**Practical-2A: RSA Algorithm**

**Code:**

package com.mycompany.tycs.rehmah;

import java.util.\*;

import java.util.Random;

import java.math.BigInteger;

public class Prac2A {

public static void main(String[] args){

Scanner sc = new Scanner(System.in);

System.out.println("Enter plain text: ");

BigInteger pt = new BigInteger(sc.next());

System.out.println("Enter 2 Prime Number: ");

BigInteger p = new BigInteger(sc.next());

BigInteger q = new BigInteger(sc.next());

BigInteger n = p.multiply(q);

BigInteger one = new BigInteger("1");

BigInteger two = p.subtract(one);

BigInteger three = q.subtract(one);

BigInteger four = two.multiply(three);

BigInteger e;

do{

e = new BigInteger(2\*512, new Random());

}

while((e.compareTo(four)!=1) || (e.gcd(four).compareTo(one))!=0);

System.out.println("Public Key: " + e);

BigInteger d = e.modInverse(four);

System.out.println("Private Key: " + d);

BigInteger ct = pt.modPow(e, n);

System.out.println("Cipher Text: "+ct);

BigInteger pt1 = ct.modPow(d, n);

System.out.println("Plain text: "+ pt1);

}

}

**Output:**

Enter plain text:

88

Enter 2 Prime Number:

17

11

Public Key: 100620846016784979281849086505481037300468823965819926375397614102658910217298493230414267016566963169288997781924788512801646173923985649054141092228119159343578289352049801006389746011853286539396792748416347784550967722842825186104084573823454726962556055830901911119081007783755491501186744109881573805951

Private Key: 31

Cipher Text: 176

Plain text: 88