

```

EXP ICS: 7
Roll NO:62
package ics;
import java.util.*; import
java.math.BigInteger;

public class Exp7 { public static void
    main(String arg[])
    {
        int alpha=0,q=0,xa=0,xb=0;
Scanner sc=new Scanner(System.in);
        System.out.println("Enter the first prime number");
        alpha=sc.nextInt();
        System.out.println("Enter value of primitive root of alpha:");
q= sc.nextInt();
        System.out.println("Enter the private key A:");
xa=sc.nextInt();
        System.out.println("Enter the private key B:");
xb=sc.nextInt( );
        BigInteger Alpha = BigInteger.valueOf(alpha);
        BigInteger Q = BigInteger.valueOf(q);
        BigInteger XA = BigInteger.valueOf(xa);
        BigInteger XB = BigInteger.valueOf(xb);

        BigInteger YA=Alpha.modPow(XA,Q);
        System.out.println("YA==" +YA);
        BigInteger YB=Alpha.modPow(XB,Q);
        System.out.println("YB==" +YB);
        BigInteger k1=YB.modPow(XA,Q);
        System.out.println("k1==" +k1);
        BigInteger k2=YA.modPow(XB,Q);
        System.out.println("k2==" +k2);

    }
} OUTPUT:

```

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Enter the first prime number
23
Enter value of primitive root of alpha:
17
Enter the private key A:
10
Enter the private key B:
7
YA==15
YB==14
k1==8 k2==8

```