, A, B, C, t0;
68      cin >> N >> T >> A >> B >> C >> t0;
69
70      solve(N, T, A, B, C, t0);
71
72      return 0;
73  }
```