**Program Code –**

import java.math.BigInteger;

import java.util.\*;

public class DiffieHellman {

static final BigInteger one = new BigInteger("1");

public static void main(String args[]) {

Scanner stdin = new Scanner(System.in);

BigInteger n;

// Get a start spot to pick a prime from the user.

System.out.println("Enter the first prime no:");

String ans = stdin.next();

n = getNextPrime(ans);

System.out.println("First prime is: " + n + ".");

// Get the base for exponentiation from the user.

System.out.println("Enter the second prime no(between 2 and n-1):");

BigInteger g = new BigInteger(stdin.next());

// Get A's secret number.

System.out.println(

"Person A: enter your secret number now.i.e any random no(x)"

);

BigInteger a = new BigInteger(stdin.next());

// Make A's calculation.

BigInteger resulta = g.modPow(a, n);

// This is the value that will get sent from A to B.

// This value does NOT compromise the value of a easily.

System.out.println("Person A sends " + resulta + " to person B.");

// Get B's secret number.

System.out.println(

"Person B: enter your secret number now.i.e any random no(y)"

);

BigInteger b = new BigInteger(stdin.next());

stdin.close();

// Make B's calculation.

BigInteger resultb = g.modPow(b, n);

// This is the value that will get sent from B to A.

// This value does NOT compromise the value of b easily.

System.out.println("Person B sends " + resultb + " to person A.");

BigInteger b = new BigInteger(stdin.next());

stdin.close();

// Make B's calculation.

BigInteger resultb = g.modPow(b, n);

// This is the value that will get sent from B to A.

// This value does NOT compromise the value of b easily.

System.out.println("Person B sends " + resultb + " to person A.");

// Once A and B receive their values, they make their new calculations.

// This involved getting their new numbers and raising them to the // same power as before, their secret number.

BigInteger KeyACalculates = resultb.modPow(a, n);

BigInteger KeyBCalculates = resulta.modPow(b, n);

// Print out the Key A calculates.

System.out.println(

"A takes " + resultb + " raises it to the power " + a + " mod " + n

);

System.out.println("The Key A calculates is " + KeyACalculates + ".");

// Print out the Key B calculates.

System.out.println(

"B takes " + resulta + " raises it to the power " + b + " mod " + n

);

System.out.println("The Key B calculates is " + KeyBCalculates + ".");

}

public static BigInteger getNextPrime(String ans) {

BigInteger test = new BigInteger(ans);

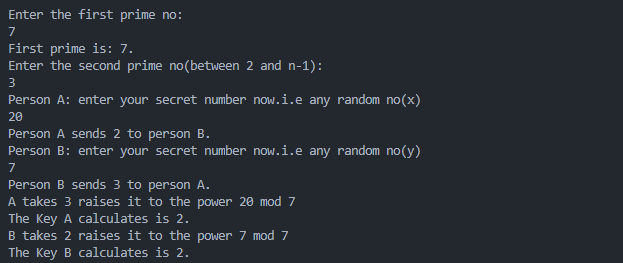
while (!test.isProbablePrime(99)) test = test.add(one);

return test;

}

}

**Output –**

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