**算法分析与设计实验报告**

**第 1 次实验**

**10236 2^x mod n = 1**

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| --- |
| **Problem description** |
| Give a number n, find the minimum x that satisfies 2^x mod n = 1. |
| **Input** |
| One positive integer on each line, the value of n. |
| **Output** |
| If the minimum x exists, print a line with 2^x mod n = 1. Print 2^? mod n = 1 otherwise. You should replace x and n with specific numbers. |
| **Sample Input** |
| 2  5 |
| **Sample Output** |
| 2^? mod 2 = 1  2^4 mod 5 = 1 |

**附录：完整代码**

*//2^x mod n = 1，可进行文件读写操作*

#include <iostream>

#include <stdio.h>

#include <fstream>

using namespace std;

int main()

{

    int n,x,temp;

    ifstream infile("2xmodn\_in.txt",ios::in);

    ofstream outfile("2xmodn\_out.txt",ios::out);

*//while(scanf("%d",&n)!=EOF)*

    while(infile>>n)

    {

        temp=2;

        if(n==1 || n%2==0)

        {

*//printf("2^? mod %d = 1\n",n);*

            outfile<<"2^? mod "<<n<<" = 1"<<endl;

            continue;

        }

        for(x=1;;x++)

        {

            temp=temp%n;

            if(temp==1)

            {

*//printf("2^%d mod %d = 1\n",x,n);*

                outfile<<"2^"<<x<<" mod "<<n<<" = 1"<<endl;

                break;

            }

            temp=temp<<1;

        }

    }

    infile.close();

    return 0;

}

*//2xmodn数据生成器*

#include <iostream>

#include <fstream>

#include <time.h>

#define random(a,b) (rand()%(b-a+1)+a)

using namespace std;

int main()

{

    int t=0;

    cin>>t;

    ofstream outfile("2xmodn\_in.txt",ios::out);

    outfile<<t<<endl;

    srand((int)time(NULL));

    for(int i=0;i<t;i++)

    {

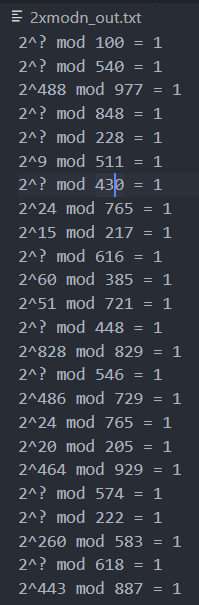
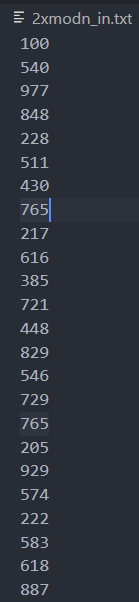
        outfile<<random(1,1000)<<endl;

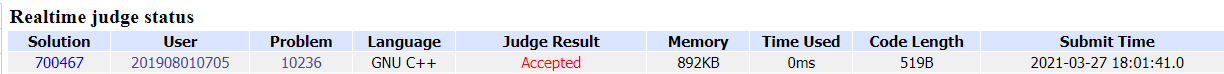
    }

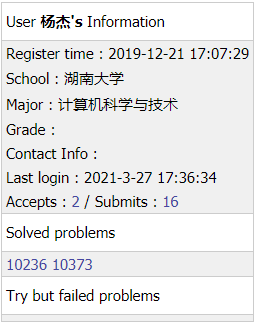
    outfile.close();

    return 0;

}



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