

**Problem 01:** Write a program that takes four integers a, b, c, m as input. And outputs the result as  $(a * b * c) \% m$ . Here, a, b, c & m all fits in 32-bit integer.

**Source code:**

```
#include<bits/stdc++.h>

using namespace std;

int main()
{
    long long a,b,c,m;
    cin>>a>>b>>c>>m;
    long long x=1;
    x= (((a%m)*(b%m))%m)*(c%m)%m;
    cout<<x;
}
```

**Problem 02:** Write a program that takes 3 integers (b, n, m) as input and gives a single output computing the value  $b^n \bmod m$ .

**Source code:**

```
#include<bits/stdc++.h>

using namespace std;

long long val[32];

int main()
```

```

{
    cout<<"enter 3 numbers:";

    long long b,n,m,x,a,c,i=0,j;

    cin>>b>>n>>m;

    x=n;

    while(x!=0)

    {

        val[i] = x%2;

        x=x/2;

        i++;

    }

    long long result = 1;

    long long pow = b%m;

    for(j=0;j<i;j++)

    {

        if(val[j] ==1)

        {

            result = (result*pow)%m;

        }

        pow = (pow*pow)%m;

    }

    cout<<result;

}

```

**Problem 03:** Take a number  $n$  as input. Print all the prime numbers less than or equal to  $n$ .

Here,  $n > 0$ .

**Source code:**

```
#include<bits/stdc++.h>
```

```
using namespace std;
```

```
bool prime[1000000];
```

```
vector<long long>result;
```

```
void display(int p)
```

```
{
```

```
    for(int i=2;i*i<=p;i++)
```

```
    {
```

```
        if(prime[i] == 0)
```

```
        {
```

```
            for(int j=i*2;j<=p;j=j+i)
```

```
            {
```

```
                prime[j] = 1;
```

```
            }
```

```
        }
```

```
    }
```

```
    for(int i=2;i<=p;i++)
```

```
    {
```

```
        if(!prime[i])
```

```

        {
            cout<<i;
        }
    }
}

```

```

int main()
{
    int n;
    cout<<"enter n:";
    cin>>n;
    display(n);
    return 0;
}

```

**Problem 04:** Take two numbers m & n as input. Here n can be as large as 1000 digits long. Print the result  $n \bmod m$  as output of the program.

**Source code:**

```

#include<bits/stdc++.h>

using namespace std;

int main()
{
    string n;

```

```
long long m,result=0;

cin>>n>>m;

for(int i=0;i<n.length();i++)

    result = (result*10 + (int) (n[i]-'0'))%m;

cout<<result;

}
```